A46 Newark Bypass

TR010065/APP/6.3

6.3 Environmental Statement

Appendix 9.2 Contaminated Land Risk Assessment

Part 5

APFP Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Volume 6

April 2024

Infrastructure Planning

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

A46 Newark Bypass

Development Consent Order 202[x]

ENVIRONMENTAL STATEMENT

APPENDIX 9.2 CONTAMINATED LAND RISK ASSESSMENT

PART 5

Regulation Number:	Regulation 5(2)(a)
Planning Inspectorate Scheme Reference	TR010065
Application Document Reference	TR010065/APP/6.3
Author:	A46 Newark Bypass Project Team, National Highways

Version	Date	Status of Version
Rev 1	April 2024	DCO Application

Contents

Appendix D: Factual reports

Plate 31 WS17 - Hand Pit GL to 1.20m bgl

Plate 32 WS17 - 1.65 to 2.00m bgl

Tetra Tech
5th Floor, Longcross Court
47 Newport Road
Cardiff
CF24 0AD

Tel: 029 20 829200
Fax: 029 20 455321

Environmental Consultancy
Ground Technologies & Investigation

Project :-
A46 NNB

Project No.: B026948

Oct-21

Plate 33 WS17 - 2.00 to 3.00m bgl

Plate 34 BLANK

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Plate 35 WS23 - Hand Pit GL to 1.20m bgl

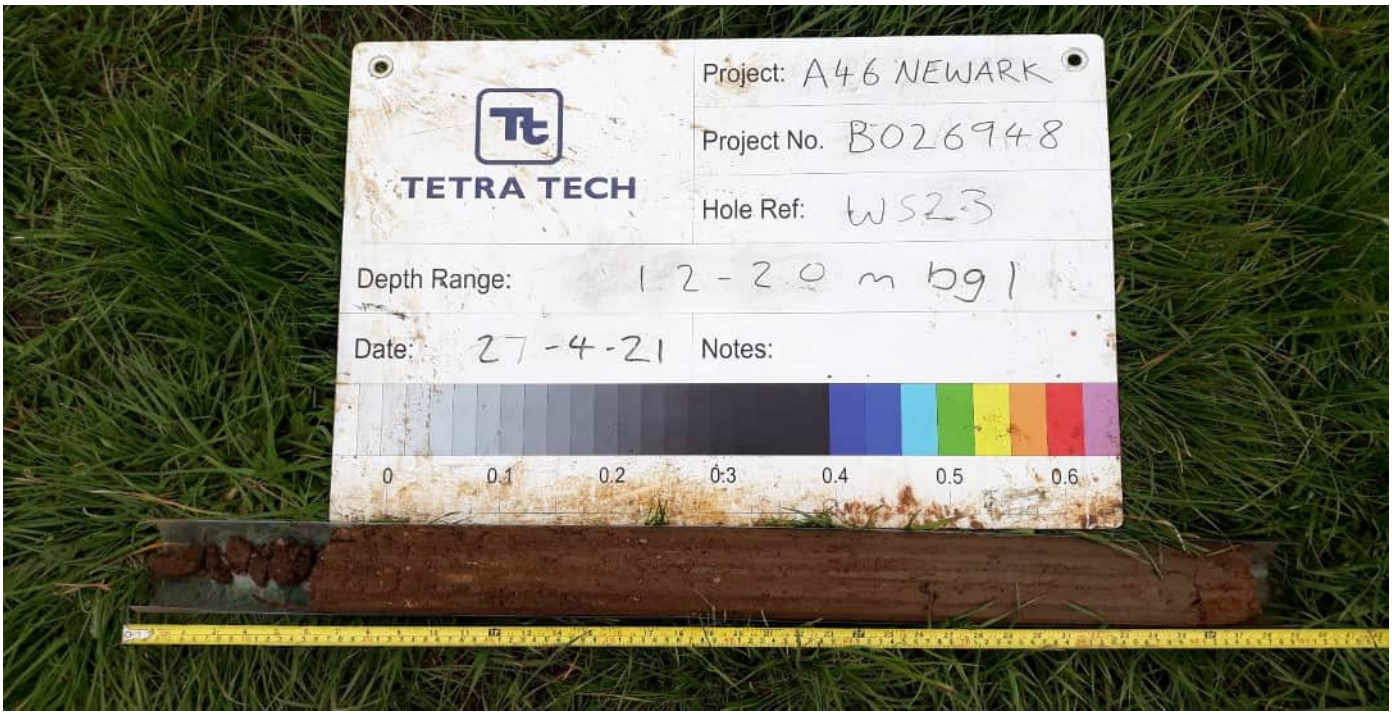

Plate 36 WS23 - 1.20 to 2.00m bgl

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Plate 37 WS23 - 2.45 to 3.00m bgl

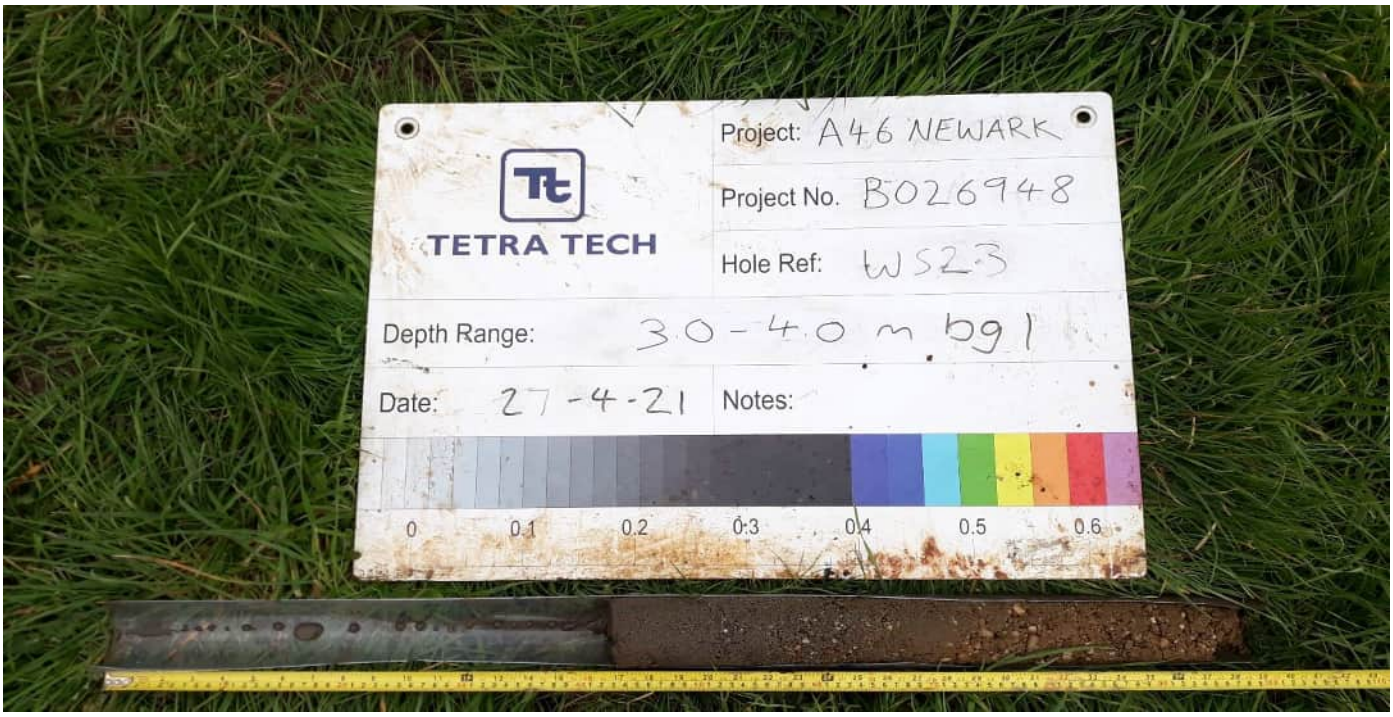

Plate 38 WS23 - 3.00 to 4.00m bgl

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Plate 39 WS25 - Hand Pit GL to 1.20m bgl

Plate 40 WS25 - 1.65 to 2.00m bgl

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Plate 41 WS25 - 2.00 to 3.00m bgl

Plate 42 WS25 - 3.00 to 4.00m bgl

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Plate 43 WS26 - Hand Pit GL to 1.20m bgl

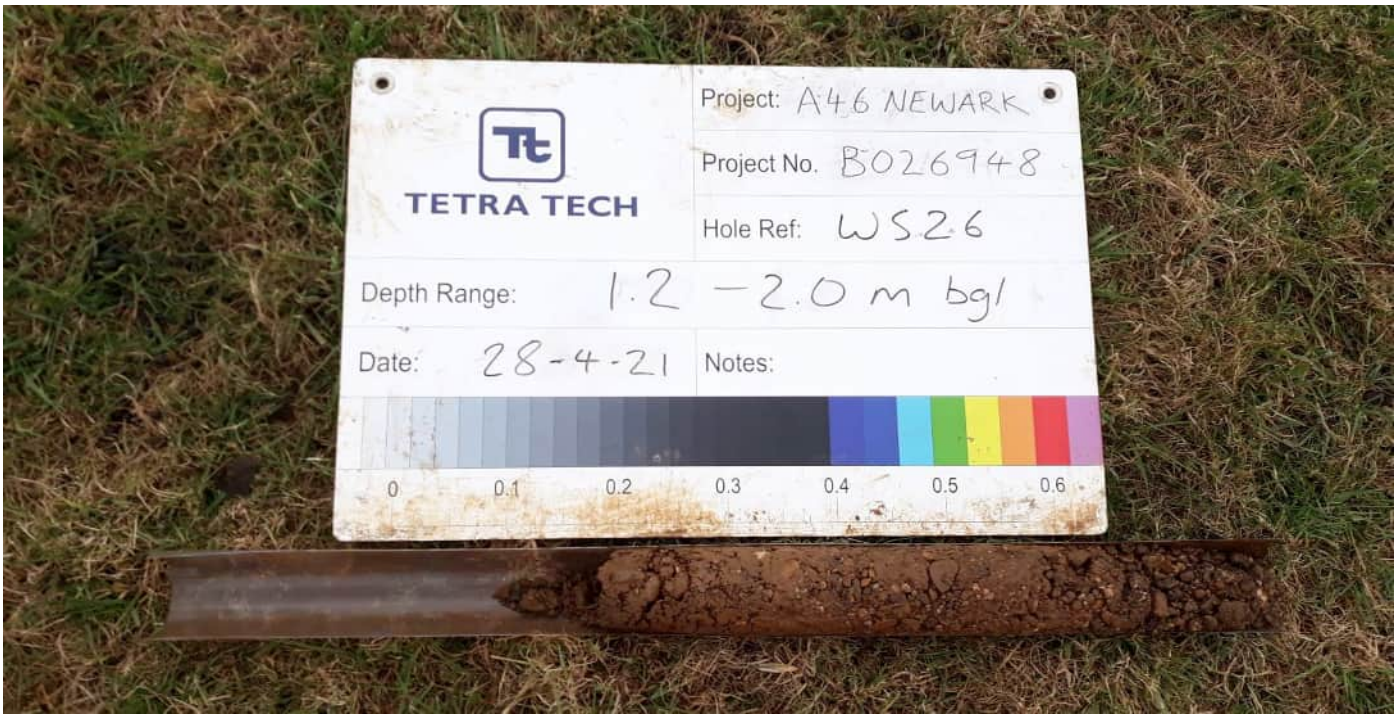

Plate 44 WS26 - 1.20 to 2.00m bgl

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Plate 45 WS26 - 2.00 to 3.00m bgl

Plate 46 BLANK

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Plate 47 WS28 - Hand Pit GL to 1.20m bgl

Plate 48 WS28 - 1.65 to 2.00m bgl

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Plate 49 WS28 - 2.00 to 3.00m bgl

Plate 50 WS28 - 3.00 to 4.00m bgl

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Plate 51 WS29 - Hand Pit GL to 1.20m bgl

Plate 52 WS29 - 1.20 to 2.00m bgl

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Plate 53 WS29 - 2.00 to 3.00m bgl

Plate 54 BLANK

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Plate 55 WS31 - han Pit GL to 1.20m bgl

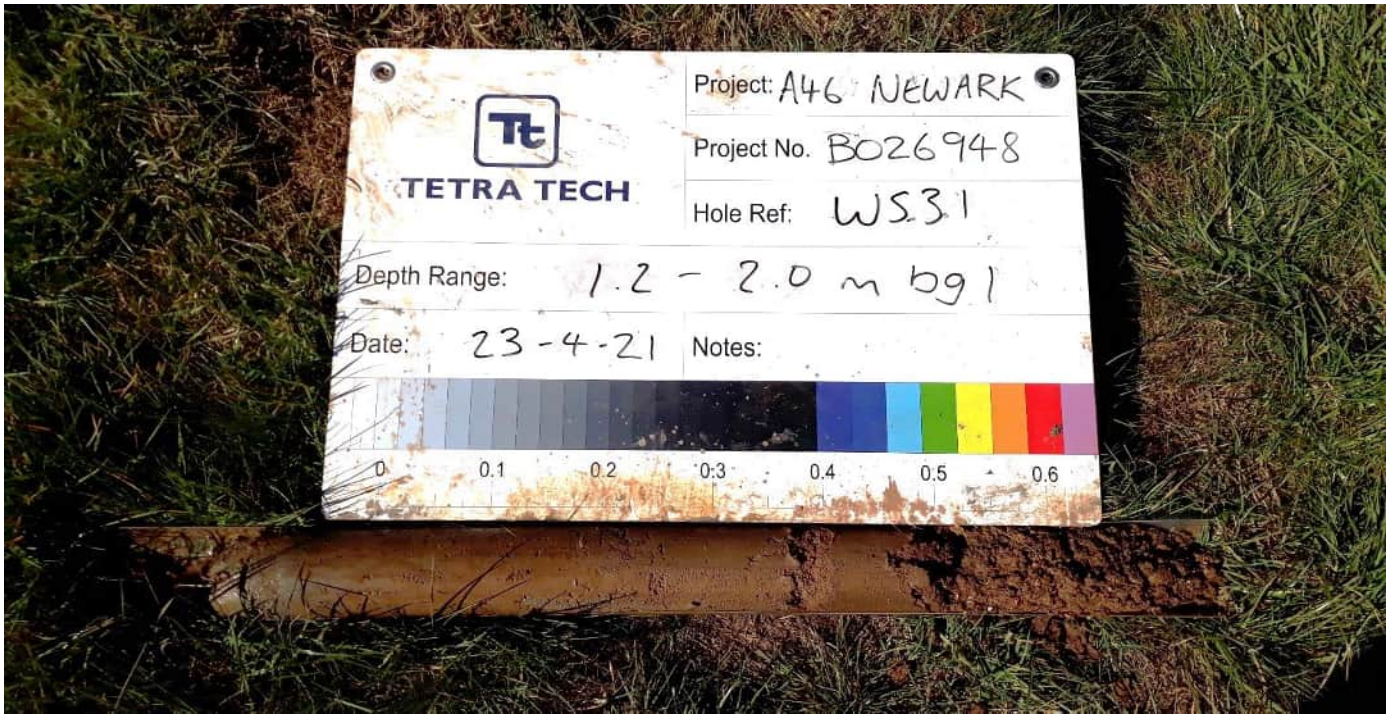

Plate 56 WS31 - 1.20 to 2.00m bgl

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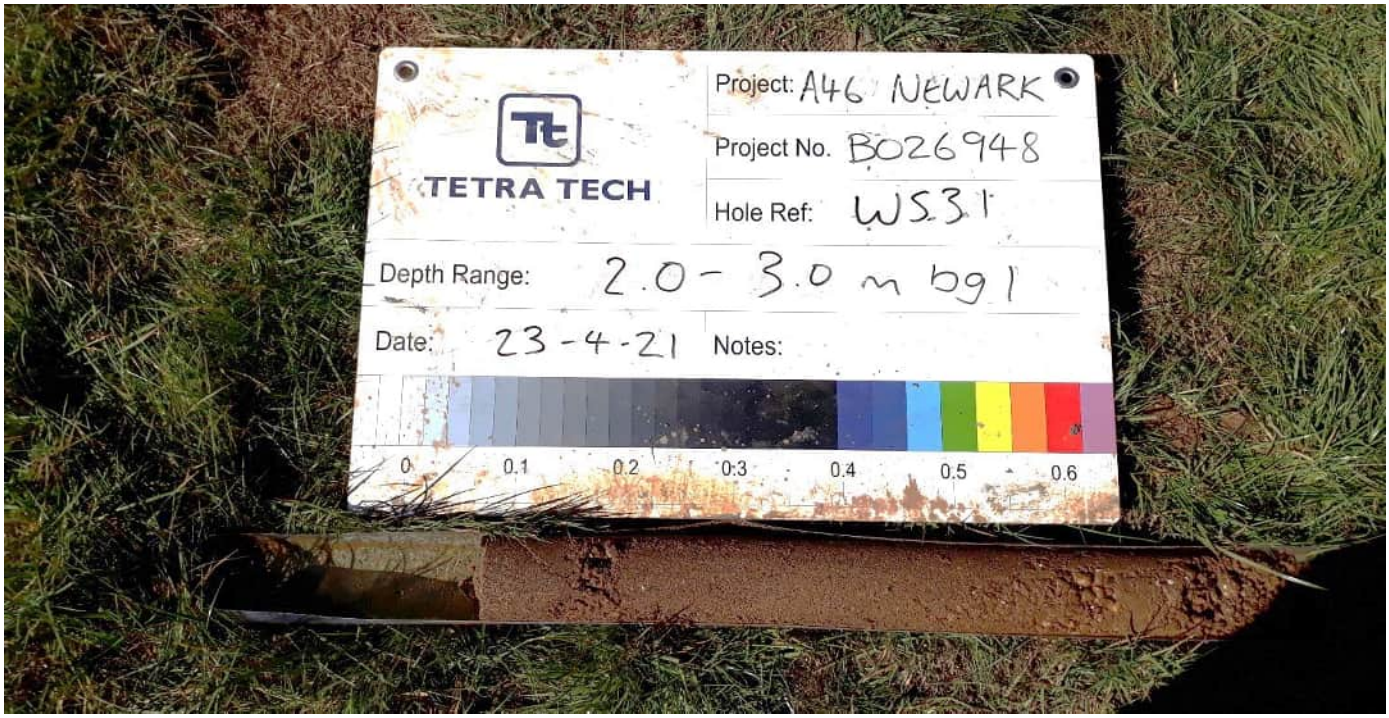

Plate 57 WS31 - 2.00 to 3.00m bgl

Plate 58 WS31 - 3.00 to 4.00m bgl

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Plate 59 WS31 - 4.00 to 5.00m bgl

Plate 60 BLANK

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Plate 61 WS46 - Hand Pit GL to 1.20m bgl

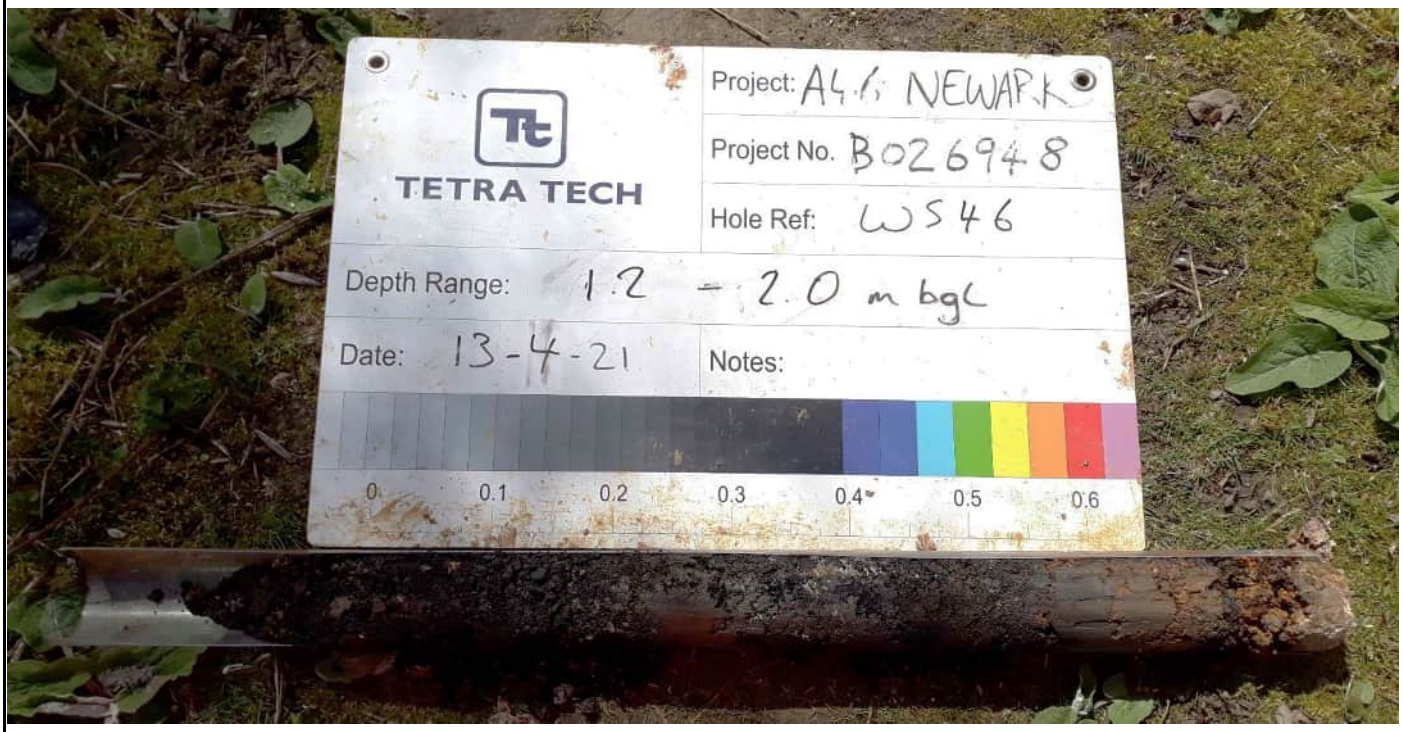

Plate 62 WS46 - 1.20 to 2.00m bgl

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Plate 63 WS46 - 2.00 to 3.00m bgl

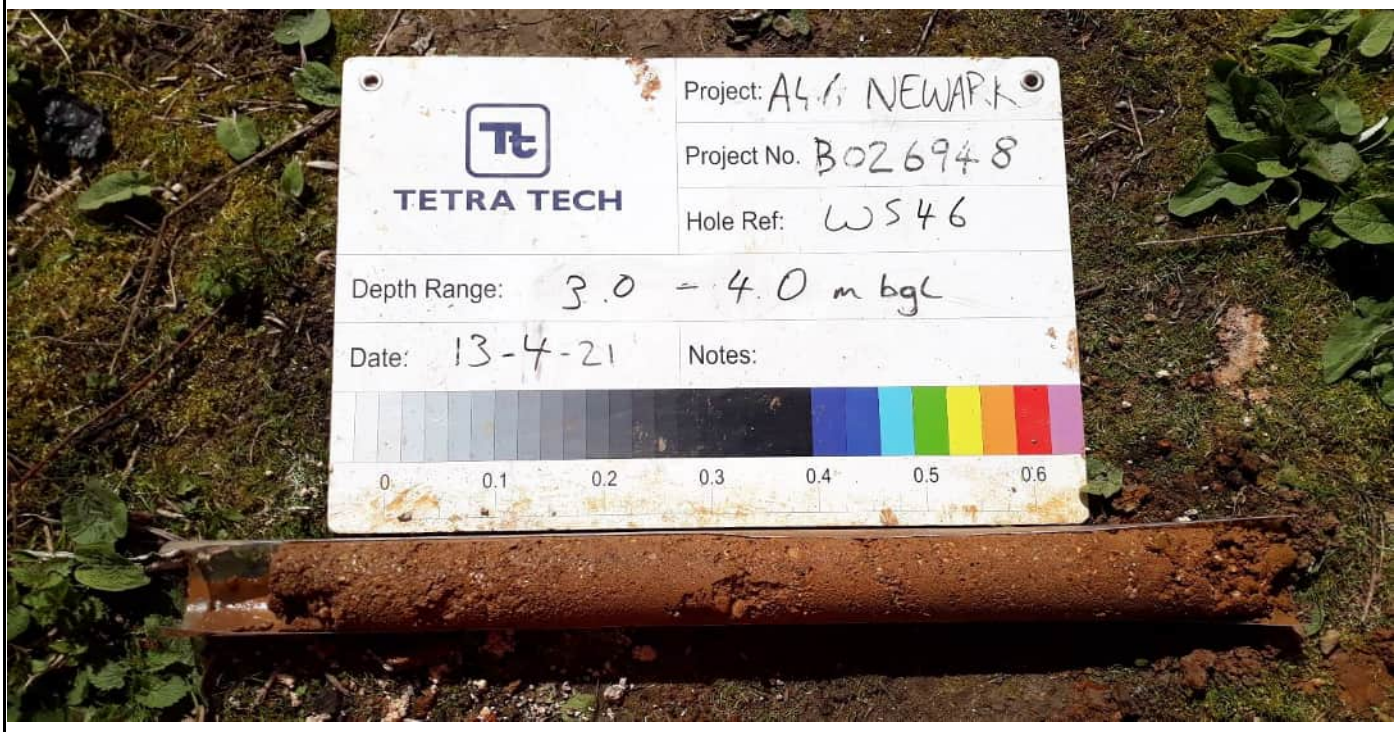

Plate 64 WS46 - 3.00 to 4.00m bgl

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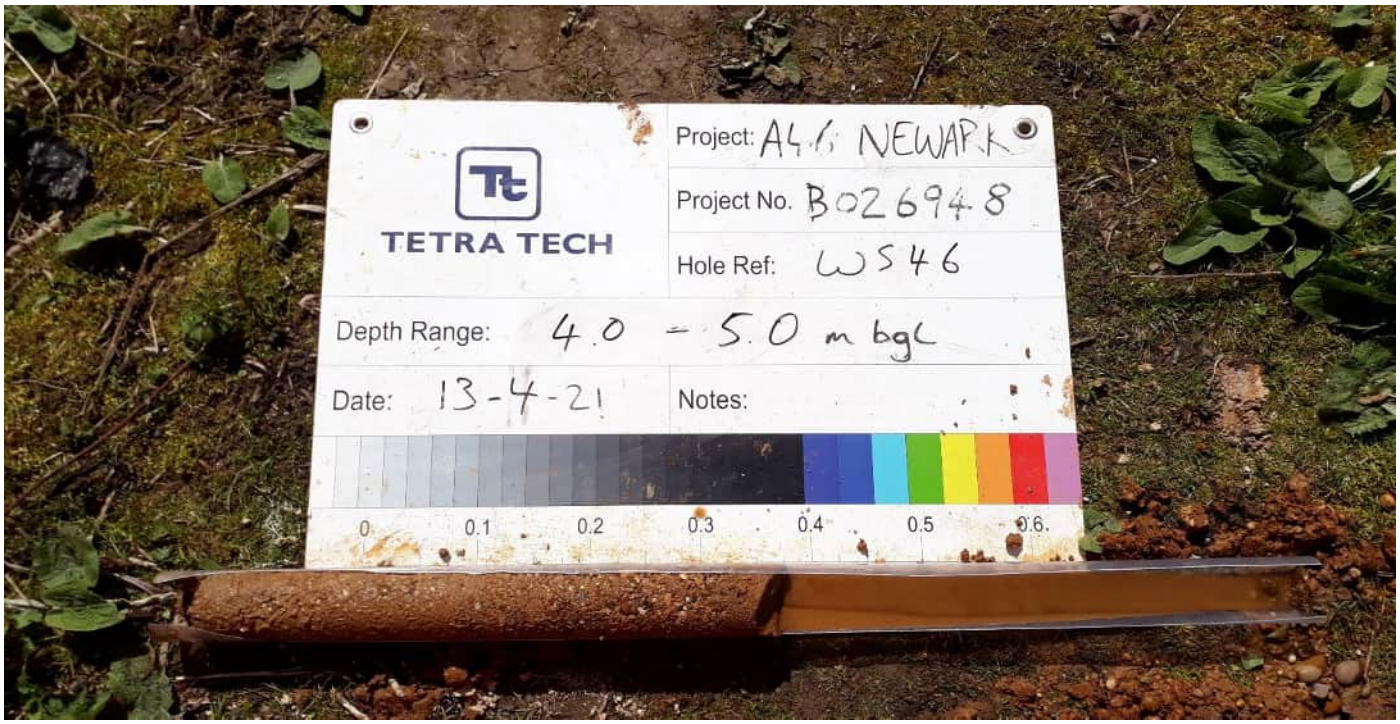

Plate 65 WS46 - 4.00 to 5.00m bgl

Plate 66 WS46 - 5.00 to 6.00m bgl

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Plate 67 WS48 - Hand Pit GL to 1.20m bgl

Plate 68 WS48 - 1.20 to 2.00m bgl

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Plate 69 WS48 - 2.00 to 3.00m bgl

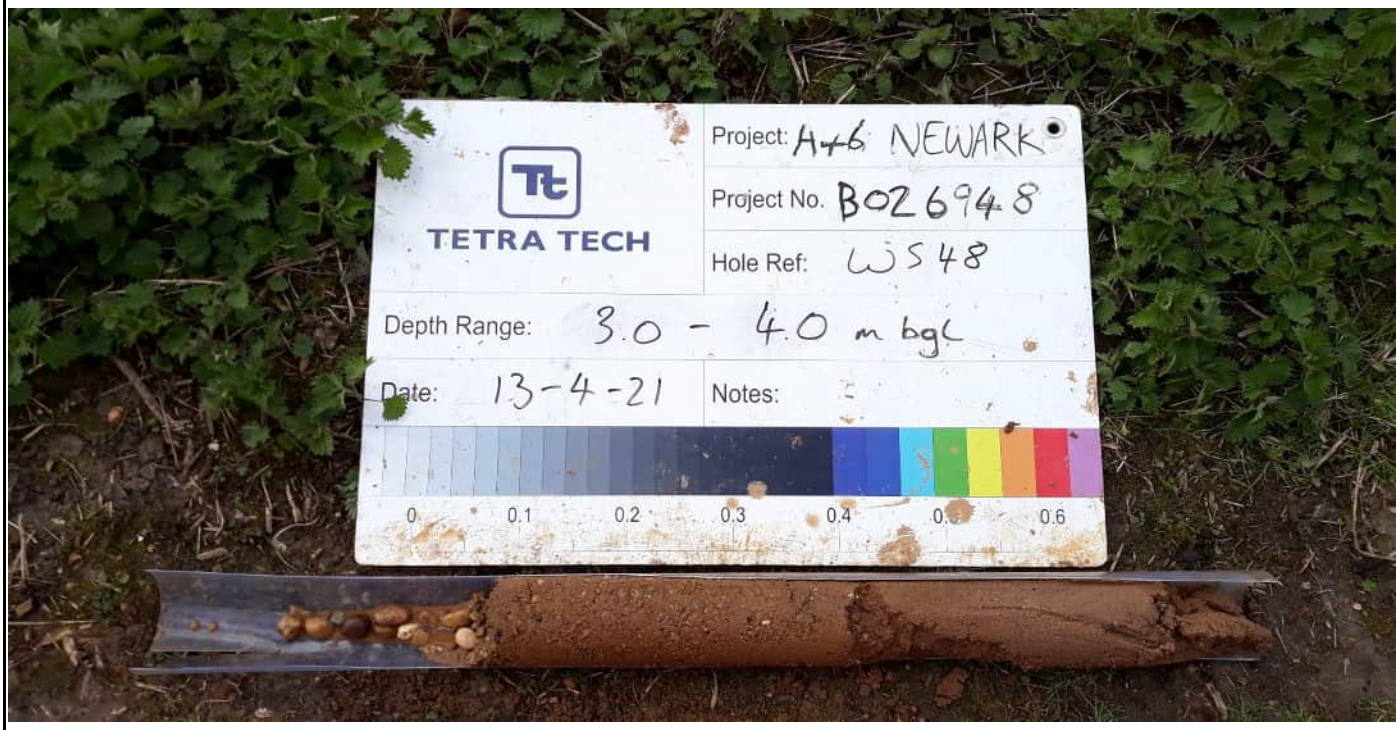

Plate 70 WS48 - 3.00 to 4.00m bgl

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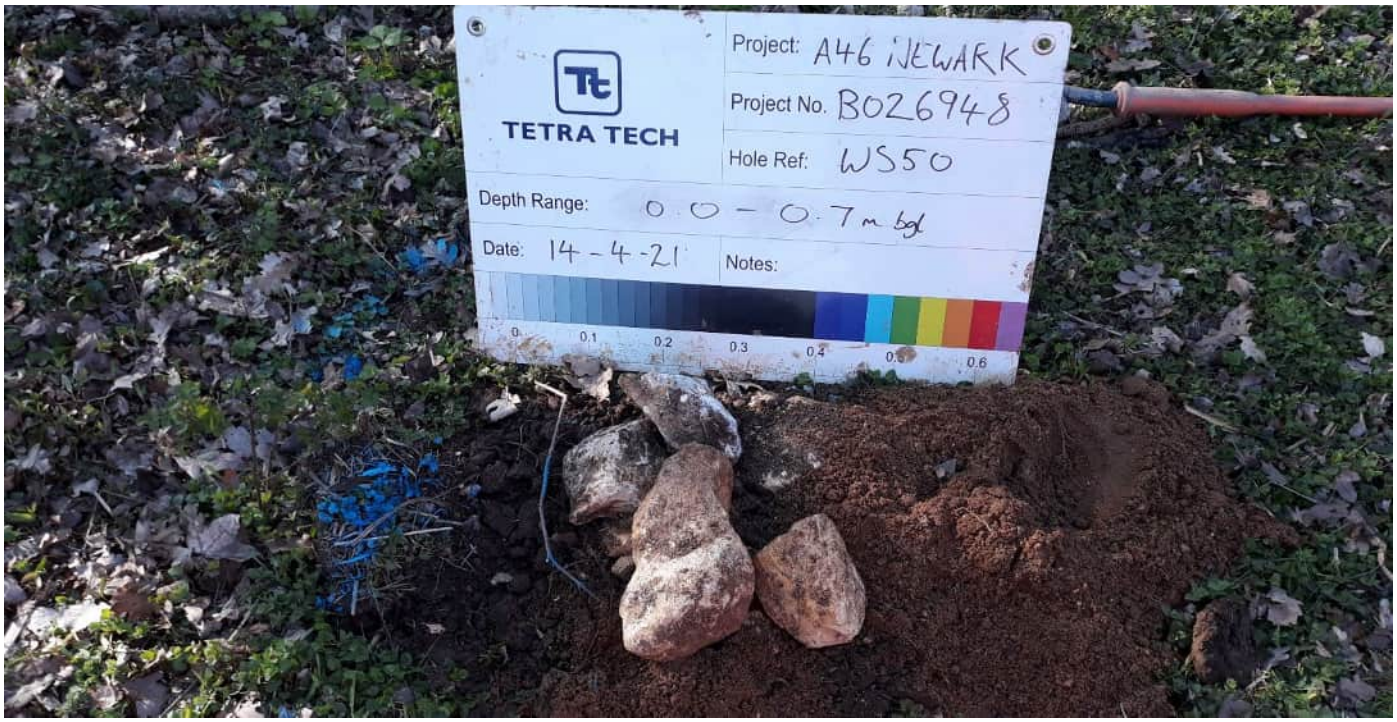

Plate 71 WS50 - Hand Pit to 0.70m bgl

Plate 72 WS50 - Service identified at base of pit, hole relocated.

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Plate 73 WS50A - Hand Pit GL to 1.20m bgl

Plate 74 WS50A - 1.20 to 2.00m bgl

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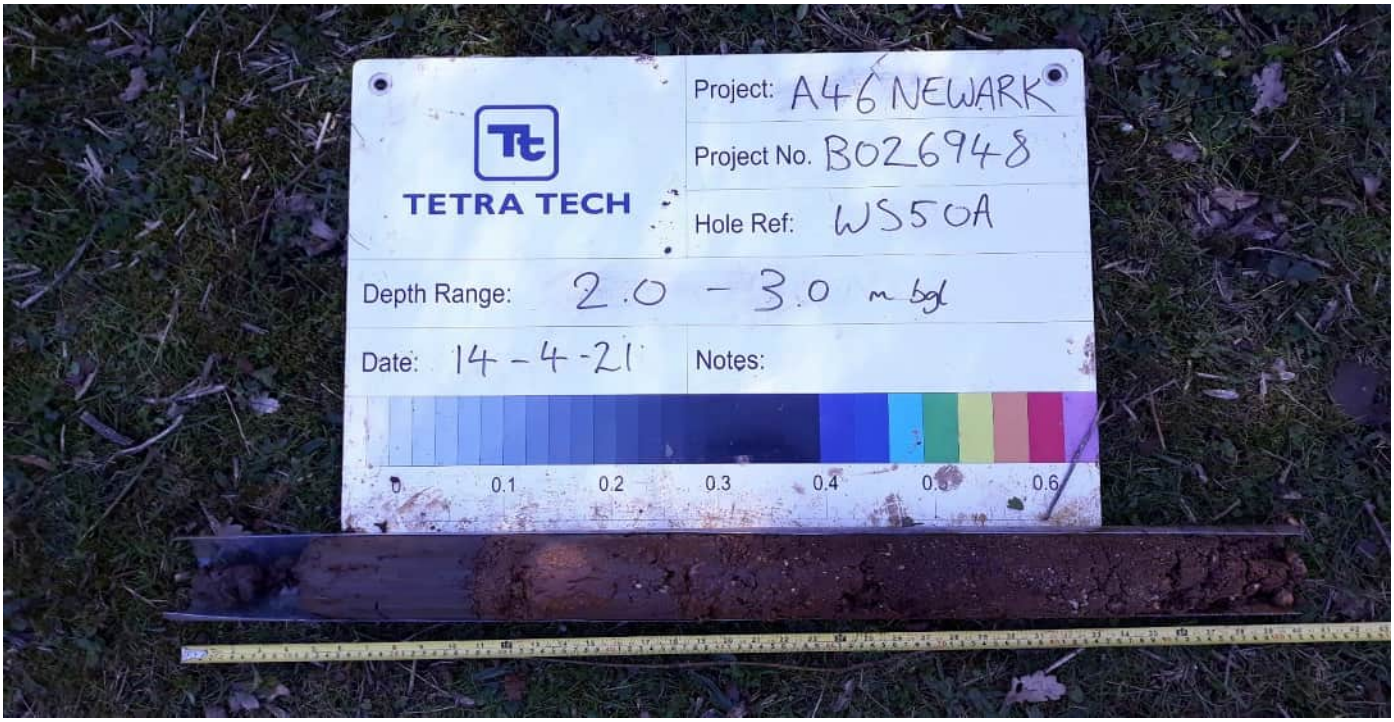

Plate 75 WS50A - 2.00 to 3.00m bgl

Plate 76 WS50A - 3.00 to 4.00m bgl

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Plate 77 WS50A - 4.00 to 5.00m bgl

Plate 78 BLANK

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Plate 79 WS54 - Hand Pit GL to 1.20

Plate 80 WS54 - 1.20 to 2.00m bgl

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Plate 81 WS54 - 2.00 to 3.00m bgl

Plate 82 WS54 - 3.00 to 4.00m bgl

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Plate 83 WS54 - 4.00 to 5.00m bgl

Plate 84 BLANK

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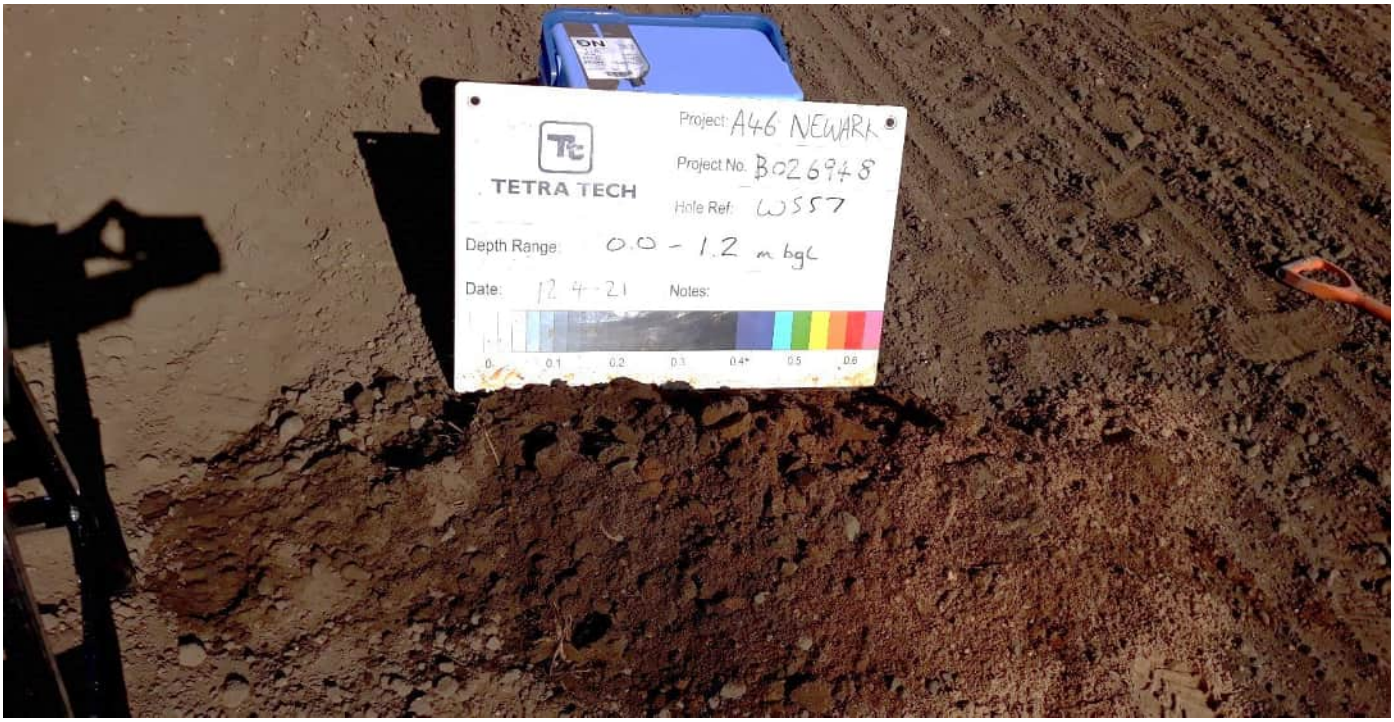

Plate 85 WS57 - Hand Pit GL to 1.20m bgl

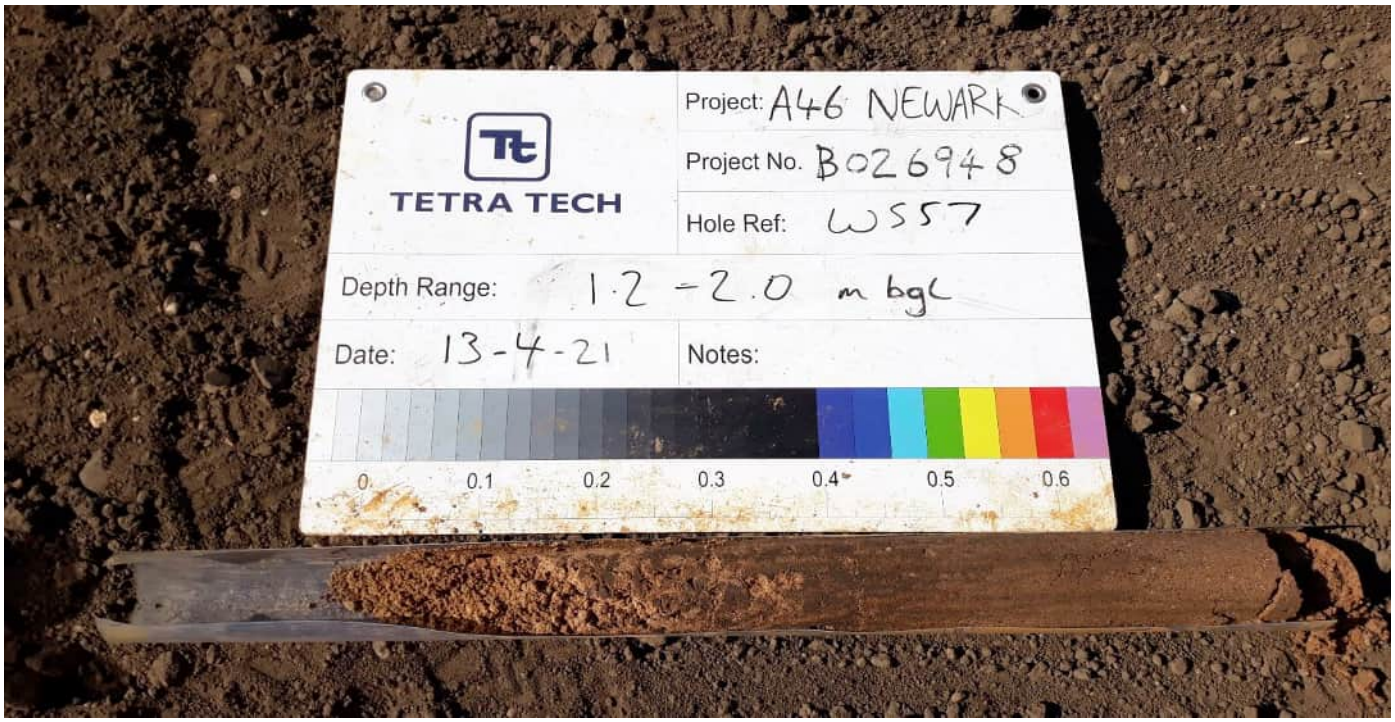

Plate 86 WS57 - 1.20 to 2.00m bgl

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Oct-21

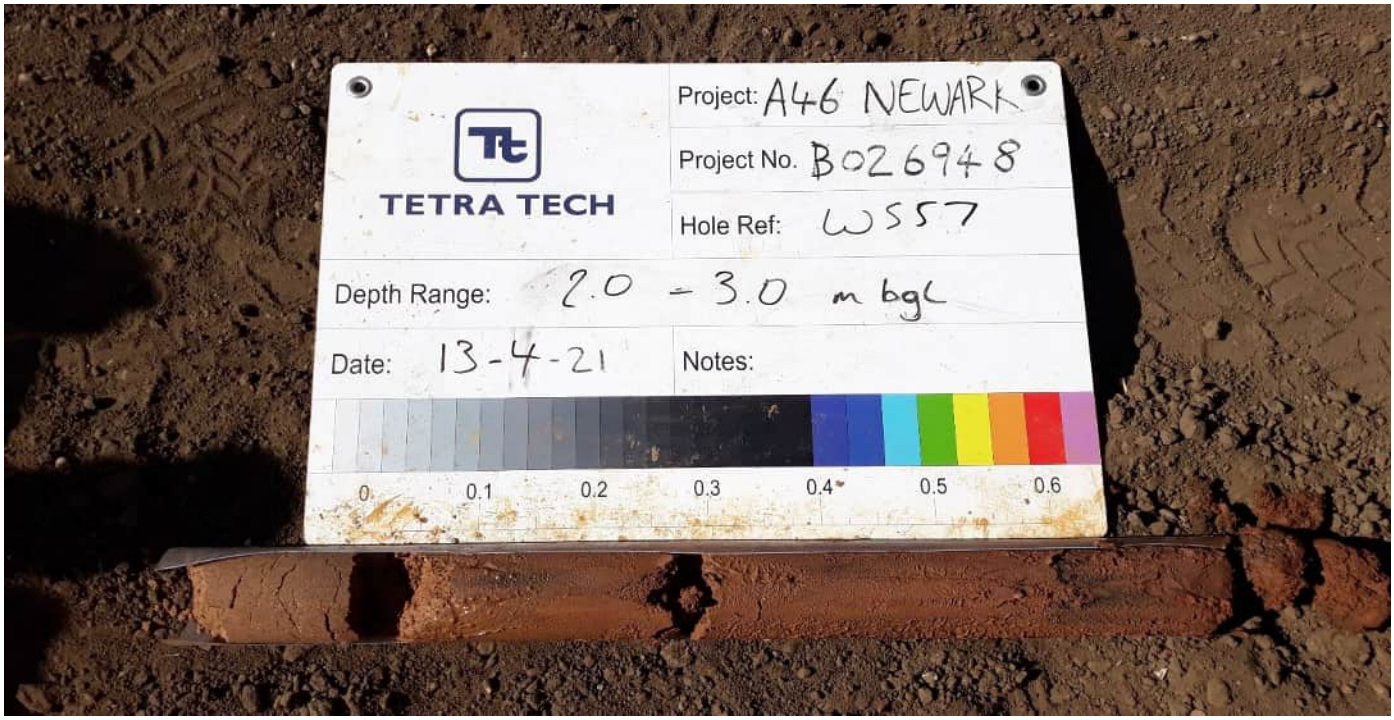

Plate 87 WS57 - 2.00 to 3.00m bgl

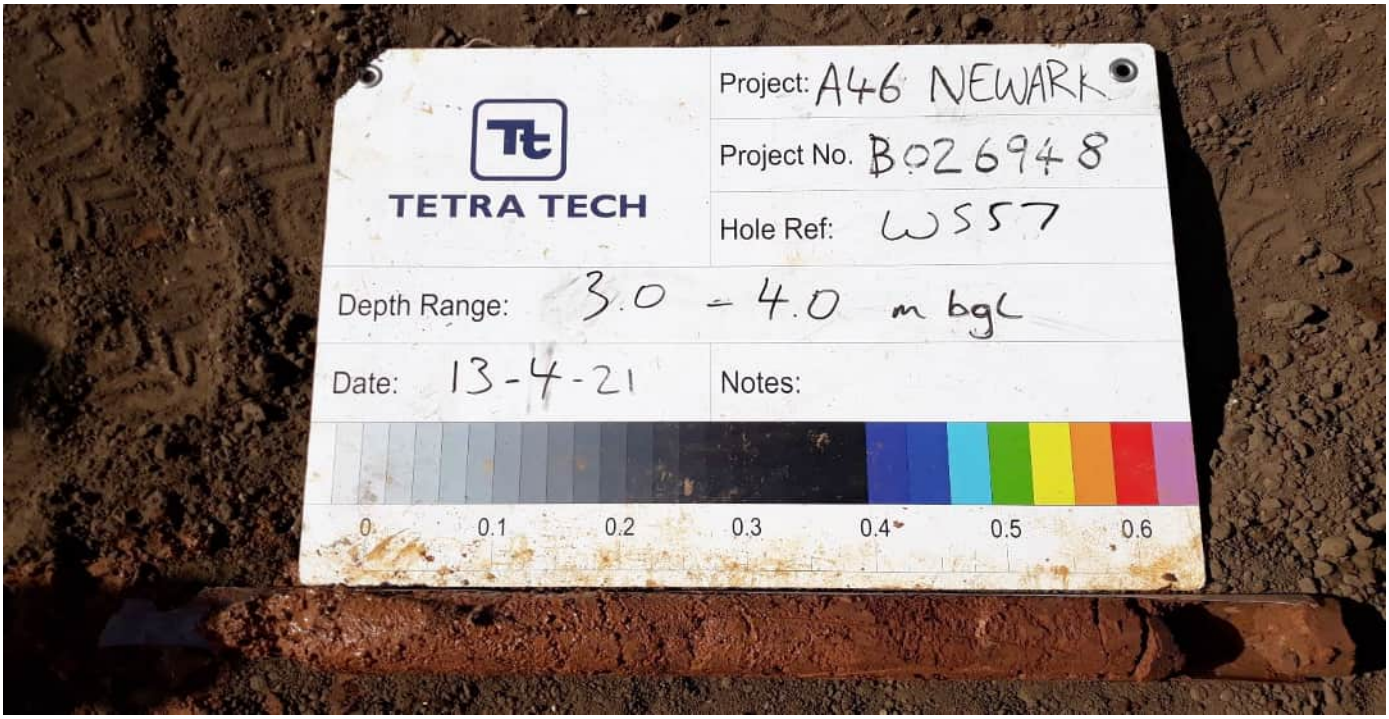

Plate 88 WS57 - 3.00 to 4.00m bgl

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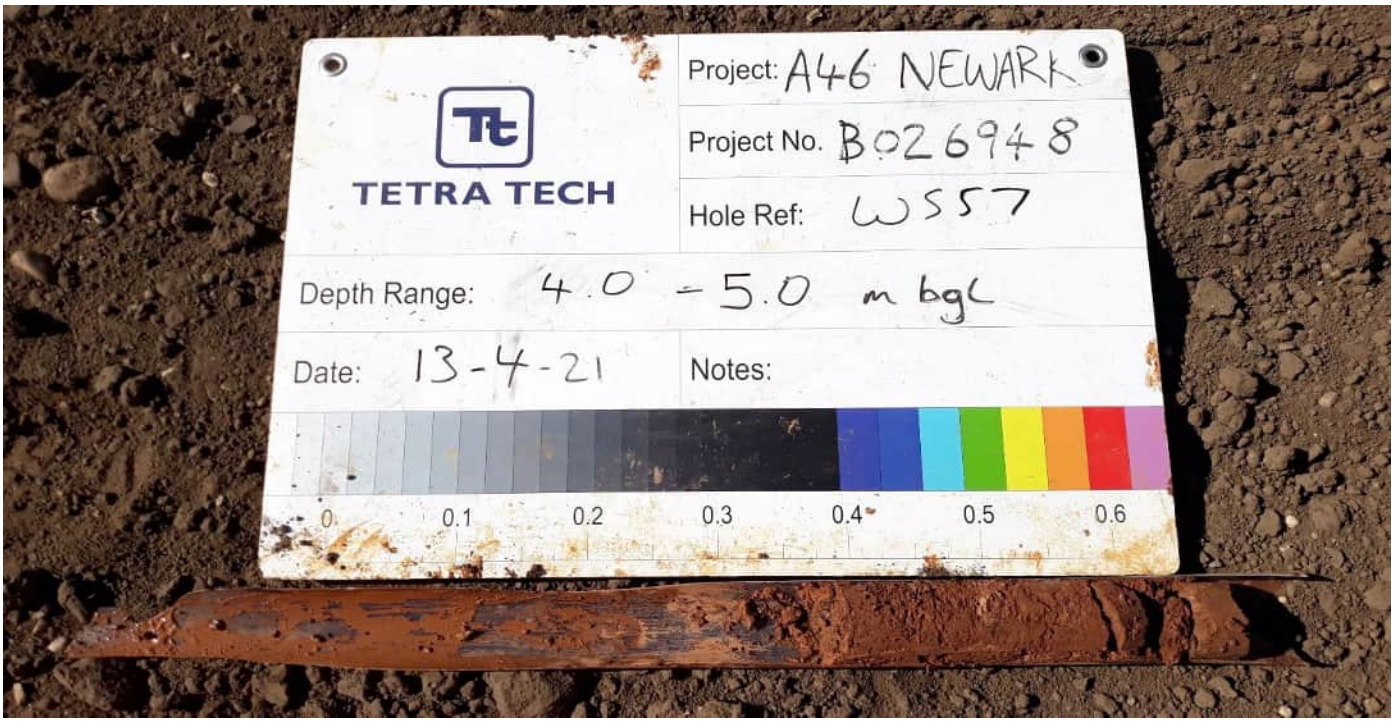

Plate 89 WS57 - 4.00 to 5.00m bgl

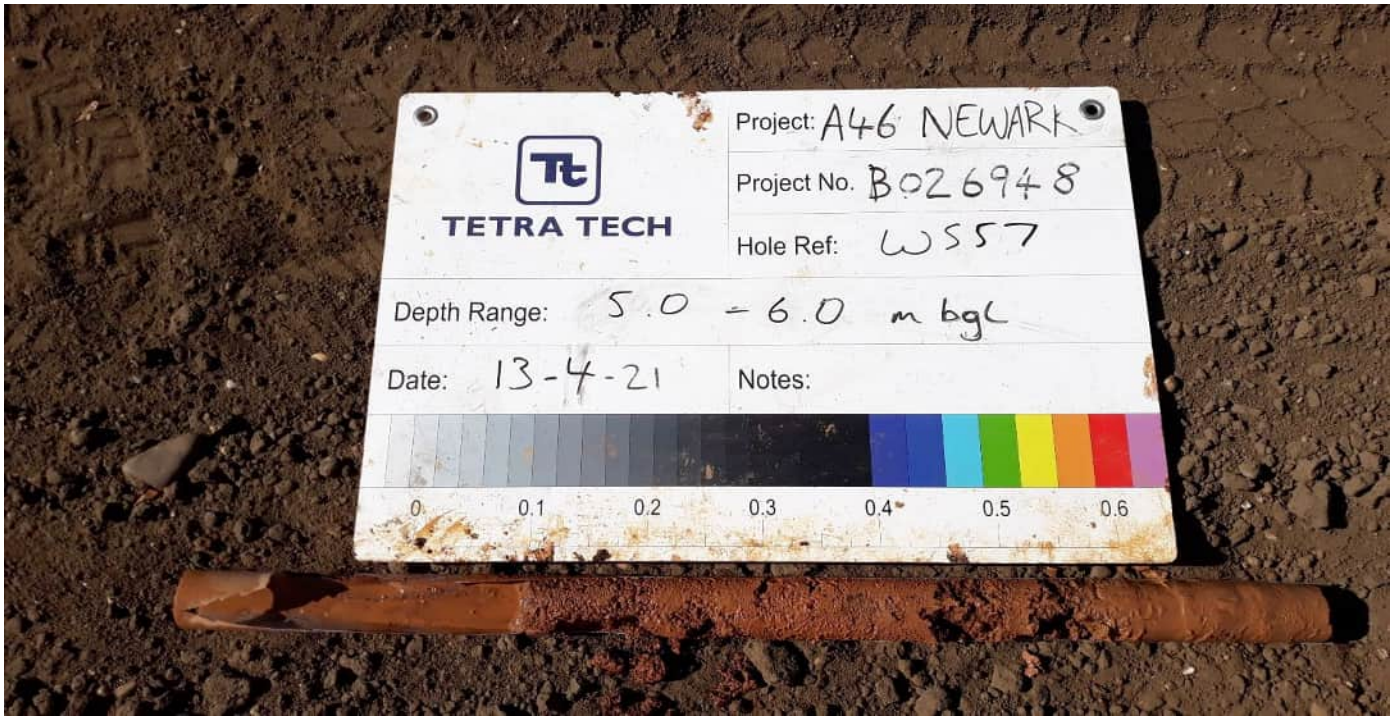

Plate 90 WS57 - 5.00 to 6.00m bgl

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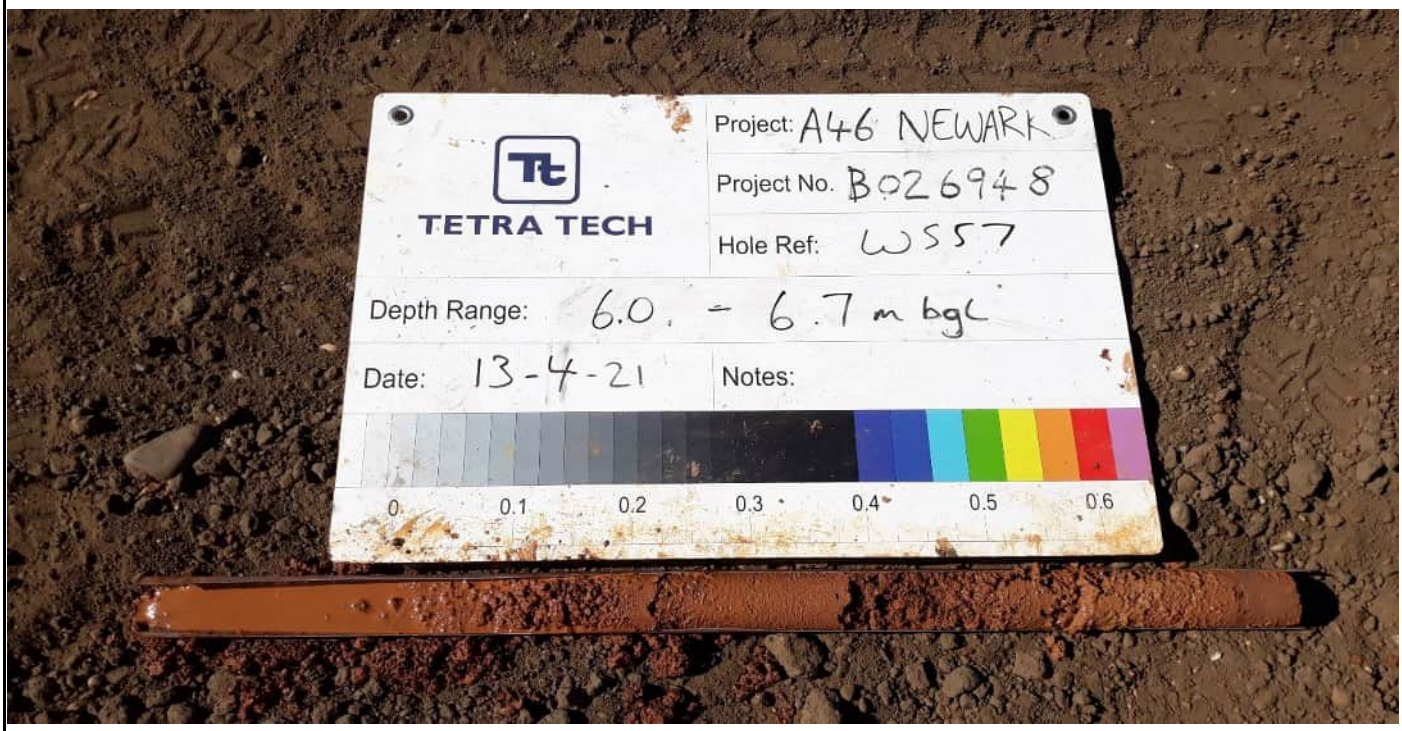

Plate 91 WS57 - 6.00 to 6.70m bgl

Plate 92 BLANK

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Plate 93 WS64 - Hand Pit GL to 1.20m bgl

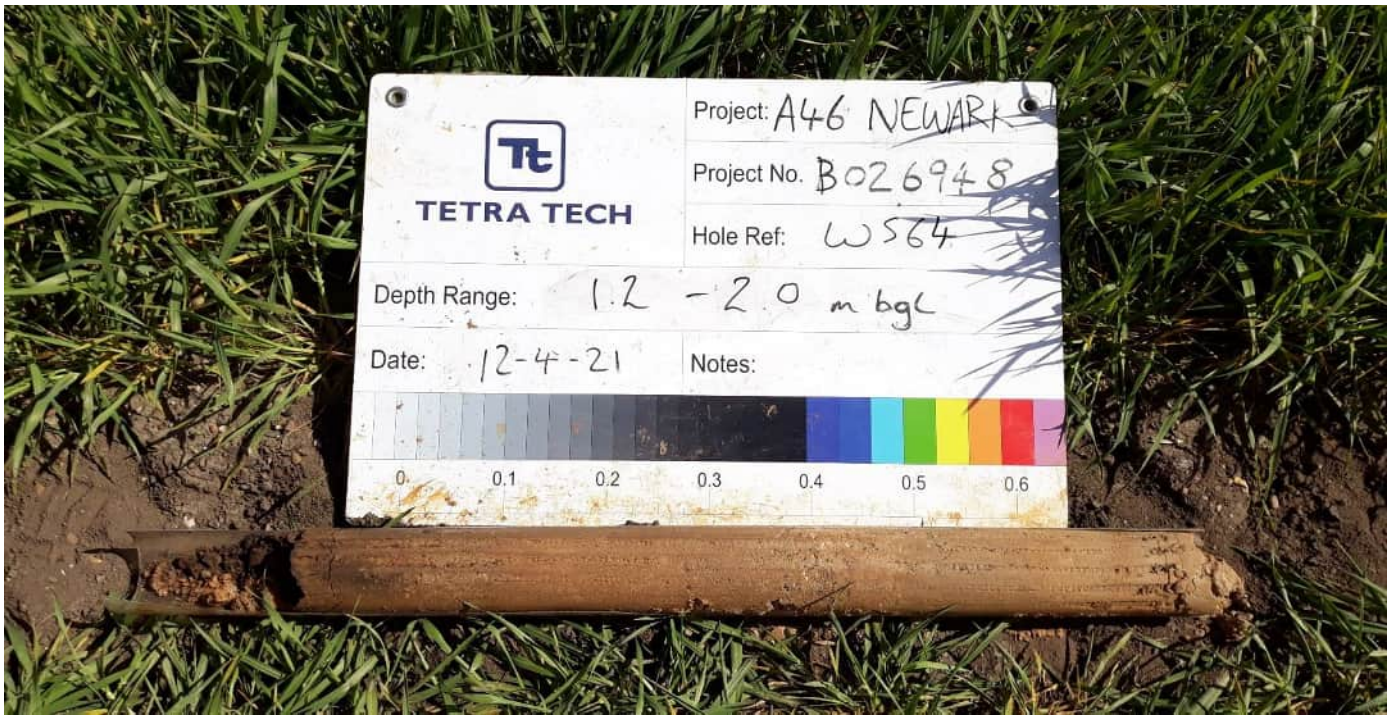

Plate 94 WS64 - 1.20 to 2.00m bgl

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Plate 95 WS64 - 2.00 to 3.00m bgl

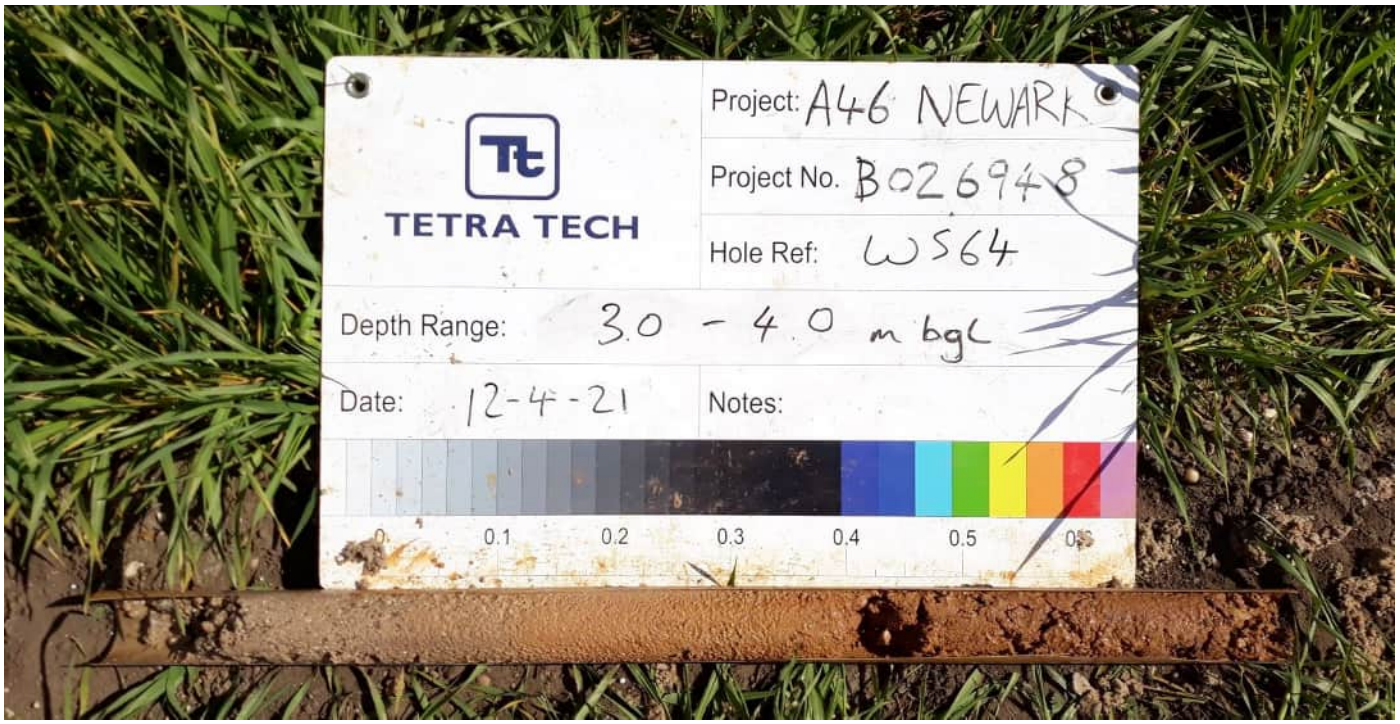

Plate 96 WS64 - 3.00 to 4.00m bgl

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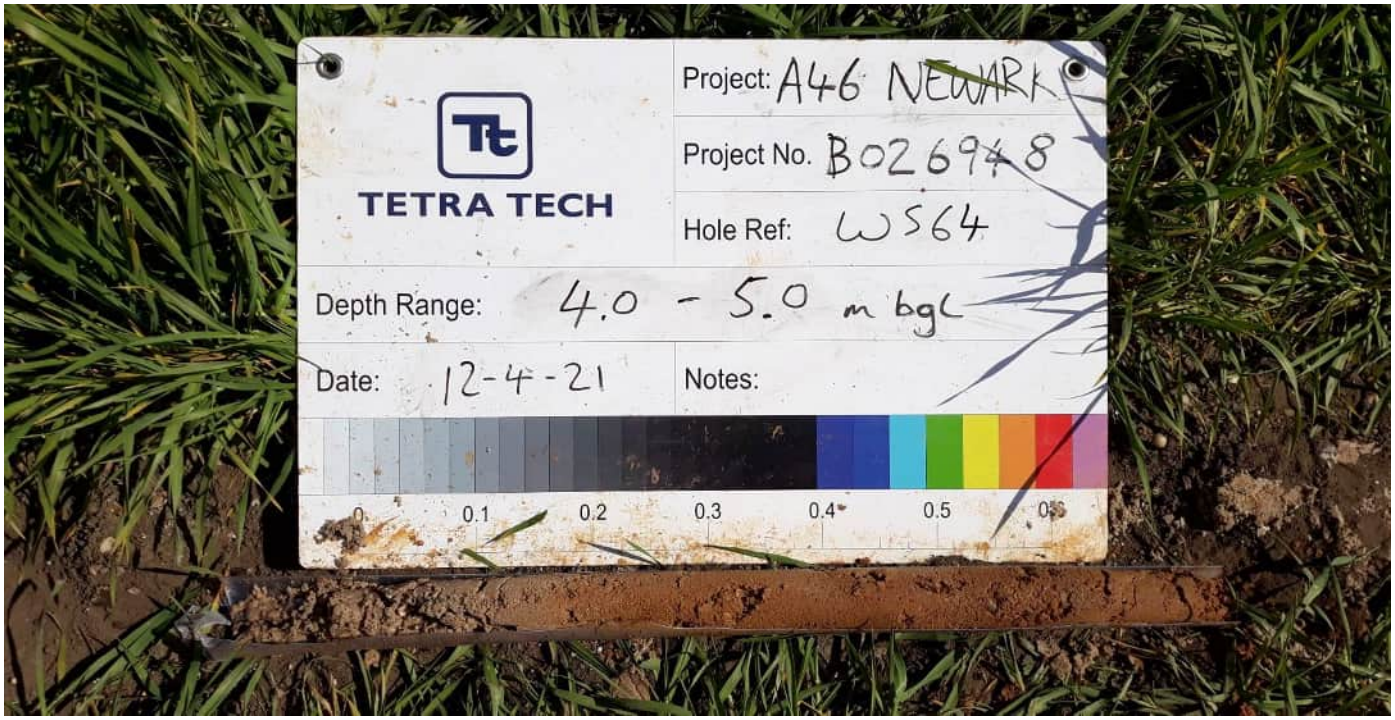

Plate 97 WS64 - 4.00 to 5.00m bgl

Plate 98 BLANK

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Plate 99 WS65 - Hand Pit GL to 1.20m bgl

Plate 100 WS65 - 1.20 to 2.00m bgl

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Dec-22

Plate 101 WS65 - 2.00 to 3.00m bgl

Plate 102 BLANK

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Jan-23

Plate 103 WS66 - GL to 0.90m bgl

Plate 104 WS66 - 0.90 to 2.00m bgl

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Plate 105 WS66 - 2.00 to 3.00m bgl

Plate 106 WS66 - 3.00 to 3.90m bgl

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Plate 107 WS67 - Hand Pit GL to 1.20m bgl

Plate 108 WS67 - 1.20 to 2.00m bgl

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Plate 109 WS67 - 2.00 to 3.00m bgl

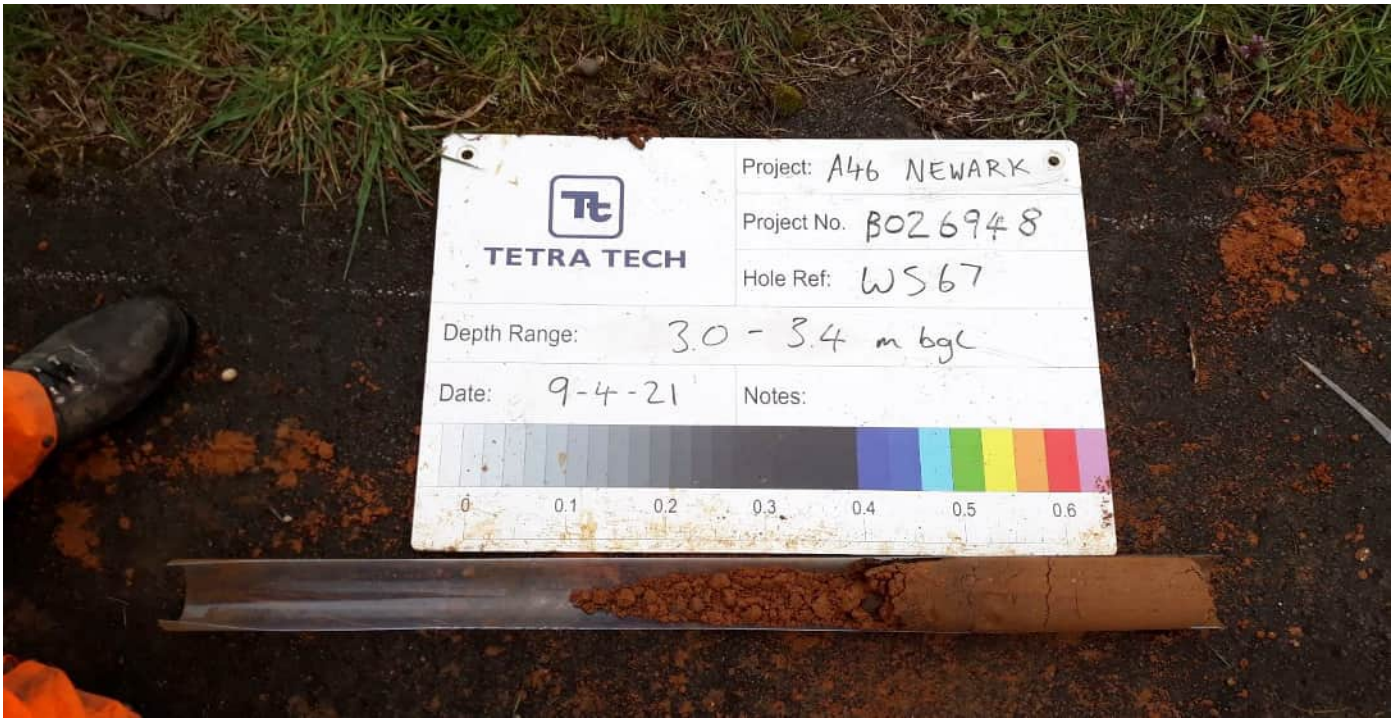

Plate 110 WS67 - 3.00 to 3.40m bgl

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Plate 111 WS68 - Hand Pit GL to 1.20m bgl

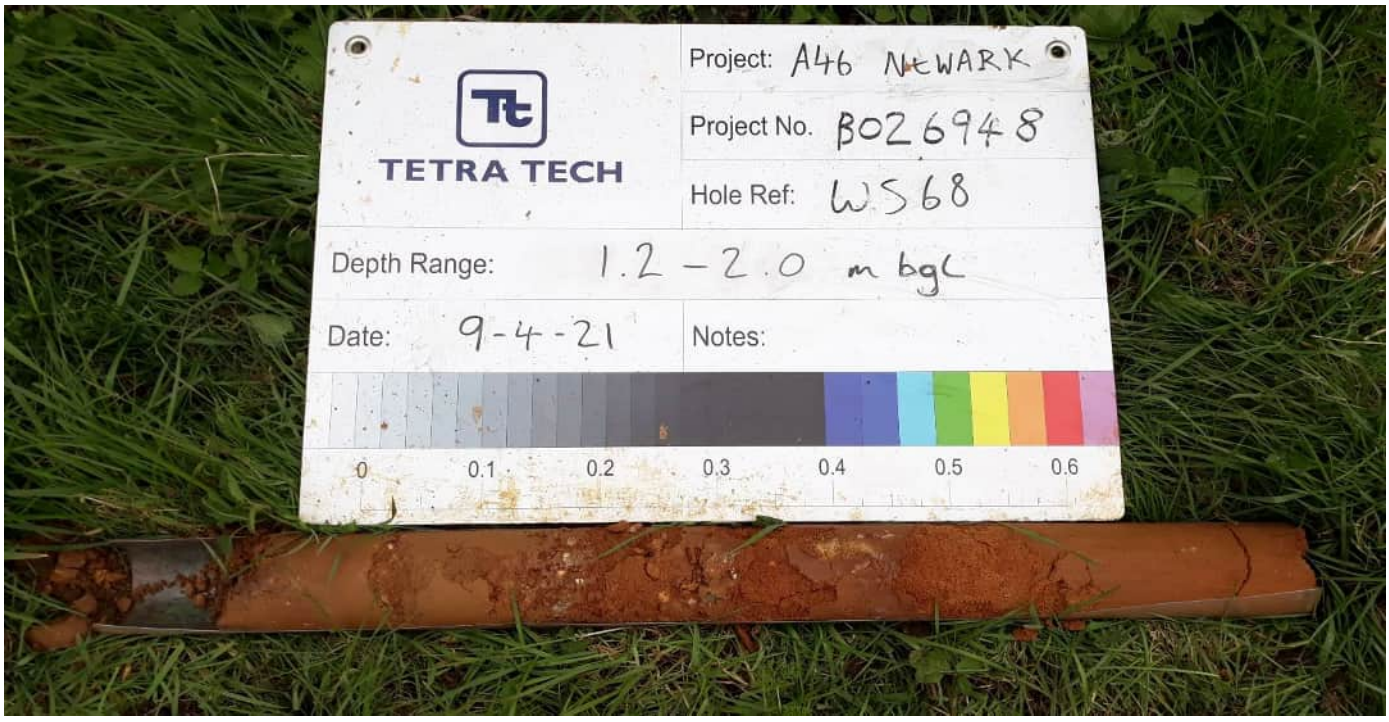

Plate 112 WS68 - 1.20 to 2.00m bgl

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Oct-21

Plate 113 WS68 - 2.00 to 3.00m bgl

Plate 114 WS68 - 3.00 to 4.00m bgl

Tetra Tech
5th Floor, Longcross Court
47 Newport Road
Cardiff
CF24 0AD

Tel: 029 20 829200
Fax: 029 20 455321

Environmental Consultancy
Ground Technologies & Investigation

Project :-
A46 NNB

Project No.: B026948

Oct-21

Plate 115 WS69 - Hand Pit GL to 1.20m bgl

Plate 116 WS69 - 1.20 to 2.00m bgl

Tetra Tech
5th Floor, Longcross Court
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Environmental Consultancy
Ground Technologies & Investigation

Project :-
A46 NNB

Project No.: B026948

Oct-21

Plate 117 WS69 - 2.00 to 3.00m bgl

Plate 118 WS69 - 3.00 to 4.00m bgl

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5th Floor, Longcross Court
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Tel: 029 20 829200
Fax: 029 20 455321

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Ground Technologies & Investigation

Project :-
A46 NNB

Project No.: B026948

Oct-21

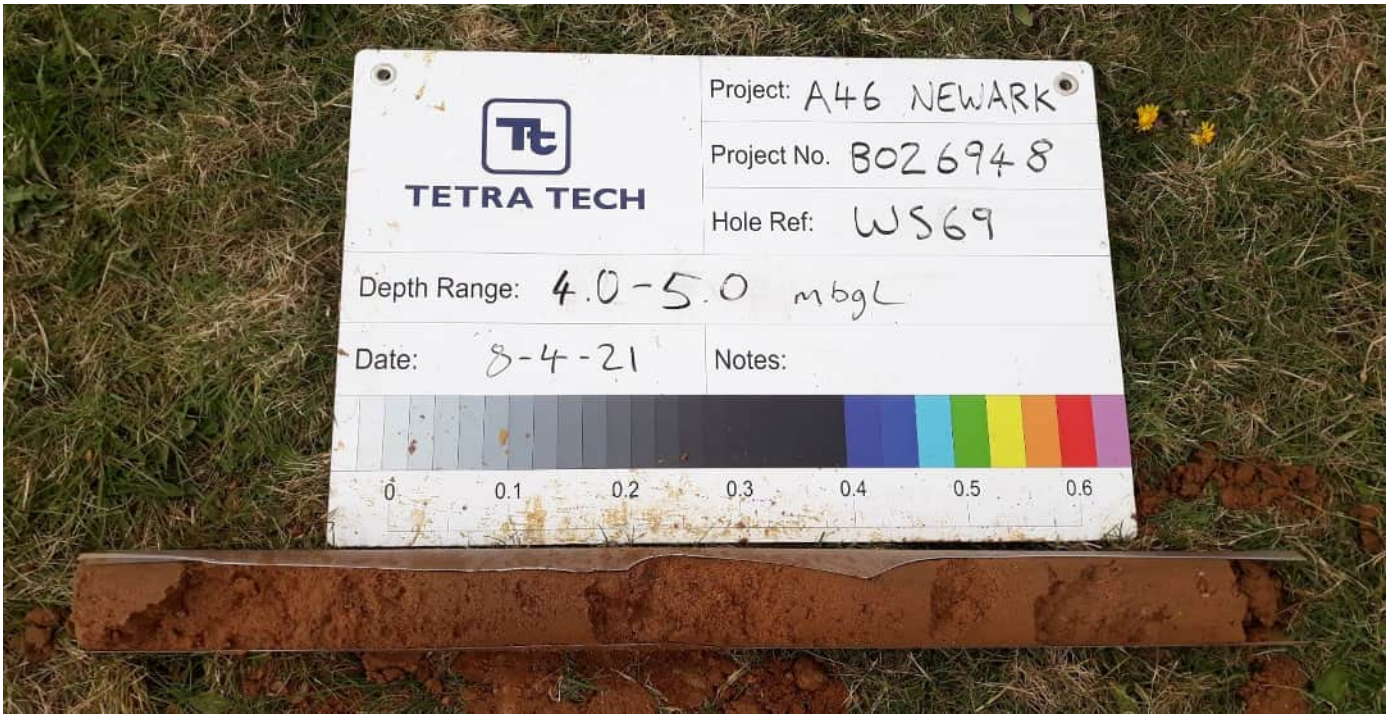

Plate 119 WS69 - 4.00 to 5.00m bgl

Plate 120 BLANK

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Ground Technologies & Investigation

Project :-
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Project No.: B026948

Oct-21

Plate 121 WS70 - Hand Pit GL to 1.20m bgl

Plate 122 WS70 - 1.20 to 2.00m bgl

Tetra Tech
5th Floor, Longcross Court
47 Newport Road
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Fax: 029 20 455321

Environmental Consultancy
Ground Technologies & Investigation

TETRA TECH

Project :-
A46 NNB

Project No.: B026948

Oct-21

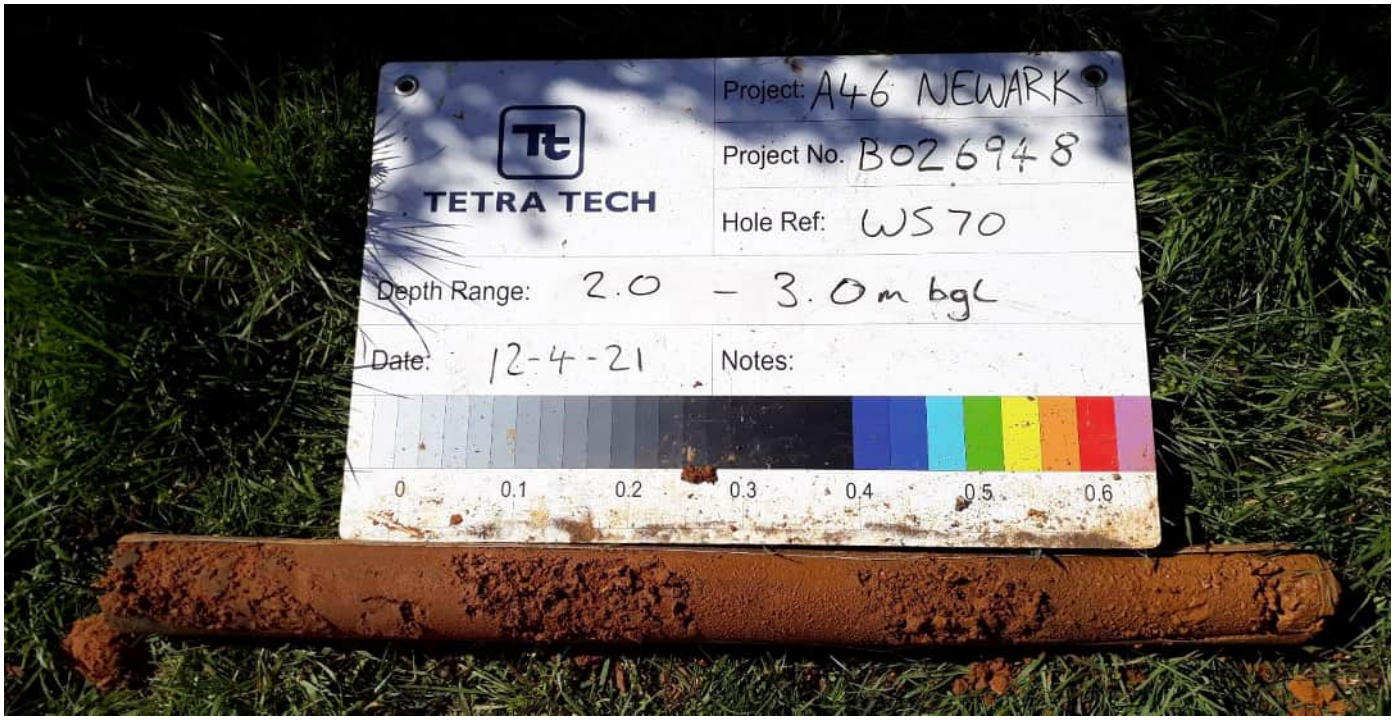

Plate 123 WS70 - 2.00 to 3.00m bgl

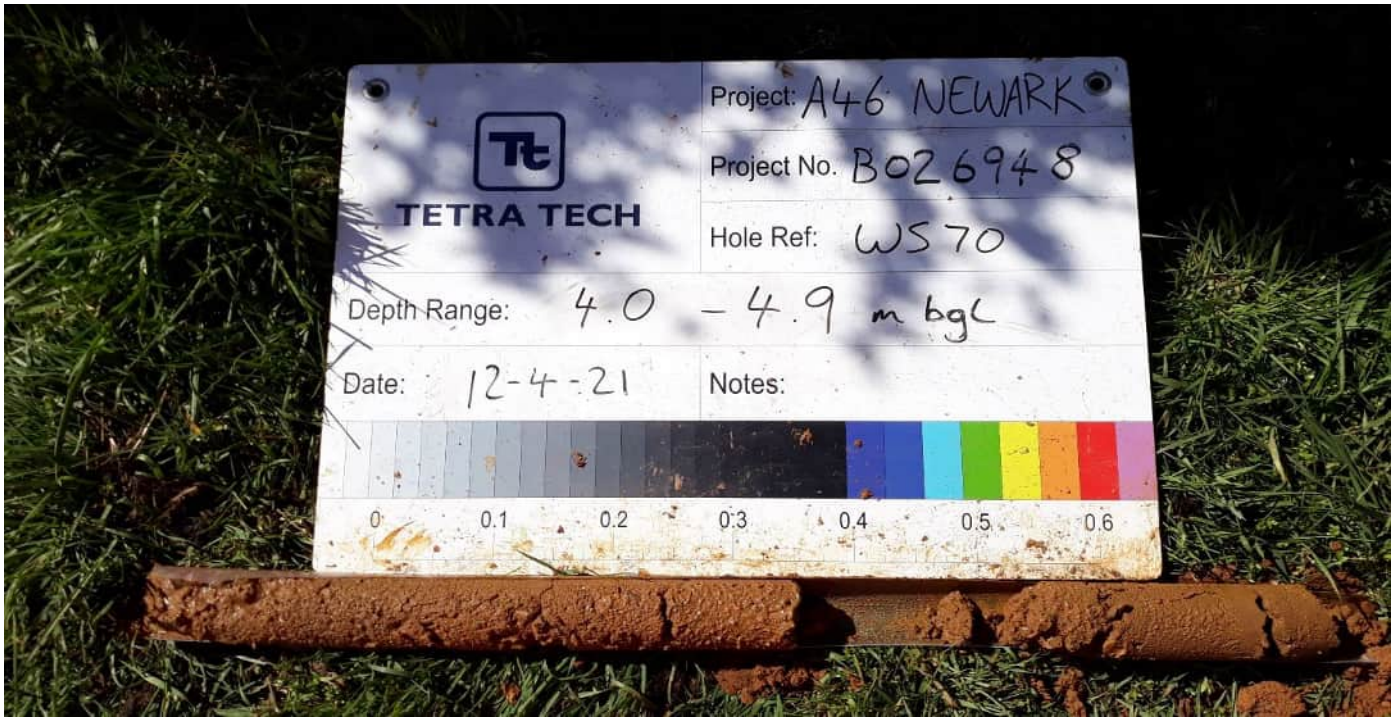

Plate 124 WS70 - 4.00 to 4.90m bgl

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47 Newport Road
Cardiff
CF24 0AD

Tel: 029 20 829200
Fax: 029 20 455321

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Plate 125 WS71 - Hand Pit GL to 1.20m bgl

Plate 126 WS71 - 1.20 to 2.00m bgl

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47 Newport Road
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Project No.: B026948

Oct-21

Plate 127 WS71 - 2.00 to 3.00m bgl

Plate 128 WS71 - 3.00 to 4.00m bgl

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47 Newport Road
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Project :-
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Project No.: B026948

Oct-21

Plate 129 WS72 - Hand Pit GL to 1.20m bgl

Plate 130 WS72 - 1.20 to 2.00m bgl

Tetra Tech
5th Floor, Longcross Court
47 Newport Road
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Project No.: B026948

Oct-21

Plate 131 WS72 - 2.00 to 3.00m bgl

Plate 132 WS72 - 3.00 to 4.00m bgl

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47 Newport Road
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Project :-
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Project No.: B026948

Oct-21

Plate 133 Ws72 - 4.00 to 5.00m bgl

Plate 134 BLANK

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Project :-
A46 NNB

Project No.: B026948

Oct-21

Plate 135 WS73 - Hand Pit GL to 1.20m bgl

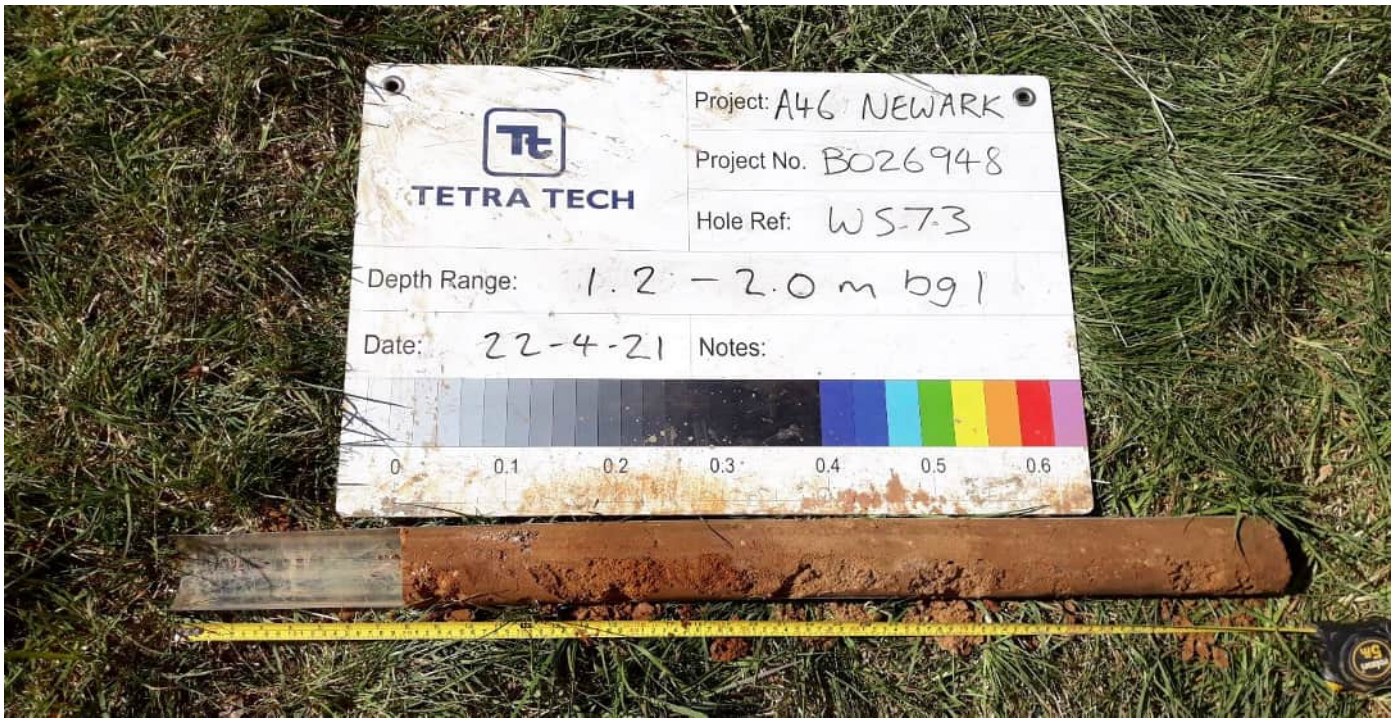

Plate 136 WS73 - 1.20 to 2.00m bgl

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5th Floor, Longcross Court
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Fax: 029 20 455321

Environmental Consultancy
Ground Technologies & Investigation

Project :-
A46 NNB

Project No.: B026948

Oct-21

Laboratory Report	STR747	Contract Sample No	STR747/19
Report Date	28 July 2021	Clients Reference	C10
Client	Tetra Tech Europe	Date Drilled	27/07/2021
Address	5th Floor, Longcross Court	Date Logged	27/07/2021
	Newport Road	Latitudinal Coordinates	53.079711
	CF24 0AD	Longitudinal Coordinates	-0.825536
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 NB & SB Winthorpe Island to Kelham Island		

Construction Testing Solutions
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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	40	14	HRA	Presence Indicated
Layer 2	60	20	DBM	Presence Indicated
Layer 3	73	28	DBM	Presence Indicated
Layer 4	88	28	DBM	Presence Indicated
Layer 5	109	28	DBM	Presence Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	370	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

*PAK Marker Testing, Aggregate Size assessment and Material Descriptions are not covered by our current scope of UKAS accreditation.

Results relate only to the sample tested.

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Authorised Signatory

James Whitworth
Operations Manager - Structures

[redacted]

* End of Certificate *

Laboratory Report	STR747	Contract Sample No	STR747/16
Report Date	28 July 2021	Clients Reference	C11
Client	Tetra Tech Europe	Date Drilled	26/07/2021
Address	5th Floor, Longcross Court	Date Logged	26/07/2021
	Newport Road	Latitudinal Coordinates	53.081118
	CF24 0AD	Longitudinal Coordinates	-0.82261
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 NB & SB Winthorpe Island to Kelham Island		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	43	14	HRA	Presence Indicated
Layer 2	63	20	DBM	Presence Indicated
Layer 3	81	20	DBM	Presence Indicated
Layer 4	89	20	DBM	Presence Indicated
Layer 5	106	28	DBM	Presence Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	382	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

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Authorised Signatory

James Whitworth
Operations Manager - Structures

[redacted]

* End of Certificate *

Laboratory Report	STR747	Contract Sample No	STR747/15
Report Date	28 July 2021	Clients Reference	C12
Client	Tetra Tech Europe	Date Drilled	26/07/2021
Address	5th Floor, Longcross Court	Date Logged	26/07/2021
	Newport Road	Latitudinal Coordinates	53.082024
	CF24 0AD	Longitudinal Coordinates	-0.820382
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 NB & SB Winthorpe Island to Kelham Island		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	45	14	HRA	Presence Indicated
Layer 2	70	28	DBM	Presence Indicated
Layer 3	73	28	DBM	Presence Indicated
Layer 4	82	28	DBM	Presence Indicated
Layer 5	110	28	DBM	Presence Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	380	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

Authorised Signatory

James Whitworth
Operations Manager - Structures

[redacted]

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Laboratory Report	STR747	Contract Sample No	STR747/33
Report Date	03 August 2021	Clients Reference	C14
Client	Tetra Tech Europe	Date Drilled	02/08/2021
Address	5th Floor, Longcross Court	Date Logged	02/08/2021
	Newport Road	Latitudinal Coordinates	53.063012
	CF24 0AD	Longitudinal Coordinates	-0.837294
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 NB & SB Kelham Island to Farndon Island & Fardon Island		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	38	10	DBM	Presence Not Indicated
Layer 2	118	20	DBM	Presence Not Indicated
Layer 3				
Layer 4				
Layer 5				
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	156	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

Authorised Signatory

James Whitworth
Operations Manager - Structures

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Laboratory Report	STR747	Contract Sample No	STR747/34
Report Date	03 August 2021	Clients Reference	C15
Client	Tetra Tech Europe	Date Drilled	02/08/2021
Address	5th Floor, Longcross Court	Date Logged	02/08/2021
	Newport Road	Latitudinal Coordinates	53.3150883
	CF24 0AD	Longitudinal Coordinates	-0.5005899
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 NB & SB Kelham Island to Farndon Island & Fardon Island		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	52	10	DBM	Presence Not Indicated
Layer 2	55	20	DBM	Presence Not Indicated
Layer 3	53	28	DBM	Presence Not Indicated
Layer 4				
Layer 5				
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	160	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

Authorised Signatory

James Whitworth
Operations Manager - Structure

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Laboratory Report	STR747	Contract Sample No	STR747/35
Report Date	03 August 2021	Clients Reference	C16
Client	Tetra Tech Europe	Date Drilled	02/08/2021
Address	5th Floor, Longcross Court	Date Logged	02/08/2021
	Newport Road	Latitudinal Coordinates	53.003088
	CF24 0AD	Longitudinal Coordinates	-0.835763
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 NB & SB Kelham Island to Farndon Island & Fardon Island		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	45	10	DBM	Presence Not Indicated
Layer 2	85	20	DBM	Presence Not Indicated
Layer 3	76	28	DBM	Presence Not Indicated
Layer 4	149	20	DBM	Presence Not Indicated
Layer 5				
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	355	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

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Operations Manager - Structures

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Laboratory Report	STR747	Contract Sample No	STR747/36
Report Date	03 August 2021	Clients Reference	C17
Client	Tetra Tech Europe	Date Drilled	02/08/2021
Address	5th Floor, Longcross Court	Date Logged	02/08/2021
	Newport Road	Latitudinal Coordinates	53.03152377
	CF24 0AD	Longitudinal Coordinates	-0.5005794
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 NB & SB Kelham Island to Farndon Island & Fardon Island		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	63	10	DBM	Presence Not Indicated
Layer 2	51	20	DBM	Presence Not Indicated
Layer 3	51	14	HRA	Presence Not Indicated
Layer 4	170	20	DBM	Presence Not Indicated
Layer 5	69	28	DBM	Presence Not Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	404	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

Authorised Signatory

James Whitworth
Operations Manager - Structures

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Laboratory Report	STR747	Contract Sample No	STR747/29
Report Date	02 August 2021	Clients Reference	C18
Client	Tetra Tech Europe	Date Drilled	30/07/2021
Address	5th Floor, Longcross Court	Date Logged	30/07/2021
	Newport Road	Latitudinal Coordinates	53.087178
	CF24 0AD	Longitudinal Coordinates	-0.819189
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Light Rain
Core Location	A46 NB & SB Winthorpe Island to Kelham Island & Great North Road		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	35	10	DBM	Presence Indicated
Layer 2	113	20	DBM	Presence Indicated
Layer 3	55	32	DBM	Presence Indicated
Layer 4	61	40	DBM	Presence Indicated
Layer 5				
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	264	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

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Operations Manager - Structures

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Laboratory Report	STR747	Contract Sample No	STR747/30
Report Date	02 August 2021	Clients Reference	C19
Client	Tetra Tech Europe	Date Drilled	30/07/2021
Address	5th Floor, Longcross Court	Date Logged	30/07/2021
	Newport Road	Latitudinal Coordinates	53.085435
	CF24 0AD	Longitudinal Coordinates	-0.817532
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 NB & SB Winthorpe Island to Kelham Island & Great North Road		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	38	10	DBM	Presence Indicated
Layer 2	31	10	HRA	Presence Indicated
Layer 3	41	10	DBM	Presence Indicated
Layer 4	38	20	DBM	Presence Indicated
Layer 5	50	40	DBM	Presence Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	198	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

Authorised Signatory

James Whitworth
Operations Manager - Structures

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* End of Certificate *

Laboratory Report	STR747	Contract Sample No	STR747/31
Report Date	02 August 2021	Clients Reference	C20
Client	Tetra Tech Europe	Date Drilled	30/07/2021
Address	5th Floor, Longcross Court	Date Logged	30/07/2021
	Newport Road	Latitudinal Coordinates	53.084438
	CF24 0AD	Longitudinal Coordinates	-0.817211
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 NB & SB Winthorpe Island to Kelham Island & Great North Road		

Construction Testing Solutions
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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	41	10	DBM	Presence Indicated
Layer 2	30	10	DBM	Presence Indicated
Layer 3	56	14	HRA	Presence Indicated
Layer 4	40	20	DBM	Presence Indicated
Layer 5				
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	167	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

*PAK Marker Testing, Aggregate Size assessment and Material Descriptions are not covered by our current scope of UKAS accreditation.

Results relate only to the sample tested.

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Authorised Signatory

James Whitworth
Operations Manager - Structures

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* End of Certificate *

Laboratory Report	STR747	Contract Sample No	STR747/32
Report Date	02 August 2021	Clients Reference	C21
Client	Tetra Tech Europe	Date Drilled	30/07/2021
Address	5th Floor, Longcross Court	Date Logged	30/07/2021
	Newport Road	Latitudinal Coordinates	53.0833308
	CF24 0AD	Longitudinal Coordinates	-0.81615
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 NB & SB Winthorpe Island to Kelham Island & Great North Road		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	65	10	DBM	Presence Indicated
Layer 2	54	28	DBM	Presence Indicated
Layer 3	81	20	DBM	Presence Indicated
Layer 4	91	28	DBM	Presence Indicated
Layer 5	100	28	DBM	Presence Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	391	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

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James Whitworth
Operations Manager - Structures

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Laboratory Report	STR747	Contract Sample No	STR747/46
Report Date	02 August 2021	Clients Reference	C21a
Client	Tetra Tech Europe	Date Drilled	30/07/2021
Address	5th Floor, Longcross Court	Date Logged	30/07/2021
	Newport Road	Latitudinal Coordinates	53.082092
	CF24 0AD	Longitudinal Coordinates	-0.816584
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 NB & SB Winthorpe Island to Kelham Island & Great North Road		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	80	14	HRA	Presence Indicated
Layer 2	29	10	DBM	Presence Indicated
Layer 3	83	28	DBM	Presence Indicated
Layer 4	45	20	DBM	Presence Indicated
Layer 5	81	40	DBM	Presence Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	318	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

Authorised Signatory

James Whitworth
Operations Manager - Structures

[redacted]

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Laboratory Report	STR747	Contract Sample No	STR747/25
Report Date	30 July 2021	Clients Reference	C22
Client	Tetra Tech Europe	Date Drilled	29/07/2021
Address	5th Floor, Longcross Court	Date Logged	29/07/2021
	Newport Road	Latitudinal Coordinates	53.083478
	CF24 0AD	Longitudinal Coordinates	-0.814492
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 NB & SB Winthorpe Island to Kelham Island		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	30	14	HRA	Presence Indicated
Layer 2	53	20	DBM	Presence Indicated
Layer 3	75	28	DBM	Presence Indicated
Layer 4	100	28	DBM	Presence Indicated
Layer 5	98	20	DBM	Presence Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	356	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

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Operations Manager - Structures

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* End of Certificate *

Laboratory Report	STR747	Contract Sample No	STR747/24
Report Date	30 July 2021	Clients Reference	C24
Client	Tetra Tech Europe	Date Drilled	29/07/2021
Address	5th Floor, Longcross Court	Date Logged	29/07/2021
	Newport Road	Latitudinal Coordinates	53.083624
	CF24 0AD	Longitudinal Coordinates	-0.812279
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 NB & SB Winthorpe Island to Kelham Island		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	41	14	HRA	Presence Indicated
Layer 2	46	20	DBM	Presence Indicated
Layer 3	91	28	DBM	Presence Indicated
Layer 4	95	28	DBM	Presence Indicated
Layer 5	91	28	DBM	Presence Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	364	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

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James Whitworth
Operations Manager - Structures

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Laboratory Report	STR747	Contract Sample No	STR747/23
Report Date	30 July 2021	Clients Reference	C25
Client	Tetra Tech Europe	Date Drilled	29/07/2021
Address	5th Floor, Longcross Court	Date Logged	29/07/2021
	Newport Road	Latitudinal Coordinates	53.084735
	CF24 0AD	Longitudinal Coordinates	-0.807957
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 NB & SB Winthorpe Island to Kelham Island		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	31	14	HRA	Presence Indicated
Layer 2	50	20	DBM	Presence Indicated
Layer 3	95	28	DBM	Presence Indicated
Layer 4	84	28	DBM	Presence Indicated
Layer 5	101	28	DBM	Presence Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	361	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

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James Whitworth
Operations Manager - Structures

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Laboratory Report	STR747	Contract Sample No	STR747/10
Report Date	29 June 2021	Clients Reference	BH42
Client	Tetra Tech Europe	Date Drilled	28/06/2021
Address	5th Floor, Longcross Court	Date Logged	28/06/2021
	Newport Road	Latitudinal Coordinates	480035.5
	CF24 0AD	Longitudinal Coordinates	355057.4
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark Northern Bypass	Weather Conditions	Fine
Core Location	BH42		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	55	14	HRA	Presence Indicated
Layer 2	42	20	DBM	Presence Indicated
Layer 3	101	28	DBM	Presence Not Indicated
Layer 4	84	28	DBM	Presence Not Indicated
Layer 5	92	28	DBM	Presence Not Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	374	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

Authorised Signatory

James Whitworth
Operations Manager - Structures

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Laboratory Report	STR747	Contract Sample No	STR747/21
Report Date	29 July 2021	Clients Reference	C27
Client	Tetra Tech Europe	Date Drilled	28/07/2021
Address	5th Floor, Longcross Court	Date Logged	28/07/2021
	Newport Road	Latitudinal Coordinates	53.087348
	CF24 0AD	Longitudinal Coordinates	-0.80605
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 NB & SB Winthorpe Island to Kelham Island		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	36	14	HRA	Presence Indicated
Layer 2	58	20	DBM	Presence Indicated
Layer 3	83	28	DBM	Presence Indicated
Layer 4	83	28	DBM	Presence Indicated
Layer 5	101	32	DBM	Presence Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	361	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

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Authorised Signatory

James Whitworth
Operations Manager - Structures

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* End of Certificate *

Laboratory Report	STR747	Contract Sample No	STR747/9
Report Date	23 June 2021	Clients Reference	BH13
Client	Tetra Tech Europe	Date Drilled	22/06/2021
Address	5th Floor, Longcross Court	Date Logged	22/06/2021
	Newport Road	Latitudinal Coordinates	480209.3
	CF24 0AD	Longitudinal Coordinates	355495.5
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark Northern Bypass	Weather Conditions	Fine
Core Location	BH13		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	40	14	HRA	Presence Indicated
Layer 2	72	20	DBM	Presence Not Indicated
Layer 3	71	28	DBM	Presence Not Indicated
Layer 4	98	28	DBM	Presence Not Indicated
Layer 5	105	32	DBM	Presence Not Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	386	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

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Authorised Signatory

James Whitworth
Operations Manager - Structures

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* End of Certificate *

Laboratory Report	STR747	Contract Sample No	STR747/18
Report Date	28 July 2021	Clients Reference	C29
Client	Tetra Tech Europe	Date Drilled	27/07/2021
Address	5th Floor, Longcross Court	Date Logged	27/07/2021
	Newport Road	Latitudinal Coordinates	53.09199
	CF24 0AD	Longitudinal Coordinates	-0.802582
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 NB & SB Winthorpe Island to Kelham Island		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	48	14	HRA	Presence Indicated
Layer 2	64	20	DBM	Presence Indicated
Layer 3	85	28	DBM	Presence Indicated
Layer 4	100	28	DBM	Presence Indicated
Layer 5	90	28	DBM	Presence Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	387	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

Authorised Signatory

James Whitworth
Operations Manager - Structures

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* End of Certificate *

Laboratory Report	STR747	Contract Sample No	STR747/17
Report Date	28 July 2021	Clients Reference	C31
Client	Tetra Tech Europe	Date Drilled	27/07/2021
Address	5th Floor, Longcross Court	Date Logged	27/07/2021
	Newport Road	Latitudinal Coordinates	53.094113
	CF24 0AD	Longitudinal Coordinates	-0.799798
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 NB & SB Winthorpe Island to Kelham Island		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	44	14	HRA	Presence Indicated
Layer 2	45	20	DBM	Presence Indicated
Layer 3	90	28	DBM	Presence Indicated
Layer 4	86	28	DBM	Presence Indicated
Layer 5	92	28	DBM	Presence Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	357	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

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Authorised Signatory

James Whitworth
Operations Manager - Structures

[redacted]

* End of Certificate *

Laboratory Report	STR747	Contract Sample No	STR747/14
Report Date	28 July 2021	Clients Reference	C32
Client	Tetra Tech Europe	Date Drilled	26/07/2021
Address	5th Floor, Longcross Court	Date Logged	26/07/2021
	Newport Road	Latitudinal Coordinates	53.095704
	CF24 0AD	Longitudinal Coordinates	-0.796237
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 NB & SB Winthorpe Island to Kelham Island		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	35	14	HRA	Presence Indicated
Layer 2	60	10	DBM	Presence Indicated
Layer 3	85	28	DBM	Presence Indicated
Layer 4	95	28	DBM	Presence Indicated
Layer 5	91	28	DBM	Presence Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	366	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

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Authorised Signatory

James Whitworth
Operations Manager - Structures

[redacted]

* End of Certificate *

Laboratory Report	STR747	Contract Sample No	STR747/13
Report Date	28 July 2021	Clients Reference	C33
Client	Tetra Tech Europe	Date Drilled	26/07/2021
Address	5th Floor, Longcross Court	Date Logged	26/07/2021
	Newport Road	Latitudinal Coordinates	480900
	CF24 0AD	Longitudinal Coordinates	356020
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 NB & SB Winthorpe Island to Kelham Island		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	40	14	HRA	Presence Indicated
Layer 2	53	20	DBM	Presence Indicated
Layer 3	82	32	DBM	Presence Indicated
Layer 4	103	28	DBM	Presence Indicated
Layer 5	98	28	DBM	Presence Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	376	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

Authorised Signatory

James Whitworth
Operations Manager - Structures

[redacted]

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Laboratory Report	STR747	Contract Sample No	STR747/12
Report Date	28 July 2021	Clients Reference	C34
Client	Tetra Tech Europe	Date Drilled	26/07/2021
Address	5th Floor, Longcross Court	Date Logged	26/07/2021
	Newport Road	Latitudinal Coordinates	53.093792
	CF24 0AD	Longitudinal Coordinates	-0.790564
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 NB & SB Winthorpe Island to Kelham Island		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	35	14	HRA	Presence Indicated
Layer 2	59	20	DBM	Presence Indicated
Layer 3	87	28	DBM	Presence Indicated
Layer 4	101	28	DBM	Presence Indicated
Layer 5	87	28	DBM	Presence Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	369	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

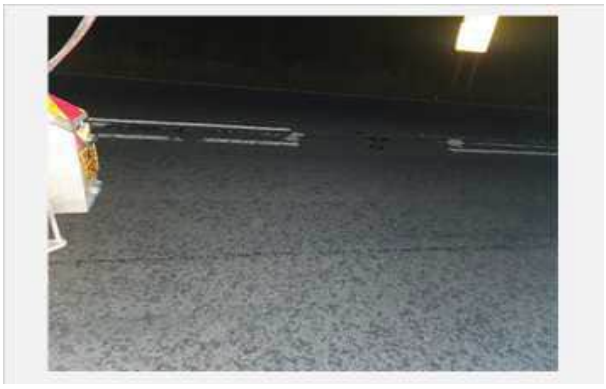

Photo 2: Core & Scale

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Authorised Signatory

James Whitworth
Operations Manager - Structures

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Laboratory Report	STR747	Contract Sample No	STR747/37
Report Date	04 August 2021	Clients Reference	C35
Client	Tetra Tech Europe	Date Drilled	03/08/2021
Address	5th Floor, Longcross Court	Date Logged	03/08/2021
	Newport Road	Latitudinal Coordinates	53.093194
	CF24 0AD	Longitudinal Coordinates	-0.789083
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 NB Between A1 Roundabout & Newark Showground Roundabout		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	60	10	DBM	Presence Not Indicated
Layer 2	65	20	DBM	Presence Not Indicated
Layer 3	61	28	DBM	Presence Not Indicated
Layer 4	85	28	DBM	Presence Not Indicated
Layer 5	99	28	DBM	Presence Not Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	370	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

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Authorised Signatory

James Whitworth
Operations Manager - Structures

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Laboratory Report	STR747	Contract Sample No	STR747/38
Report Date	04 August 2021	Clients Reference	C36
Client	Tetra Tech Europe	Date Drilled	03/08/2021
Address	5th Floor, Longcross Court	Date Logged	03/08/2021
	Newport Road	Latitudinal Coordinates	53.054119
	CF24 0AD	Longitudinal Coordinates	-0.4703397
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 NB Between A1 Roundabout & Newark Showground Roundabout		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	69	10	DBM	Presence Not Indicated
Layer 2	76	20	DBM	Presence Not Indicated
Layer 3	97	28	DBM	Presence Indicated
Layer 4				
Layer 5				
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	242	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

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Operations Manager - Structures

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Laboratory Report	STR747	Contract Sample No	STR747/45
Report Date	05 August 2021	Clients Reference	C37
Client	Tetra Tech Europe	Date Drilled	04/08/2021
Address	5th Floor, Longcross Court	Date Logged	04/08/2021
	Newport Road	Latitudinal Coordinates	53.100415
	CF24 0AD	Longitudinal Coordinates	-0.775178
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 SB Between Newark Showground Roundabout & A1 Roundabout		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	42	10	DBM	Presence Not Indicated
Layer 2	55	20	DBM	Presence Not Indicated
Layer 3	61	20	DBM	Presence Not Indicated
Layer 4	180	20	Concrete	Presence Not Indicated
Layer 5				
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	*338	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Concrete		

Notes	*A further layer of concrete was present beneath layer 4. Unable to extrude - Client aware on site.

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

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James Whitworth
Operations Manager - Structures

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Laboratory Report	STR747	Contract Sample No	STR747/39
Report Date	04 August 2021	Clients Reference	C38
Client	Tetra Tech Europe	Date Drilled	03/08/2021
Address	5th Floor, Longcross Court	Date Logged	03/08/2021
	Newport Road	Latitudinal Coordinates	53.098001
	CF24 0AD	Longitudinal Coordinates	-0.77938
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 NB Between A1 Roundabout & Newark Showground Roundabout		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	45	10	DBM	Presence Not Indicated
Layer 2	72	20	DBM	Presence Not Indicated
Layer 3	105	28	DBM	Presence Not Indicated
Layer 4	49	28	DBM	Presence Indicated
Layer 5	129	32	DBM	Presence Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	400	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

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Operations Manager - Structures

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Laboratory Report	STR747	Contract Sample No	STR747/44
Report Date	05 August 2021	Clients Reference	C39
Client	Tetra Tech Europe	Date Drilled	04/08/2021
Address	5th Floor, Longcross Court	Date Logged	04/08/2021
	Newport Road	Latitudinal Coordinates	53.100402
	CF24 0AD	Longitudinal Coordinates	-0.77518
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 SB Between Newark Showground Roundabout & A1 Roundabout		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	45	10	DBM	Presence Not Indicated
Layer 2	70	20	DBM	Presence Not Indicated
Layer 3	93	20	DBM	Presence Not Indicated
Layer 4	120	20	Concrete	Presence Not Indicated
Layer 5				
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	328	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

Authorised Signatory

James Whitworth
Operations Manager - Structures

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Laboratory Report	STR747	Contract Sample No	STR747/40
Report Date	04 August 2021	Clients Reference	C40
Client	Tetra Tech Europe	Date Drilled	03/08/2021
Address	5th Floor, Longcross Court	Date Logged	03/08/2021
	Newport Road	Latitudinal Coordinates	53.10594
	CF24 0AD	Longitudinal Coordinates	-0.772669
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 NB Between A1 Roundabout & Newark Showground Roundabout		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	53	10	DBM	Presence Not Indicated
Layer 2	55	20	DBM	Presence Not Indicated
Layer 3	96	20	DBM	Presence Not Indicated
Layer 4	72	28	DBM	Presence Not Indicated
Layer 5	133	28	DBM	Presence Not Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	409	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

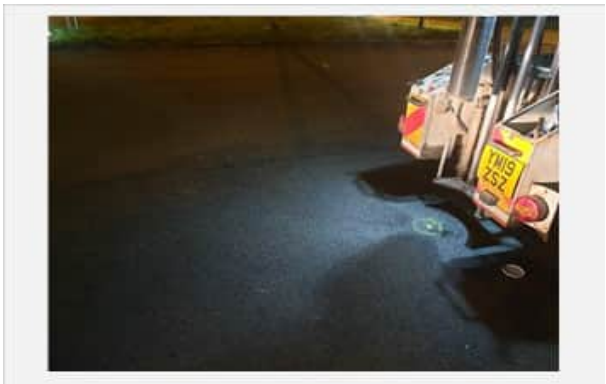

Photo 2: Core & Scale

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Authorised Signatory

James Whitworth
Operations Manager - Structures

[redacted]

* End of Certificate *

Laboratory Report	STR747	Contract Sample No	STR747/43
Report Date	05 August 2021	Clients Reference	C41
Client	Tetra Tech Europe	Date Drilled	04/08/2021
Address	5th Floor, Longcross Court	Date Logged	04/08/2021
	Newport Road	Latitudinal Coordinates	53.102116
	CF24 0AD	Longitudinal Coordinates	-0.771922
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 SB Between Newark Showground Roundabout & A1 Roundabout		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	43	10	DBM	Presence Not Indicated
Layer 2	67	20	DBM	Presence Not Indicated
Layer 3	137	28	DBM	Presence Not Indicated
Layer 4	181	28	DBM	Presence Not Indicated
Layer 5	140	28	DBM	Presence Not Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	568	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

Authorised Signatory

James Whitworth
Operations Manager - Structures

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Laboratory Report	STR747	Contract Sample No	STR747/41
Report Date	04 August 2021	Clients Reference	C42
Client	Tetra Tech Europe	Date Drilled	03/08/2021
Address	5th Floor, Longcross Court	Date Logged	03/08/2021
	Newport Road	Latitudinal Coordinates	53.102827
	CF24 0AD	Longitudinal Coordinates	-0.773476
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 NB Between A1 Roundabout & Newark Showground Roundabout		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	63	10	DBM	Presence Not Indicated
Layer 2	50	20	DBM	Presence Not Indicated
Layer 3	54	14	HRA	Presence Not Indicated
Layer 4	13	6	DBM	Presence Not Indicated
Layer 5	63	28	DBM	Presence Not Indicated
Layer 6	201	32	Concrete	Presence Not Indicated
Layer 7				
Layer 8				
Total Mean Depth	444	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

Authorised Signatory

James Whitworth
Operations Manager - Structures

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Laboratory Report	STR747	Contract Sample No	STR747/42
Report Date	05 August 2021	Clients Reference	C43
Client	Tetra Tech Europe	Date Drilled	04/08/2021
Address	5th Floor, Longcross Court	Date Logged	04/08/2021
	Newport Road	Latitudinal Coordinates	53.102579
	CF24 0AD	Longitudinal Coordinates	-0.771717
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 SB Between Newark Showground Roundabout & A1 Roundabout		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	58	10	DBM	Presence Not Indicated
Layer 2	65	20	DBM	Presence Not Indicated
Layer 3	96	28	DBM	Presence Not Indicated
Layer 4	111	28	DBM	Presence Not Indicated
Layer 5				
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	330	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

Authorised Signatory

James Whitworth
Operations Manager - Structures

[redacted]

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* End of Certificate *

Laboratory Report	STR747	Contract Sample No	STR747/7
Report Date	16 June 2021	Clients Reference	BH24
Client	Tetra Tech Europe	Date Drilled	15/06/2021
Address	5th Floor, Longcross Court	Date Logged	15/06/2021
	Newport Road	Latitudinal Coordinates	478102
	CF24 0AD	Longitudinal Coordinates	352727.1
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark Northern Bypass	Weather Conditions	Fine
Core Location	BH24		

Construction Testing Solutions
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Certificate of Test - Bituminous Core Investigation

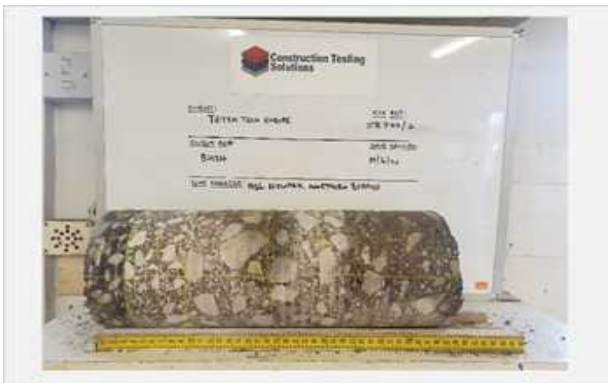
Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	41	14	HRA	Presence Indicated
Layer 2	60	20	DBM	Presence Indicated
Layer 3	84	32	DBM	Presence Indicated
Layer 4	91	28	DBM	Presence Indicated
Layer 5	103	28	DBM	Presence Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	379	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale



Authorised Signatory

James Whitworth
Operations Manager - Structures

[redacted]

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Laboratory Report	STR747	Contract Sample No	STR747/5
Report Date	11 June 2021	Clients Reference	BH26
Client	Tetra Tech Europe	Date Drilled	11/06/2021
Address	5th Floor, Longcross Court	Date Logged	11/06/2021
	Newport Road	Latitudinal Coordinates	478123.8
	CF24 0AD	Longitudinal Coordinates	353219.3
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark Northern Bypass	Weather Conditions	Fine
Core Location	BH26		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	30	14	HRA	Presence Not Indicated
Layer 2	65	20	DBM	Presence Not Indicated
Layer 3	83	28	DBM	Presence Not Indicated
Layer 4	78	28	DBM	Presence Not Indicated
Layer 5	97	28	DBM	Presence Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	353	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

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James Whitworth
Operations Manager - Structures

[redacted]

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Laboratory Report	STR747	Contract Sample No	STR747/4
Report Date	11 June 2021	Clients Reference	BH27
Client	Tetra Tech Europe	Date Drilled	10/06/2021
Address	5th Floor, Longcross Court	Date Logged	10/06/2021
	Newport Road	Latitudinal Coordinates	478159.4
	CF24 0AD	Longitudinal Coordinates	353556.9
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark Northern Bypass	Weather Conditions	Fine
Core Location	BH27		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	31	14	HRA	Presence Indicated
Layer 2	70	20	DBM	Presence Not Indicated
Layer 3	89	28	DBM	Presence Not Indicated
Layer 4	85	28	DBM	Presence Not Indicated
Layer 5	92	32	DBM	Presence Not Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	367	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

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James Whitworth
Operations Manager - Structures

[redacted]

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Laboratory Report	STR747	Contract Sample No	STR747/2
Report Date	09 June 2021	Clients Reference	BH29
Client	Tetra Tech Europe	Date Drilled	08/06/2021
Address	5th Floor, Longcross Court	Date Logged	08/06/2021
	Newport Road	Latitudinal Coordinates	478314.4
	CF24 0AD	Longitudinal Coordinates	353663.4
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark Northern Bypass	Weather Conditions	Fine
Core Location	BH29		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	36	14	HRA	Presence Not Indicated
Layer 2	68	20	DBM	Presence Not Indicated
Layer 3	99	28	DBM	Presence Not Indicated
Layer 4	81	28	DBM	Presence Not Indicated
Layer 5	93	40	DBM	Presence Not Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	377	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

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James Whitworth
Operations Manager - Structures

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Page 1 of 1

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Laboratory Report	STR747	Contract Sample No	STR747/11
Report Date	07 July 2021	Clients Reference	BH38
Client	Tetra Tech Europe	Date Drilled	06/07/2021
Address	5th Floor, Longcross Court	Date Logged	06/07/2021
	Newport Road	Latitudinal Coordinates	53.083554
	CF24 0AD	Longitudinal Coordinates	-0.813031
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark Northern Bypass	Weather Conditions	Light Rain
Core Location	BH38		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	40	14	HRA	Presence Not Indicated
Layer 2	136	28	DBM	Presence Not Indicated
Layer 3	110	32	DBM	Presence Not Indicated
Layer 4	78	32	DBM	Presence Not Indicated
Layer 5				
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	364	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

Authorised Signatory

James Whitworth
Operations Manager - Structures

[redacted]

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Laboratory Report	STR747	Contract Sample No	STR747/8
Report Date	18 June 2021	Clients Reference	BH43
Client	Tetra Tech Europe	Date Drilled	17/06/2021
Address	5th Floor, Longcross Court	Date Logged	17/06/2021
	Newport Road	Latitudinal Coordinates	480252.6
	CF24 0AD	Longitudinal Coordinates	355602.1
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark Northern Bypass	Weather Conditions	Fine
Core Location	BH43		

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Certificate of Test - Bituminous Core Investigation

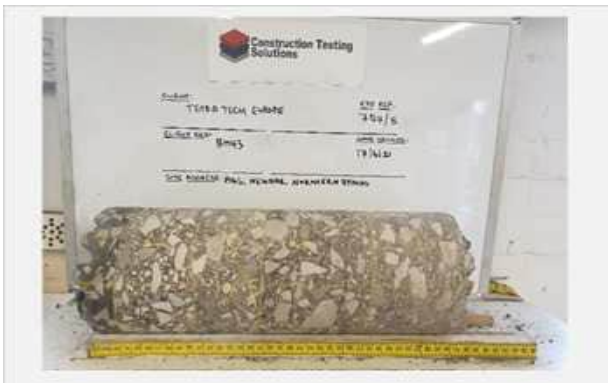
Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	37	14	HRA	Presence Indicated
Layer 2	75	20	DBM	Presence Indicated
Layer 3	64	32	DBM	Presence Not Indicated
Layer 4	104	32	DBM	Presence Not Indicated
Layer 5	101	28	DBM	Presence Not Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	381	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale



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Authorised Signatory

James Whitworth
Operations Manager - Structures

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Laboratory Report	STR747	Contract Sample No	STR747/28
Report Date	30 July 2021	Clients Reference	C1
Client	Tetra Tech Europe	Date Drilled	29/07/2021
Address	5th Floor, Longcross Court	Date Logged	29/07/2021
	Newport Road	Latitudinal Coordinates	53.065388
	CF24 0AD	Longitudinal Coordinates	-0.835877
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 NB & SB Kelham Island to Farndon Island		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	38	14	HRA	Presence Indicated
Layer 2	66	20	DBM	Presence Indicated
Layer 3	80	28	DBM	Presence Indicated
Layer 4	89	28	DBM	Presence Indicated
Layer 5	102	28	DBM	Presence Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	375	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

Authorised Signatory

James Whitworth
Operations Manager - Structures

[redacted]

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Laboratory Report	STR747	Contract Sample No	STR747/27
Report Date	30 July 2021	Clients Reference	C2
Client	Tetra Tech Europe	Date Drilled	29/07/2021
Address	5th Floor, Longcross Court	Date Logged	29/07/2021
	Newport Road	Latitudinal Coordinates	53.066583
	CF24 0AD	Longitudinal Coordinates	-0.835877
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 NB & SB Kelham Island to Farndon Island		

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Certificate of Test - Bituminous Core Investigation

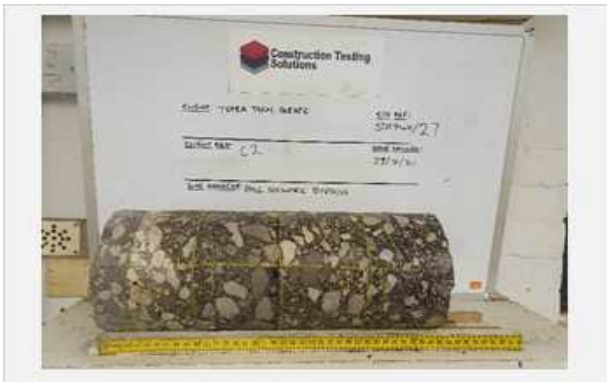
Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	38	14	HRA	Presence Indicated
Layer 2	60	20	DBM	Presence Indicated
Layer 3	89	28	DBM	Presence Indicated
Layer 4	91	20	DBM	Presence Indicated
Layer 5	90	28	DBM	Presence Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	368	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale



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Authorised Signatory

James Whitworth
Operations Manager - Structures

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Laboratory Report	STR747	Contract Sample No	STR747/6
Report Date	15 June 2021	Clients Reference	BH25
Client	Tetra Tech Europe	Date Drilled	14/06/2021
Address	5th Floor, Longcross Court	Date Logged	14/06/2021
	Newport Road	Latitudinal Coordinates	478100.8
	CF24 0AD	Longitudinal Coordinates	353076
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark Northern Bypass	Weather Conditions	Fine
Core Location	BH25		

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Certificate of Test - Bituminous Core Investigation

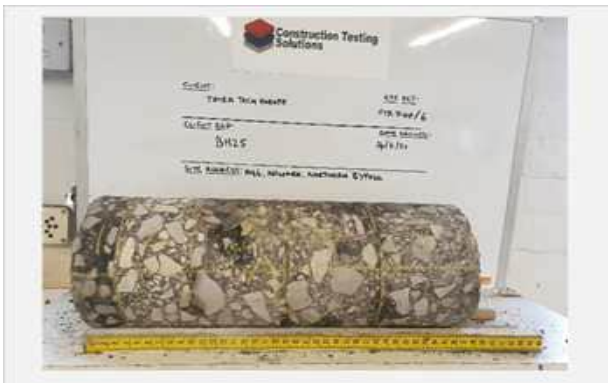
Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	38	14	HRA	Presence Indicated
Layer 2	67	20	DBM	Presence Indicated
Layer 3	85	32	DBM	Presence Indicated
Layer 4	90	32	DBM	Presence Indicated
Layer 5	95	32	DBM	Presence Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	375	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale



Authorised Signatory

James Whitworth
Operations Manager - Structures

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Laboratory Report	STR747	Contract Sample No	STR747/26
Report Date	30 July 2021	Clients Reference	C4
Client	Tetra Tech Europe	Date Drilled	29/07/2021
Address	5th Floor, Longcross Court	Date Logged	29/07/2021
	Newport Road	Latitudinal Coordinates	53.06916
	CF24 0AD	Longitudinal Coordinates	-0.835837
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 NB & SB Kelham Island to Farndon Island		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	40	14	HRA	Presence Indicated
Layer 2	56	20	DBM	Presence Indicated
Layer 3	100	28	DBM	Presence Indicated
Layer 4	94	32	DBM	Presence Indicated
Layer 5	98	32	DBM	Presence Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	388	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

Authorised Signatory

James Whitworth
Operations Manager - Structures

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Laboratory Report	STR747	Contract Sample No	STR747/3
Report Date	10 June 2021	Clients Reference	BH28
Client	Tetra Tech Europe	Date Drilled	09/06/2021
Address	5th Floor, Longcross Court	Date Logged	09/06/2021
	Newport Road	Latitudinal Coordinates	478202.4
	CF24 0AD	Longitudinal Coordinates	353468.8
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark Northern Bypass	Weather Conditions	Fine
Core Location	BH28		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	34	14	HRA	Presence Not Indicated
Layer 2	64	20	DBM	Presence Not Indicated
Layer 3	78	32	DBM	Presence Not Indicated
Layer 4	92	40	DBM	Presence Not Indicated
Layer 5	95	28	DBM	Presence Not Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	363	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

Authorised Signatory

James Whitworth
Operations Manager - Structures

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Laboratory Report	STR747	Contract Sample No	STR747/22
Report Date	29 July 2021	Clients Reference	C6
Client	Tetra Tech Europe	Date Drilled	28/07/2021
Address	5th Floor, Longcross Court	Date Logged	28/07/2021
	Newport Road	Latitudinal Coordinates	53.0874767
	CF24 0AD	Longitudinal Coordinates	-0.805863
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 NB & SB Winthorpe Island to Kelham Island		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	35	14	HRA	Presence Indicated
Layer 2	50	20	DBM	Presence Indicated
Layer 3	85	28	DBM	Presence Indicated
Layer 4	95	28	DBM	Presence Indicated
Layer 5	96	28	DBM	Presence Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	361	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

Authorised Signatory

James Whitworth
Operations Manager - Structures

[redacted]

*PAK Marker Testing, Aggregate Size assessment and Material Descriptions are not covered by our current scope of UKAS accreditation.

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Laboratory Report	STR747	Contract Sample No	STR747/1
Report Date	04 June 2021	Clients Reference	BH30
Client	Tetra Tech Europe	Date Drilled	03/06/2021
Address	5th Floor, Longcross Court	Date Logged	03/06/2021
	Newport Road	Latitudinal Coordinates	478468
	CF24 0AD	Longitudinal Coordinates	353881
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark Northern Bypass	Weather Conditions	Fine
Core Location	BH30		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	35	14	HRA	Presence Not Indicated
Layer 2	75	28	DBM	Presence Not Indicated
Layer 3	85	28	DBM	Presence Not Indicated
Layer 4	85	32	DBM	Presence Not Indicated
Layer 5	93	40	DBM	Presence Not Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	373	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

Authorised Signatory

James Whitworth
Operations Manager - Structures

[redacted]

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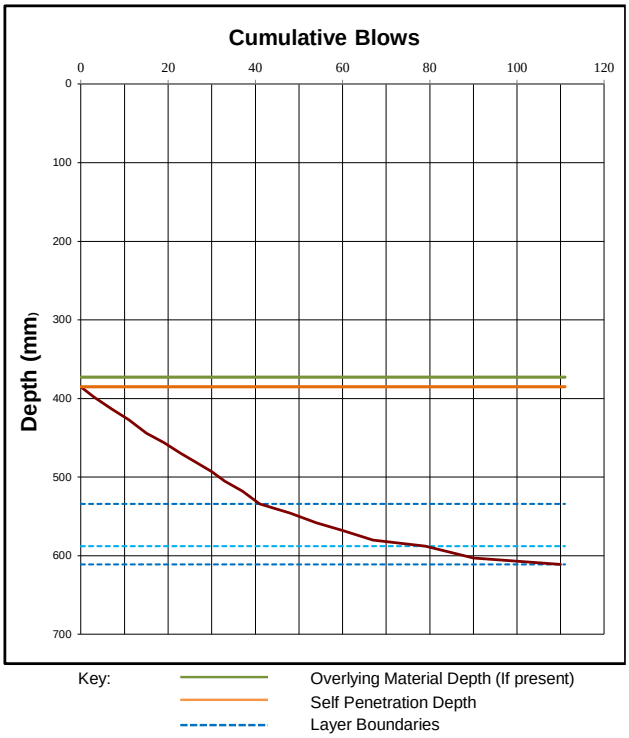
Project: **A46 Newark**

Dynamic Cone Penetrometer	**REPORT NO:**	**STR747**	**STR747/1**
In House Method for DCP, based on DMRB Vol 7, Section 3 - HD 29/08	Report Date:	04/06/2021	

Test Location:	BH30			**Date Tested:**	**03/06/2021**
Material at Surface:	Tarmac	Depth	373mm	**Client Reference**	**BH30**
Material at Test Surface Level:	Sub-Base				
Weather	Fine			Start Depth :	373mm
Tested By:	A. Smith			Self Penetration Depth:	12mm

Layer	No. of Blows	Cum. No. of Blows	CBR %	Layer Thickness (mm)	Total Depth (mm)
1	41	41	71.1	161	161
2	38	79	>100	54	215
3	31	110	>100	23	238



Interpretative Method : TRL Equation : Log10(CBR) = 2.480 - 1.057 x Log10(mm/blow)

Note: The test is designed for interpretation of CBR values from 50mm to 550mm depth. Reported values for other depths must be treated with caution owing to potential poor compaction, lack of overburden or ground friction with the apparatus.

Authorised Signatory	Comments: **1. Refusal**
[redacted] J Whitworth - Operations Manager	

Laboratory Report	STR747	Contract Sample No	STR747/1
Report Date	04 June 2021	Clients Reference	BH30
Client	Tetra Tech Europe	Date Drilled	03/06/2021
Address	5th Floor, Longcross Court	Date Logged	03/06/2021
	Newport Road	Latitudinal Coordinates	478468
	CF24 0AD	Longitudinal Coordinates	353881
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark Northern Bypass	Weather Conditions	Fine
Core Location	BH30		

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Certificate of Test - Bituminous Core Investigation

Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*		Indication of Potential Presence of Coal Tar
	Average Layer thickness (mm)	Aggregate Size (mm)	Material	PAK Marker Test*
Layer 1	35	14	HRA	Presence Not Indicated
Layer 2	75	28	DBM	Presence Not Indicated
Layer 3	85	28	DBM	Presence Not Indicated
Layer 4	85	32	DBM	Presence Not Indicated
Layer 5	93	40	DBM	Presence Not Indicated
Layer 6				
Layer 7				
Layer 8				
Total Mean Depth	373	Note: A positive result in the PAK marker test is a strong (but not definitive) indicator of the presence of tar. For quantitative results, this test should be considered in conjunction with other test results (i.e. Total PAH by Gas Chromatography – Flame Ionisation Detection – GC-FID)		
Material beneath extruded core		Unbound Material		

Notes	

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale

Authorised Signatory

James Whitworth
Operations Manager - Structures

[redacted]

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Laboratory Report	STR747	Contract Sample No	STR747/20
Report Date	28 July 2021	Clients Reference	C8
Client	Tetra Tech Europe	Date Drilled	27/07/2021
Address	5th Floor, Longcross Court	Date Logged	27/07/2021
	Newport Road	Latitudinal Coordinates	53.074929
	CF24 0AD	Longitudinal Coordinates	-0.831866
Attention	Nicholas Bool	Drilled By	A. Smith
Scheme Name	A46, Newark	Weather Conditions	Fine
Core Location	A46 NB & SB Winthorpe Island to Kelham Island		

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Certificate of Test - Bituminous Core Investigation

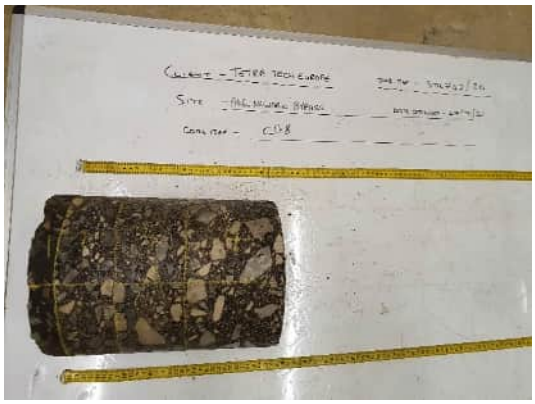
Core sampling in accordance with BS EN 12697-27: 2017	Thickness of Bituminous Pavement Tested in Accordance with BS EN 12697-36: 2003 Clause 4.1	Material Description*	
	Average Layer thickness (mm)	Aggregate Size (mm)	Material
Layer 1	27	14	HRA
Layer 2	65	20	DBM
Layer 3	80	28	DBM
Layer 4	127	28	DBM
Layer 5			
Layer 6			
Layer 7			
Layer 8			
Total Mean Depth	299*		
Material beneath extruded core		*Further Bituminous Material	

Notes	A further layer of bituminous material appears to be present beneath Layer 4, however CTS weren't able to extrude this as the core got stuck during the extrusion process. As such no sample of Unbound Material was able to be recovered at this location.

Photographic Record

Photo 1: Wide Angle

Photo 2: Core & Scale



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Authorised Signatory

James Whitworth
Operations Manager - Structures

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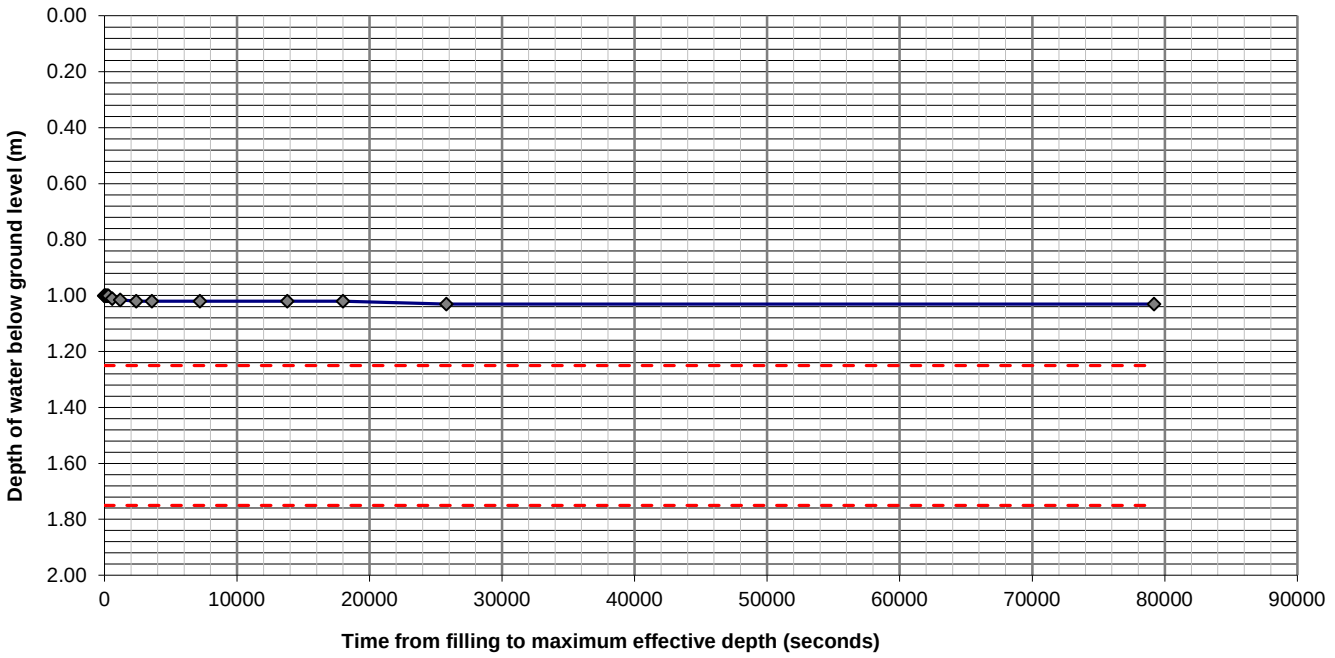
APPENDIX C – SOIL INFILTRATION TESTING RESULTS

Tetra Tech
Geneva Building, Nottingham, NG15 0ED
Tel: 01623 684550
Environmental Consultancy
Ground Engineering Services

TETRA TECH

DATE:	09/06/2021
PROJECT No:	784-B026948
PROJECT NAME:	A46 NNB
CLIENT:	Highways England
TRIAL PIT ID:	TP31
TEST NUMBER:	1

SOAKAWAY TEST - SOIL INFILTRATION RATE/PERMEABILITY CALCULATION



Time Elapsed (s)	Time Elapsed (mins)	Distance to water surface from ground level (m)
	0.00	1.000
30	0.50	1.000
60	1.00	1.000
120	2.00	1.000
180	3.00	1.000
240	4.00	1.000
300	5.00	1.000
600	10.00	1.010
1200	20.00	1.015
2400	40.00	1.020
3600	60.00	1.020
7200	120.00	1.020
13800	230.00	1.020
18000	300.00	1.020
25800	430.00	1.030
79200	1320.00	1.030

PIT LENGTH (m):	1.34	**Pit construction**
PIT WIDTH (m):	0.69	
PIT DEPTH (m):	2.00	

INPUT PARAMETERS:

Total volume of pit	(m^3)	0.92
Pit volume between 75% and 25% depths = L x W x ½D	(m^3)	0.46
Effective depth of Pit	(m)	1.00
Proportion of pit volume occupied by gravel solids	(0-1)	0.00
Maximum potential volume of Water	(m^3)	0.92
Level of water in pit at 75% effective depth (p_{75})	(m)	0.25
Level of water in pit at 25% effective depth (p_{25})	(m)	0.75
Effective volume between 75% & 25% depth $Vp_{75\text{-}25}$ = V x Pg	(m^3)	0.46
Surface area of pit up to 50% effective depth (A_{p50})	(m^2)	2.95
Time at 75% effective depth (p_{75})	(s)	#N/A
Time at 25% effective depth (p_{25})	(s)	#N/A
Time for outflow for 75% and 25% effective depth (Tp75-25)	(s)	#N/A

OUTPUT:

SOIL INFILTRATION RATE (f)	$\frac{V_{p75-25}}{A_{p50} \times T_{p75-25}}$	(m/s)	**#N/A**

WATER INPUT:	1000 l	16 mins

GEOLOGY OF TEST SECTION:

Soft to firm reddish brown slightly silty slightly gravelly CLAY. Gravel is fine to medium sub-angular mudstone.

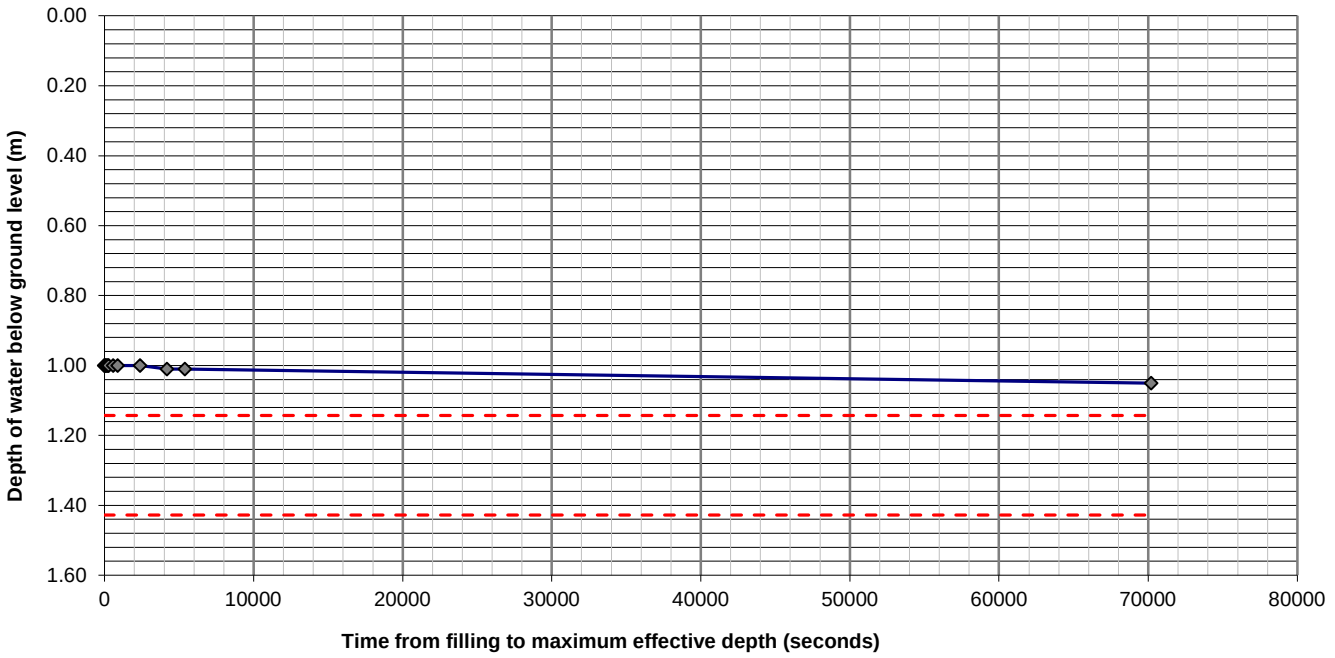
Compiled by:	AH
Checked by:	NEB

Tetra Tech
Geneva Building, Nottingham, NG15 0ED
Tel: 01623 684550
Environmental Consultancy
Ground Engineering Services

TETRA TECH

DATE:	07/06/2021
PROJECT No:	784-B026948
PROJECT NAME:	A46 NNB
CLIENT:	Highways England
TRIAL PIT ID:	TP33
TEST NUMBER:	1

SOAKAWAY TEST - SOIL INFILTRATION RATE/PERMEABILITY CALCULATION



Time Elapsed (s)	Time Elapsed (mins)	Distance to water surface from ground level (m)
	0.00	1.000
30	0.50	1.000
60	1.00	1.000
120	2.00	1.000
180	3.00	1.000
240	4.00	1.000
300	5.00	1.000
600	10.00	1.000
900	15.00	1.000
2400	40.00	1.000
4200	70.00	1.010
5400	90.00	1.010
70200	1170.00	1.050

PIT LENGTH (m):	2.13	**Pit construction**	
PIT WIDTH (m):	0.69		
PIT DEPTH (m):	1.57		
INPUT PARAMETERS:			
Total volume of pit		(m^3)	0.84
Pit volume between 75% and 25% depths = L x W x ½D		(m^3)	0.42
Effective depth of Pit		(m)	0.57
Proportion of pit volume occupied by gravel solids		(0-1)	0.00
Maximum potential volume of Water		(m^3)	0.84
Level of water in pit at 75% effective depth (p_{75})		(m)	0.14
Level of water in pit at 25% effective depth (p_{25})		(m)	0.43
Effective volume between 75% & 25% depth $Vp_{75\text{-}25}$ = V x Pg		(m^3)	0.42
Surface area of pit up to 50% effective depth (A_{p50})		(m^2)	3.08
Time at 75% effective depth (p_{75})		(s)	#N/A
Time at 25% effective depth (p_{25})		(s)	#N/A
Time for outflow for 75% and 25% effective depth (Tp75-25)		(s)	#N/A
OUTPUT:			
SOIL INFILTRATION RATE (f)	$\frac{V_{p75-25}}{A_{p50} \times T_{p75-25}}$	(m/s)	**#N/A**
WATER INPUT:	600 l	17 mins	

GEOLOGY OF TEST SECTION:

Compiled by: AH
Checked by: NEB

APPENDIX D – GROUNDWATER INCLUDING LOW FLOW AND LANDGAS MONITORING RESULTS

TETRA TECH ENVIRONMENT

Geneva Building, Lakeview Drive, Sherwood Business Park, Annesley, Nottingham, NG15 0ED
Tel: 01623 684550

TETRA TECH

GROUNDWATER / GAS MONITORING RECORD SHEET

Client:	HE	**Job No.:**	B026948	**Instruments Used:**	GA5000
Project:	A46 Newark	**Date:**	11-Aug-21	**Make / Model:**	
Weather:	Warm, Sunny	**Monitored By:**	SC	**Serial Number:**	

Installation No.	Elevation of cover (m agl)	Peak [1]		Steady [2]					PID (ppm)	Total gas flow rate (l/hr)	Peak CH_4 flow rate (l/hr)	Peak CO_2 flow rate (l/hr)	Atmospheric Pressure (mbar)	Water Depth (mbgl)	Base Depth (m bgl)	Remarks
		CH_4 (% vol)	CO_2 (% vol)	CH_4 (% vol)	CO_2 (% vol)	O_2 (% vol)	CO (ppm)	H_2S (ppm)								
WS67	0.00	0.0	0.3	0.0	0.3	19.8	1	0	0.3	0.0	0.000	0.000	1016	DRY	2.62	
BH21	0.33	0.0	0.6	0.0	0.5	19.5	0	0	0.2	0.1	0.000	0.001	1016	2.51	5.60	
BH22	0.00	0.0	0.1	0.0	0.1	21.3	0	0	0.2	0.0	0.000	0.000	1016	3.52	5.74	
WS66	0.26	0.0	0.5	0.0	0.5	20.8	0	0	1.1	0.0	0.000	0.000	1016	2.78	2.91	
BH19	0.00	0.1	7.4	0.1	6.9	11.6	1	0	0.4	0.0	0.000	0.000	1016	0.33	4.86	
BH15	0.13	0.1	0.2	0.1	0.2	19.9	2	0	0.4	0.1	0.000	0.000	1017	1.86	4.83	
BH66	0.30	0.0	2.6	0.0	2.6	18.6	1	0	0.1	0.0	0.000	0.000	1017	DRY	2.44	
BH17	0.34	0.0	1.8	0.0	1.8	18.9	1	0	0.1	0.0	0.000	0.000	1017	2.54	17.39	
BH16	0.31	0.0	2.5	0.0	2.5	17.9	1	0	0.0	0.0	0.000	0.000	1017	2.77	6.98	

Background Gas Levels:

	CH_4 (%)	CO_2 (%)	O_2 (%)	Atmos (mbar)
Before Monitoring	0.0	0.1	20.9	1016
After Monitoring	0.0	0.1	21.3	1017

Characteristic Gas Situation	
1	
2	
3	
4	

[1] The peak reading is the maximum recorded level during a monitoring event.

[2] The steady reading is the level which remained constant after approximately 1 minute.

TETRA TECH ENVIRONMENT

Geneva Building, Lakeview Drive, Sherwood Business Park, Annesley, Nottingham, NG15 0ED
Tel: 01623 684550

TETRA TECH

GROUNDWATER / GAS MONITORING RECORD SHEET

Client:	HE	**Job No.:**	B026948	**Instruments Used:**	GA5000
Project:	A46 Newark	**Date:**	12-Aug-21	**Make / Model:**	
Weather:	Warm, Sunny	**Monitored By:**	SC	**Serial Number:**	

Installation No.	Elevation of cover (m agl)	Peak [1]		Steady [2]					PID (ppm)	Total gas flow rate (l/hr)	Peak CH_4 flow rate (l/hr)	Peak CO_2 flow rate (l/hr)	Atmospheric Pressure (mbar)	Water Depth (mbgl)	Base Depth (m bgl)	Remarks
		CH_4 (% vol)	CO_2 (% vol)	CH_4 (% vol)	CO_2 (% vol)	O_2 (% vol)	CO (ppm)	H_2S (ppm)								
BH01	0.32	0.0	0.4	0.0	0.4	20.6	1	0	0.0	0.0	0.000	0.000	1017	1.73	14.34	
BH14	0.33	0.0	4.0	0.0	4.0	18.3	0	0	2.9	0.1	0.000	0.004	1017	2.98	4.47	
WS48	0.22	0.0	4.4	0.0	4.1	17.4	9	0	0.9	0.1	0.000	0.004	1018	2.06	2.15	
WS50	0.08	0.1	6.4	0.1	6.4	17.5	0	0	0.6	0.0	0.000	0.000	1017	3.68	3.98	Cover damaged / vandalised
WS54	0.29	0.0	2.1	0.0	2.1	19.3	2	0	0.7	-0.1	0.000	-0.002	1017	1.64	4.69	
BH12	0.25	0.0	0.3	0.0	0.3	19.6	1	0	0.3	0.0	0.000	0.000	1017	2.85	4.76	
BH11	0.00	0.0	0.5	0.0	0.5	19.6	1	0	0.1	0.0	0.000	0.000	1018	3.71	5.88	
BH10	0.00	0.0	0.3	0.0	0.3	19.7	1	0	0.2	0.0	0.000	0.000	1017	1.78	4.24	
BH09	0.00	0.0	1.1	0.0	1.1	18.4	3	0	1.8	-1.8	0.000	-0.020	1017	1.35	4.37	
WS26	0.00	0.0	0.2	0.0	0.2	20.7	0	0	0.1	0.0	0.000	0.000	1017	1.86	3.41	

Background Gas Levels:

	CH_4 (%)	CO_2 (%)	O_2 (%)	Atmos (mbar)
Before Monitoring	0.0	0.1	21.2	1017
After Monitoring	0.0	0.1	21.3	1017

Characteristic Gas Situation	
1	
2	
3	
4	

[1] The peak reading is the maximum recorded level during a monitoring event.

[2] The steady reading is the level which remained constant after approximately 1 minute.

TETRA TECH ENVIRONMENT

Geneva Building, Lakeview Drive, Sherwood Business Park, Annesley, Nottingham, NG15 0ED
Tel: 01623 684550

TETRA TECH

GROUNDWATER / GAS MONITORING RECORD SHEET

Client:	HE	**Job No.:**	B026948	**Instruments Used:**	GA5000
Project:	A46 Newark	**Date:**	13-Aug-21	**Make / Model:**	
Weather:	Warm, Sunny	**Monitored By:**	SC	**Serial Number:**	

Installation No.	Elevation of cover (m agl)	Peak [1]		Steady [2]					PID (ppm)	Total gas flow rate (l/hr)	Peak CH_4 flow rate (l/hr)	Peak CO_2 flow rate (l/hr)	Atmospheric Pressure (mbar)	Water Depth (mbgl)	Base Depth (m bgl)	Remarks
		CH_4 (% vol)	CO_2 (% vol)	CH_4 (% vol)	CO_2 (% vol)	O_2 (% vol)	CO (ppm)	H_2S (ppm)								
BH02	0.00	0.0	3.2	0.0	3.2	17.7	1	0	0.3	0.0	0.000	0.000	1017	1.10	4.91	
WS06																Assume destroyed by farmer
WS08	0.00	0.0	0.1	0.0	0.1	20.3	1	0	0.2	0.0	0.000	0.000	1017	1.14	4.89	Cover damaged
WS12	0.39	0.1	5.8	0.1	5.7	10.5	1	0	0.8	0.0	0.000	0.000	1017	1.20	2.89	
BH03	0.00	0.0	5.7	0.0	5.7	15.7	3	0	0.7	-0.2	0.000	-0.011	1017	1.06	4.29	
WS15	0.29	0.1	3.2	0.1	3.2	17.8	1	0	0.5	0.0	0.000	0.000	1017	1.26	2.89	
WS31	0.00	0.0	2.3	0.0	2.3	19.3	8	0	0.6	0.0	0.000	0.000	1017	1.76	3.98	
WS25	0.31	0.0	1.1	0.0	1.1	20.1	0	0	0.2	0.0	0.000	0.000	1017	2.24	3.44	
BH56	0.24	0.0	2.8	0.0	2.8	14.2	0	0	0.1	0.0	0.000	0.000	1017	1.62	4.06	
BH05	0.00	0.0	0.3	0.0	0.3	14.7	2	0	0.5	0.0	0.000	0.000	1017	2.11	4.33	

Background Gas Levels:

	CH_4 (%)	CO_2 (%)	O_2 (%)	Atmos (mbar)
Before Monitoring	0.0	0.1	20.9	1017
After Monitoring	0.0	0.1	20.8	1017

Characteristic Gas Situation	
1	
2	
3	
4	

[1] The peak reading is the maximum recorded level during a monitoring event.

[2] The steady reading is the level which remained constant after approximately 1 minute.

TETRA TECH GEO-ENVIRONMENT

Geneva Building, Lake View Drive

Sherwood Business Park, Annesley

Notinghamshire, NG15 0ED

TETRA TECH

Groundwater Field Parameters Record Sheet

Client:	HE			**Job No.:**	**B026948**									
Project:	A46 Newark			**Date:**	**20/08/2021**			**Monitored By:**			**SC**			
Weather:	Warm, sunny			**Round**	**1**			**Instruments Used:**			Peristaltic pump and AquaTroll			
Installation No.	Intake level m bgl	pH	Temp °C	Actual Conductivity µS/cm	Specific Conductivity µS/cm	Dissolved oxygen mg/L	Dissolved oxygen % Saturation	Redox pH/mV	ORP mV	Density g/cm^3	Salinity %	TDS ppm	Water depth mbgl	Base depth mbgl
BH01	10	6.88	15.75	728.7	889.63	0.51	5.14	10.6	-6.4	1	0.44	0.57	1.77	14.32
BH02	4.5	7.91	16.46	770.7	922.51	0.33	7.2	-5.6	68.1	1	0.46	0.6	1.12	4.91
WS08	4.50	7.17	16.23	753.4	905.54	1.56	8.6	-5.7	-3.9	1	0.45	0.59	1.17	4.88
WS12	2.5	7.17	14.25	867.8	1069.40	0.34	4.9	-5.5	-13.6	1	0.54	0.7	1.23	2.92
BH03	4.5	7.15	14.55	871.5	1087.60	0.21	2.2	-3.8	-22.3	1	0.49	0.82	1.09	4.92

TETRA TECH GEO-ENVIRONMENT

Geneva Building, Lake View Drive

Sherwood Business Park, Annesley

Notinghamshire, NG15 0ED

TETRA TECH

Groundwater Field Parameters Record Sheet

Client:	HE			**Job No.:**	**B026948**									
Project:	A46 Newark			**Date:**	**23/08/2021**			**Monitored By:**			**SC**			
Weather:	Warm, sunny			**Round**	**1**			**Instruments Used:**			Peristaltic pump and AquaTroll			
Installation No.	Intake level m bgl	pH	Temp °C	Actual Conductivity µS/cm	Specific Conductivity µS/cm	Dissolved oxygen mg/L	Dissolved oxygen % Saturation	Redox pH/mV	ORP mV	Density g/cm^3	Salinity %	TDS ppm	Water depth mbgl	Base depth mbgl
BH15	3	7.98	17.31	2771.1	3207.20	0.69	7.77	-50.5	132.9	1	1.7	2.09	1.83	3.32
BH19	4	6.93	17.75	1502.4	1752.20	0.41	3.7	8.8	70.5	1	0.9	1.14	1.46	4.87
BH21	5.00	7.51	18.05	593.9	685.70	6.83	71.1	-24.2	110.3	1	0.34	0.45	2.51	5.61
BH22	5.5	7.56	17.48	598.8	700.76	6.23	64.2	-21.4	115.9	1	0.39	0.71	2.81	5.74
WS66	2.65	7.45	17.56	789.2	967.20	4.23	23.4	-12.3	89.3	1	0.34	0.54	2.52	2.7

TETRA TECH GEO-ENVIRONMENT

Geneva Building, Lake View Drive
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Notinghamshire, NG15 0ED

Groundwater Field Parameters Record Sheet

Client:	HE	**Job No.:**	**B026948**		
Project:	A46 Newark	**Date:**	**24/08/2021**	**Monitored By:**	**SC**
Weather:	Warm, sunny	**Round**	**1**	**Instruments Used:**	Peristaltic pump and AquaTroll

Installation	Intake level	pH	Temp	Actual Conductivity	Specific Conductivity	Dissolved oxygen	Dissolved oxygen	Redox	ORP	Density	Salinity	TDS	Water depth	Base depth
No.	m bgl		°C	µS/cm	µS/cm	mg/L	% Saturation	pH/mV	mV	g/cm^3	%	ppm	mbgl	mbgl
BH17	10	7.60	15.55	1323.5	1626.50	8.09	79.26	-30.2	181.2	1	0.82	1.05	2.23	17.04
BH16	5.5	7.49	14.81	2706.3	3360.30	4.80	47.9	-23.1	179	1	1.77	2.18	3.46	5.93
BH18	6.00	7.64	14.64	2278.8	2884.60	2.06	22.2	-30.1	171.5	1	1.49	1.85	2.54	6.66
BH14	3.5	7.45	13.97	2697.6	3441.10	0.90	7.0	-23.3	-1.7	1	1.81	2.23	2.67	4.06
WS48	1.9	7.02	16.15	2352.3	2824.50	3.62	36.2	3.9	-1.7	1	1.48	1.84	1.78	1.93
WS50	2.80	6.75	16.24	1089.1	1356.40	0.43	6.8	28.1	23.8	1	0.71	0.91	2.58	2.91
WS54	4.00	6.39	15.54	1032.3	1255.10	0.39	3.5	40.5	21.1	1	0.63	0.82	1.51	4.4

TETRA TECH GEO-ENVIRONMENT

Geneva Building, Lake View Drive
Sherwood Business Park, Annesley
Notinghamshire, NG15 0ED

Groundwater Field Parameters Record Sheet

Client:	HE	**Job No.:**	**B026948**		
Project:	A46 Newark	**Date:**	**25/08/2021**	**Monitored By:**	**SC**
Weather:	Overcast	**Round**	**1**	**Instruments Used:**	Peristaltic pump and AquaTroll

Installation	Intake level	pH	Temp	Actual Conductivity	Specific Conductivity	Dissolved oxygen	Dissolved oxygen	Redox	ORP	Density	Salinity	TDS	Water depth	Base depth
No.	m bgl		°C	µS/cm	µS/cm	mg/L	% Saturation	pH/mV	mV	g/cm^3	%	ppm	mbgl	mbgl
BH09	4	7.65	14.93	758.8	952.23	1.00	10.06	-32.7	51.1	1	0.47	0.61	1.37	4.36
BH10	4	7.66	15.59	2239.1	2823.30	0.85	8.3	-32.4	2.8	1	1.43	1.77	1.79	4.24
BH07	3.50	7.29	15.94	1601.5	1950.50	0.82	7.8	-12	71	1	0.99	1.26	1.54	4.02
BH60	5	7.65	16.53	1265.3	1568.20	2.60	11.0	-2.3	85.3	1	0.56	1.56	1.25	5.63
BH61	5	7.23	15.68	1465.3	1764.20	0.56	5.3	-15.3	68.3	1	0.64	1.96	1.58	5.74

TETRA TECH GEO-ENVIRONMENT

Geneva Building, Lake View Drive
Sherwood Business Park, Annesley
Notinghamshire, NG15 0ED

TETRA TECH

Groundwater Field Parameters Record Sheet

Client:	HE			**Job No.:**	**B026948**									
Project:	A46 Newark			**Date:**	**26/08/2021**			**Monitored By:**			**SC**			
Weather:	Overcast			**Round**	**1**			**Instruments Used:**			Peristaltic pump and AquaTroll			
Installation No.	Intake level m bgl	pH	Temp °C	Actual Conductivity µS/cm	Specific Conductivity µS/cm	Dissolved oxygen mg/L	Dissolved oxygen % Saturation	Redox pH/mV	ORP mV	Density g/cm^3	Salinity %	TDS ppm	Water depth mbgl	Base depth mbgl
BH06	3	7.48	15.74	4435.9	5385.80	1.52	15.11	-22.6	-76.7	1	2.92	3.5	1.88	4.4
WS26	3	7.01	16.22	675.9	826.50	5.07	50.3	4.4	58.6	1	0.4	0.53	7.86	3.24
BH11	5.50	7.21	15.30	1203.8	1475.70	1.22	11.9	-7.3	211.4	1	0.75	0.96	3.77	5.88
BH12	4.5	7.23	16.15	1896.3	2156.70	0.86	6.9	-22.5	-1.8	1	1.79	2.26	2.89	4.76
WS31	3.5	7.06	16.58	765.3	899.40	4.89	45.3	2.3	49.5	1	0.34	0.42	1.79	3.98

TETRA TECH GEO-ENVIRONMENT

Geneva Building, Lake View Drive
Sherwood Business Park, Annesley
Notinghamshire, NG15 0ED

TETRA TECH

Groundwater Field Parameters Record Sheet

Client:	HE			**Job No.:**	**B026948**									
Project:	A46 Newark			**Date:**	**27/08/2021**			**Monitored By:**			**SC**			
Weather:	Overcast			**Round**	**1**			**Instruments Used:**			Peristaltic pump and AquaTroll			
Installation No.	Intake level m bgl	pH	Temp °C	Actual Conductivity µS/cm	Specific Conductivity µS/cm	Dissolved oxygen mg/L	Dissolved oxygen % Saturation	Redox pH/mV	ORP mV	Density g/cm^3	Salinity %	TDS ppm	Water depth mbgl	Base depth mbgl
WS15	2.5	7.01	16.35	689.5	846.20	4.89	45.6	3.6	55.6	1	0.56	0.33	1.26	2.89
BH05	4	7.35	16.23	789.6	986.30	3.56	32.1	2.3	26.8	1	0.86	1.32	2.16	4.35
BH56	4.00	6.89	15.63	896.2	1057.30	2.30	12.3	-3.2	85.6	1	0.78	0.96	1.65	4.33
WS25	3	7.29	16.59	1256.3	1545.10	0.82	7.5	-14.3	75.3	1	0.99	1.28	2.22	3.49

TETRA TECH ENVIRONMENT

Geneva Building, Lakeview Drive, Sherwood Business Park, Annesley, Nottingham, NG15 0ED
Tel: 01623 684550

TETRA TECH

GROUNDWATER / GAS MONITORING RECORD SHEET

Client:	HE	**Job No.:**	B026948	**Instruments Used:**	GA5000
Project:	A46 Newark	**Date:**	02-Sep-21	**Make / Model:**	
Weather:	Warm, Sunny	**Monitored By:**	SC	**Serial Number:**	

Installation No.	Elevation of cover	Peak [1]		Steady [2]					PID (ppm)	Total gas flow rate	Peak CH_4 flow rate	Peak CO_2 flow rate	Atmospheric Pressure	Water Depth	Base Depth	Remarks
		CH_4	CO_2	CH_4	CO_2	O_2	CO	H_2S								
	(m agl)	(% vol)	(% vol)	(% vol)	(% vol)	(% vol)	(ppm)	(ppm)		(l/hr)	(l/hr)	(l/hr)	(mbar)	(mbgl)	(m bgl)	
WS67	0.00	0.0	0.6	0.0	0.6	18.1	2	0	0.6	0.0	0.000	0.000	1021	DRY	2.61	
BH21	0.33	0.0	0.5	0.0	0.5	19.5	0	0	0.2	0.1	0.000	0.001	1021	2.51	5.60	
BH22	0.00	0.0	0.2	0.0	0.2	19.8	0	0	0.2	0.0	0.000	0.000	1021	3.49	5.74	
WS66	0.26	0.0	0.4	0.0	0.4	19.3	0	0	1.1	0.0	0.000	0.000	1021	2.74	2.91	
BH19	0.00	0.1	6.8	0.1	6.8	12.6	1	0	0.4	0.0	0.000	0.000	1021	0.42	4.79	
BH15	0.13	0.1	0.4	0.1	0.4	20.1	2	0	0.4	0.1	0.000	0.000	1021	1.79	4.83	
BH66	0.30	0.0	2.1	0.0	2.1	18.7	1	0	0.1	0.0	0.000	0.000	1021	DRY	2.41	
BH17	0.34	0.0	1.5	0.0	1.5	17.1	1	0	0.1	0.0	0.000	0.000	1022	2.51	17.32	
BH16	0.31	0.0	2.9	0.0	2.9	18.9	1	0	0.0	0.0	0.000	0.000	1022	2.69	6.98	
BH18	0.29	0.1	1.3	0.1	1.3	16.8	2	0	0.3	0.0	0.000	0.000	1023	2.82	6.97	
BH14	0.33	0.1	2.1	0.1	2.1	19.9	1	0	0.6	0.1	0.000	0.002	1023	3.02	4.45	
WS48	0.22	0.2	5.6	0.1	5.2	16.8	1	0	0.2	0.2	0.000	0.011	1023	2.08	2.14	
WS50	0.08	0.1	6.2	0.1	6.1	17.1	2	0	1.1	-0.1	0.000	-0.006	1023	3.61	3.98	
WS54	0.32	0.1	1.8	0.1	1.8	16.4	0	0	0.4	0.0	0.000	0.000	1023	1.73	4.65	
BH12	0.29	0.0	5.4	0.0	5.4	13.1	3	0	1.2	0.2	0.000	0.011	1023	2.91	4.74	
BH11	0.00	0.1	0.0	6.1	0.1	14.6	1	0	0.8	0.1	0.0	0.000	1023	3.67	5.85	

Background Gas Levels:

	CH_4 (%)	CO_2 (%)	O_2 (%)	Atmos (mbar)
Before Monitoring	0.0	0.1	21.2	1021
After Monitoring	0.0	0.1	21.3	1023

Characteristic Gas Situation	
1	
2	
3	
4	

[1] The peak reading is the maximum recorded level during a monitoring event.

[2] The steady reading is the level which remained constant after approximately 1 minute.

TETRA TECH ENVIRONMENT

Geneva Building, Lakeview Drive, Sherwood Business Park, Annesley, Nottingham, NG15 0ED
Tel: 01623 684550

TETRA TECH

GROUNDWATER / GAS MONITORING RECORD SHEET

Client:	HE	**Job No.:**	B026948	**Instruments Used:**	GA5000
Project:	A46 Newark	**Date:**	03-Sep-21	**Make / Model:**	
Weather:	Warm, Sunny	**Monitored By:**	SC	**Serial Number:**	

Installation No.	Elevation of cover (m agl)	Peak [1]		Steady [2]					PID (ppm)	Total gas flow rate (l/hr)	Peak CH_4 flow rate (l/hr)	Peak CO_2 flow rate (l/hr)	Atmospheric Pressure (mbar)	Water Depth (mbgl)	Base Depth (m bgl)	Remarks
		CH_4 (% vol)	CO_2 (% vol)	CH_4 (% vol)	CO_2 (% vol)	O_2 (% vol)	CO (ppm)	H_2S (ppm)								
BH01	0.32	0.0	0.4	0.0	0.4	20.6	1	0	0.0	0.0	0.000	0.000	1019	1.73	14.34	
BH07	0.00	0.1	3.4	0.1	3.4	18.5	2	0	0.1	0.1	0.000	0.003	1019	1.49	4.03	
BH10	0.00	0.0	0.6	0.0	0.6	19.7	0	0	0.1	0.0	0.000	0.000	1019	1.78	4.24	
BH09	0.00	0.0	0.8	0.0	0.8	18.7	1	0	0.2	0.1	0.000	0.001	1019	1.35	4.37	
WS26	0.00	0.0	0.1	0.0	0.1	19.8	1	0	0.1	0.2	0.000	0.000	1019	1.79	3.40	
BH02	0.00	0.0	2.9	0.0	2.9	18.2	0	0	0.2	0.1	0.000	0.003	1019	1.08	4.90	
WS08	0.00	0.0	0.1	0.0	0.1	20.7	0	0	0.1	0.0	0.000	0.000	1020	1.09	4.89	
WS12	0.39	0.1	4.9	0.1	4.9	9.9	1	0	1.1	0.0	0.000	0.000	1020	1.17	2.86	
BH03	0.00	0.0	6.7	0.0	6.7	13.4	2	0	0.3	-0.1	0.000	-0.007	1020	1.02	4.28	
WS15	0.29	0.1	2.9	0.1	2.9	18.1	1	0	0.7	0.0	0.000	0.000	1020	1.23	2.88	
WS31	0.00	0.0	4.3	0.0	4.3	17.8	5	0	0.9	0.1	0.000	0.004	1019	1.74	3.98	
WS25	0.31	0.0	1.6	0.0	1.6	19.3	0	0	0.2	0.0	0.000	0.000	1019	2.21	3.45	
BH56	0.24	0.0	2.2	0.0	2.2	13.6	1	0	0.1	0.1	0.000	0.002	1020	1.59	4.04	
BH05	0.00	0.0	0.2	0.0	0.2	16.5	2	0	0.5	0.0	0.000	0.000	1019	2.13	4.33	

Background Gas Levels:

	CH_4 (%)	CO_2 (%)	O_2 (%)	Atmos (mbar)
Before Monitoring	0.0	0.1	20.9	1019
After Monitoring	0.0	0.1	21.3	1019

Characteristic Gas Situation	
1	
2	
3	
4	

[1] The peak reading is the maximum recorded level during a monitoring event.

[2] The steady reading is the level which remained constant after approximately 1 minute.

TETRA TECH ENVIRONMENT

Geneva Building, Lakeview Drive, Sherwood Business Park, Annesley, Nottingham, NG15 0ED
Tel: 01623 684550

TETRA TECH

GROUNDWATER / GAS MONITORING RECORD SHEET

Client:	HE	**Job No.:**	B026948	**Instruments Used:**	GA5000
Project:	A46 Newark	**Date:**	28-Sep-21	**Make / Model:**	
Weather:	Warm, Sunny	**Monitored By:**	AH	**Serial Number:**	

Installation No.	Elevation of cover	Peak [1]		Steady [2]					PID (ppm)	Total gas flow rate	Peak CH_4 flow rate	Peak CO_2 flow rate	Atmospheric Pressure	Water Depth	Base Depth	Remarks
		CH_4	CO_2	CH_4	CO_2	O_2	CO	H_2S								
	(m agl)	(% vol)	(% vol)	(% vol)	(% vol)	(% vol)	(ppm)	(ppm)		(l/hr)	(l/hr)	(l/hr)	(mbar)	(mbgl)	(m bgl)	
WS67	0.00	0.1	1.0	0.1	0.8	17.9	2	0	0.6	0.0	0.000	0.000	1013	DRY	2.61	
BH21	0.33	0.0	0.8	0.0	0.8	18.9	0	0	0.1	0.2	0.000	0.002	1012	2.33	5.60	
BH22	0.00	0.0	0.4	0.0	0.4	19.0	1	0	1.0	0.0	0.000	0.000	1013	3.40	5.74	
WS66	0.26	0.0	0.9	0.0	0.8	19.3	0	0	0.0	0.0	0.000	0.000	1014	2.39	2.91	
BH19	0.00	0.1	6.5	0.1	6.5	12.0	1	0	1.0	0.2	0.000	0.013	1013	0.33	4.79	
BH15	0.13	0.1	1.0	0.1	1.0	18.9	1	0	0.2	0.2	0.000	0.002	1011	1.71	4.83	
BH66	0.30	0.0	2.0	0.0	2.0	18.1	1	0	0.1	0.0	0.000	0.000	1013	DRY	2.40	
BH17	0.35	0.0	1.7	0.0	1.7	17.3	2	0	2.0	0.0	0.000	0.000	1013	2.39	17.32	
BH16	0.30	0.0	2.1	0.0	2.1	19.0	0	0	0.0	0.0	0.000	0.000	1013	2.69	7.00	
BH18	0.30	0.1	1.8	0.1	1.8	17.0	2	0	0.0	0.0	0.000	0.000	1013	2.77	6.97	
BH14	0.33	0.1	2.0	0.1	2.0	20.0	0	0	0.8	0.1	0.000	0.002	1011	2.94	4.46	
WS48	0.22	0.2	6.0	0.1	6.0	16.8	1	0	0.2	0.2	0.000	0.012	1014	2.13	2.15	
WS50	0.10	0.1	6.0	0.1	6.0	16.9	1	0	0.9	-0.1	0.000	-0.006	1014	3.58	3.98	
WS54	0.30	0.1	1.7	0.1	1.7	16.0	0	0	0.3	0.0	0.000	0.000	1013	1.61	4.65	
BH12	0.30	0.0	4.9	0.0	4.9	15.0	3	0	1.2	0.2	0.000	0.010	1014	2.77	4.73	
BH11	0.00	0.1	0.0	0.1	0.1	15.0	1	0	1.0	1.0	0.0	0.000	1013	3.67	5.85	

Background Gas Levels:

	CH_4 (%)	CO_2 (%)	O_2 (%)	Atmos (mbar)
Before Monitoring	0.0	0.1	21.2	1021
After Monitoring	0.0	0.1	21.3	1023

Characteristic Gas Situation	
1	
2	
3	
4	

[1] The peak reading is the maximum recorded level during a monitoring event.

[2] The steady reading is the level which remained constant after approximately 1 minute.

TETRA TECH ENVIRONMENT

Geneva Building, Lakeview Drive, Sherwood Business Park, Annesley, Nottingham, NG15 0ED
Tel: 01623 684550

TETRA TECH

GROUNDWATER / GAS MONITORING RECORD SHEET

Client:	HE	**Job No.:**	B026948	**Instruments Used:**	GA5000
Project:	A46 Newark	**Date:**	29-Sep-21	**Make / Model:**	
Weather:	Warm, Sunny	**Monitored By:**	AH	**Serial Number:**	

Installation No.	Elevation of cover	Peak [1]		Steady [2]					PID (ppm)	Total gas flow rate	Peak CH_4 flow rate	Peak CO_2 flow rate	Atmospheric Pressure	Water Depth	Base Depth	Remarks
		CH_4	CO_2	CH_4	CO_2	O_2	CO	H_2S								
	(m agl)	(% vol)	(% vol)	(% vol)	(% vol)	(% vol)	(ppm)	(ppm)		(l/hr)	(l/hr)	(l/hr)	(mbar)	(mbgl)	(m bgl)	
BH01	0.30	0.0	0.7	0.0	0.7	19.9	0	0	0.0	0.0	0.000	0.000	1015	1.73	14.34	
BH07	0.00	0.1	2.0	0.1	2.0	17.9	1	0	0.1	0.1	0.000	0.002	1015	1.30	4.00	
BH10	0.00	0.0	1.0	0.0	1.0	19.0	0	0	0.0	0.0	0.000	0.000	1015	1.75	4.24	
BH09	0.00	0.0	1.0	0.0	1.0	19.1	0	0	0.0	0.4	0.000	0.004	1014	1.35	4.37	
WS26	0.00	0.0	1.0	0.0	1.0	18.0	1	0	2.0	0.8	0.000	0.008	1015	1.70	3.40	
BH02	0.00	0.0	3.0	0.0	3.0	17.8	0	0	0.2	0.1	0.000	0.003	1014	1.00	4.90	
WS08	0.00	0.0	0.3	0.0	0.3	19.0	0	0	2.0	0.0	0.000	0.000	1014	1.01	4.89	
WS12	0.30	0.1	5.0	0.1	5.0	8.0	5	0	3.0	0.1	0.000	0.005	1014	1.10	2.88	
BH03	0.00	0.0	6.2	0.0	6.0	15.0	1	0	1.0	0.1	0.000	0.006	1014	1.02	4.28	
WS15	0.30	0.2	3.1	0.1	3.1	18.0	1	0	1.0	0.0	0.000	0.000	1014	1.20	2.88	
WS31	0.00	0.0	4.0	0.0	4.0	18.0	1	0	1.0	0.1	0.000	0.004	1015	1.66	3.99	
WS25	0.30	0.0	1.5	0.0	1.5	19.0	0	0	0.1	0.0	0.000	0.000	1015	2.00	3.45	
BH56	0.25	0.0	2.0	0.0	2.0	15.0	1	0	1.0	0.4	0.000	0.008	1015	1.66	4.05	
BH05	0.00	0.0	0.3	0.0	0.3	19.0	1	0	0.1	0.1	0.000	0.000	1015	2.07	4.33	

Background Gas Levels:

	CH_4 (%)	CO_2 (%)	O_2 (%)	Atmos (mbar)
Before Monitoring	0.0	0.1	20.9	1019
After Monitoring	0.0	0.1	21.3	1019

Characteristic Gas Situation	
1	
2	
3	
4	

[1] The peak reading is the maximum recorded level during a monitoring event.

[2] The steady reading is the level which remained constant after approximately 1 minute.

TETRA TECH ENVIRONMENT

Geneva Building, Lakeview Drive, Sherwood Business Park, Annesley, Nottingham, NG15 0ED
Tel: 01623 684550

TETRA TECH

GROUNDWATER / GAS MONITORING RECORD SHEET

Client:	HE	**Job No.:**	B026948	**Instruments Used:**	GA5000
Project:	A46 Newark	**Date:**	18-Nov-21	**Make / Model:**	
Weather:	Overcast	**Monitored By:**	AH	**Serial Number:**	

Installation No.	Elevation of cover (m agl)	Peak [1]		Steady [2]					PID (ppm)	Total gas flow rate (l/hr)	Peak CH_4 flow rate (l/hr)	Peak CO_2 flow rate (l/hr)	Atmospheric Pressure (mbar)	Water Depth (mbgl)	Base Depth (m bgl)	Remarks
		CH_4 (% vol)	CO_2 (% vol)	CH_4 (% vol)	CO_2 (% vol)	O_2 (% vol)	CO (ppm)	H_2S (ppm)								
WS67	0.00	0.1	1.5	0.1	1.2	16.9	5	0	0.3	0.3	0.000	0.005	1026	DRY	2.61	
BH21	0.33	0.0	1.0	0.0	1.0	18.8	0	0	0.1	0.3	0.000	0.003	1026	3.66	5.58	
BH22	0.00	0.0	0.3	0.0	0.3	18.0	1	0	0.0	0.2	0.000	0.001	1026	3.74	5.74	
WS66																Unable to locate borehole.
BH19	0.00	0.2	6.3	0.1	6.3	8.0	1	0	1.0	0.4	0.001	0.025	1024	0.64	4.78	
BH15	0.13	0.1	1.7	0.1	1.7	17.9	1	0	0.0	0.3	0.000	0.005	1026	2.00	4.83	
BH66																Borehole destroyed.
BH17	0.35	0.0	2.0	0.0	2.0	17.0	1	0	1.0	0.1	0.000	0.002	1025	2.31	17.32	
BH16	0.30	0.0	3.1	0.0	3.1	18.0	0	0	0.0	1.0	0.000	0.031	1026	3.52	7.00	
BH18	0.30	0.0	2.0	0.1	1.5	17.9	1	0	0.0	0.1	0.000	0.002	1023	2.03	6.97	
BH14	0.33	0.1	2.7	0.1	27.0	18.4	0	0	0.8	0.3	0.000	0.008	1025	2.54	4.13	
WS48	0.22	0.2	6.6	0.2	6.6	16.2	1	0	0.2	0.3	0.001	0.020	1024	2.13	2.15	
WS50	0.10	0.1	5.4	0.1	5.4	17.3	1	0	0.0	0.2	0.000	0.011	1024	Dry	3.98	
WS54	0.30	0.1	1.5	0.1	1.5	17.3	0	0	0.0	0.1	0.000	0.002	1025	1.03	4.43	
BH12	0.30	0.0	5.0	0.0	5.0	14.2	3	0	0.6	0.3	0.000	0.015	1026	2.51	4.75	
BH11	0.00	0.2	0.1	0.1	0.1	17.9	1	0	0.0	0.3	0.0	0.000	1025	3.50	5.85	

Background Gas Levels:

	CH_4 (%)	CO_2 (%)	O_2 (%)	Atmos (mbar)
Before Monitoring	0.0	0.1	21.2	1026
After Monitoring	0.0	0.1	21.3	1025

Characteristic Gas Situation	
1	
2	
3	
4	

[1] The peak reading is the maximum recorded level during a monitoring event.

[2] The steady reading is the level which remained constant after approximately 1 minute.

TETRA TECH ENVIRONMENT

Geneva Building, Lakeview Drive, Sherwood Business Park, Annesley, Nottingham, NG15 0ED
Tel: 01623 684550

TETRA TECH

GROUNDWATER / GAS MONITORING RECORD SHEET

Client:	HE	**Job No.:**	B026948	**Instruments Used:**	GA5000
Project:	A46 Newark	**Date:**	19.11.21	**Make / Model:**	
Weather:	Overcast	**Monitored By:**	AH	**Serial Number:**	

Installation No.	Elevation of cover (m agl)	Peak [1]		Steady [2]					PID (ppm)	Total gas flow rate (l/hr)	Peak CH_4 flow rate (l/hr)	Peak CO_2 flow rate (l/hr)	Atmospheric Pressure (mbar)	Water Depth (mbgl)	Base Depth (m bgl)	Remarks
		CH_4 (% vol)	CO_2 (% vol)	CH_4 (% vol)	CO_2 (% vol)	O_2 (% vol)	CO (ppm)	H_2S (ppm)								
BH01	0.30	0.0	1.0	0.0	1.0	18.8	0	0	0.0	0.1	0.000	0.001	1026	1.33	14.30	
BH07	0.00	0.1	2.4	0.1	2.2	17.1	1	0	0.1	0.3	0.000	0.007	1026	1.33	4.00	
BH10	0.00	0.1	2.0	0.0	2.0	18.1	0	0	0.0	0.2	0.000	0.004	1024	1.89	4.24	
BH09	0.00	0.0	1.3	0.0	1.3	18.9	0	0	0.0	0.2	0.000	0.003	1026	1.46	4.35	
WS26	0.00	0.0	1.2	0.0	0.9	18.2	0	0	0.0	0.6	0.000	0.007	1024	1.99	3.25	
BH02	0.00	0.1	2.8	0.0	2.8	17.4	0	0	0.1	0.3	0.000	0.008	1025	1.00	4.31	
WS08	0.00	0.1	0.8	0.0	0.6	18.8	0	0	1.0	0.2	0.000	0.002	1026	1.10	4.88	
WS12	0.30	0.1	5.3	0.1	5.3	10.1	10	0	2.0	0.8	0.001	0.042	1026	0.69	2.44	
BH03A	0.00	0.1	5.2	0.1	5.2	16.0	0	0	1.0	0.2	0.000	0.010	1026	1.02	4.22	
WS15	0.30	0.1	3.8	0.1	3.5	17.6	1	0	0.0	0.2	0.000	0.008	1024	1.40	2.90	
WS31	0.00	0.1	4.7	0.0	4.7	17.1	1	0	1.0	0.3	0.000	0.014	1025	2.40	3.98	
WS25	0.30	0.1	2.0	0.1	2.0	17.9	1	0	0.0	0.2	0.000	0.004	1026	2.56	3.49	
BH56	0.25	0.0	2.7	0.0	2.7	17.7	1	0	1.0	0.2	0.000	0.005	1026	1.23	4.30	
BH05	0.00	0.0	0.3	0.0	0.3	19.0	1	0	0.1	0.3	0.000	0.001	1024	2.31	4.35	

Background Gas Levels:

	CH_4 (%)	CO_2 (%)	O_2 (%)	Atmos (mbar)
Before Monitoring	0.0	0.1	20.9	1026
After Monitoring	0.0	0.1	21.3	1024

Characteristic Gas Situation	
1	
2	
3	
4	

[1] The peak reading is the maximum recorded level during a monitoring event.

[2] The steady reading is the level which remained constant after approximately 1 minute.

TETRA TECH GEO-ENVIRONMENT

Geneva Building, Lake View Drive

Sherwood Business Park, Annesley

Notinghamshire, NG15 0ED

TETRA TECH

Groundwater Field Parameters Record Sheet

Client:	HE			**Job No.:**	**B026948**									
Project:	A46 Newark			**Date:**	**16/11/2021**			**Monitored By:**			**AH**			
Weather:	Warm, sunny			**Round**	**2**			**Instruments Used:**			Peristaltic pump and AquaTroll			
Installation No.	Intake level m bgl	pH	Temp °C	Actual Conductivity µS/cm	Specific Conductivity µS/cm	Dissolved oxygen mg/L	Dissolved oxygen % Saturation	Redox pH/mV	ORP mV	Density g/cm^3	Salinity %	TDS ppm	Water depth mbgl	Base depth mbgl
BH21	4.5	6.81	12.49	550.4	634.78	6.01	79.2	-20	221.4	4.26	0.31	0.41	3.66	5.5
BH16	4.5	7.23	12.11	2609.0	3424.80	43.0	-20.1	190	2	2.01	2.18	2.99	3.52	5.95
BH18	5.00	7.04	12.27	1900.9	2102.00	4.80	37.9	-20.1	177	2	1.88	2.1	2.02	6.98
BH17	7	7.29	12.82	1990.1	2055.60	7.09	69.99	-28.99	200.1	1.01	0.82	0.99	2.31	17.72

TETRA TECH GEO-ENVIRONMENT

Geneva Building, Lake View Drive

Sherwood Business Park, Annesley

Notinghamshire, NG15 0ED

TETRA TECH

Groundwater Field Parameters Record Sheet

Client:	HE			**Job No.:**	**B026948**									
Project:	A46 Newark			**Date:**	**17/11/2021**			**Monitored By:**			**AH**			
Weather:	Warm, sunny			**Round**	**2**			**Instruments Used:**			Peristaltic pump and AquaTroll			
Installation No.	Intake level m bgl	pH	Temp °C	Actual Conductivity µS/cm	Specific Conductivity µS/cm	Dissolved oxygen mg/L	Dissolved oxygen % Saturation	Redox pH/mV	ORP mV	Density g/cm^3	Salinity %	TDS ppm	Water depth mbgl	Base depth mbgl
BH06	3.5	7.01	13.18	3200.1	3511.30	4.23	55.1	3.3	52.13	1	0.59	0.4	2.11	4.09
BH60	3.5	6.29	11.64	4989.9	5179.00	5.2	56.9	3	51.12	1	0.53	0.9	1.56	5.79
BH61	3.50	6.73	12.14	1886.9	1908.00	5.43	54.9	2.9	48.9	2	0.48	0.55	1.3	5.62
BH03A	3	6.77	12.30	1201.1	1303.70	0.99	2.9	-3	-18.9	1	0.6	0.9	1.02	4.22
WS12	1.5	6.75	11.97	1587.5	1739.40	0.53	5.7	-5	-11.3	2	0.49	0.5	0.69	2.44
WS54	3.00	6.20	12.33	1425.1	1634.40	0.51	4.7	45.1	22	1	0.64	0.62	1.025	4.43
BH01	10.00	7.25	11.75	2987.9	3292.10	0.54	5.88	11.1	-6.4	1	0.55	0.6	1.33	14.3
BH02	2.50	7.89	13.10	810.9	1010.10	0.34	8.1	-8.1	55.45	1	0.61	0.89	1	4.31

TETRA TECH GEO-ENVIRONMENT

Geneva Building, Lake View Drive

Sherwood Business Park, Annesley

Notinghamshire, NG15 0ED

TETRA TECH

Groundwater Field Parameters Record Sheet

Client:	HE			**Job No.:**	**B026948**									
Project:	A46 Newark			**Date:**	**18/11/2021**			**Monitored By:**			**AH**			
Weather:	Warm, sunny			**Round**	**2**			**Instruments Used:**			Peristaltic pump and AquaTroll			
Installation No.	Intake level m bgl	pH	Temp °C	Actual Conductivity µS/cm	Specific Conductivity µS/cm	Dissolved oxygen mg/L	Dissolved oxygen % Saturation	Redox pH/mV	ORP mV	Density g/cm^3	Salinity %	TDS ppm	Water depth mbgl	Base depth mbgl
BH14	3	7.89	12.10	2406.8	3002.10	0.91	6.1	-14.4	-1.1	2	1.55	1.84	2.54	4.13
WS08	3.5	7.50	13.23	983.3	1109.75	1.01	7.2	-3.7	-2.9	1	0.7	0.49	1.1	4.88
WS15	2.5	7.40	12.76	885.2	900.10	3.87	37.9	4.8	60.11	1	0.6	0.41	1.4	2.9
BH56	3.50	6.50	13.67	1230.1	1474.60	2.91	13.5	-4	75.34	1	0.56	0.83	1.23	4.3
WS25	3	7.80	11.28	1456.3	1623.10	1.01	6.5	-8.93	69.45	1	0.77	1.39	2.56	3.49
WS26	3	6.80	13.27	823.8	985.75	6.83	56.2	5.7	45.92	1	0.7	0.63	1.99	3.25
WS31	3.5	7.30	13.32	834.5	947.20	5.01	42.1	2.01	55.36	1	0.55	0.76	2.4	3.98
BH07	3.00	7.10	14.11	1800.1	2354.21	1.18	8.2	-14.2	69.2	1	0.87	0.99	1.33	4

TETRA TECH GEO-ENVIRONMENT

Geneva Building, Lake View Drive

Sherwood Business Park, Annesley

Notinghamshire, NG15 0ED

TETRA TECH

Groundwater Field Parameters Record Sheet

Client:	HE			**Job No.:**	**B026948**									
Project:	A46 Newark			**Date:**	**19/11/2021**			**Monitored By:**			**AH**			
Weather:	Warm, sunny			**Round**	**2**			**Instruments Used:**			Peristaltic pump and AquaTroll			
Installation No.	Intake level m bgl	pH	Temp °C	Actual Conductivity µS/cm	Specific Conductivity µS/cm	Dissolved oxygen mg/L	Dissolved oxygen % Saturation	Redox pH/mV	ORP mV	Density g/cm^3	Salinity %	TDS ppm	Water depth mbgl	Base depth mbgl
BH09	3.5	7.45	12.56	973.2	1231.10	1.34	12.12	-22.5	49.1	1	0.67	0.52	1.46	4.35
BH10	3.5	6.99	11.45	1989.9	2452.80	1.00	7.6	1	3.2	1	1.32	1.55	1.89	4.24
BH11	4.5	7.77	13.26	1943.2	2002.90	0.94	5.6	-26.7	1.14	1	1.33	1.99	3.5	5.89
BH15	3	7.23	12.66	2966.2	3461.60	0.77	6.92	-31.1	79.4	1	1.9	1.88	2	3.32
BH12	3.5	6.90	11.67	2022.7	2381.50	0.99	5.6	-16.55	-1.2	1	1.44	1.66	2.51	4.75
BH19	3.5	7.22	12.43	2188.2	2758.33	0.60	5.2	7.1	82.9	1	0.77	1.13	1.22	4.85
BH22	5	6.92	11.34	983.5	1287.45	7.00	45.3	-18.88	87	1	0.58	0.94	2.27	5.75

TETRA TECH ENVIRONMENT

Geneva Building, Lakeview Drive, Sherwood Business Park, Annesley, Nottingham, NG15 0ED
Tel: 01623 684550

TETRA TECH

GROUNDWATER / GAS MONITORING RECORD SHEET

Client:	HE	**Job No.:**	B026948	**Instruments Used:**	GA5000
Project:	A46 Newark	**Date:**	29-Nov-21	**Make / Model:**	
Weather:	Overcast	**Monitored By:**	AH	**Serial Number:**	

Installation No.	Elevation of cover (m agl)	Peak [1]		Steady [2]					PID (ppm)	Total gas flow rate (l/hr)	Peak CH_4 flow rate (l/hr)	Peak CO_2 flow rate (l/hr)	Atmospheric Pressure (mbar)	Water Depth (mbgl)	Base Depth (m bgl)	Remarks
		CH_4 (% vol)	CO_2 (% vol)	CH_4 (% vol)	CO_2 (% vol)	O_2 (% vol)	CO (ppm)	H_2S (ppm)								
WS67	0.00	0.2	2.0	0.1	2.0	15.3	0	0	0.1	0.5	0.001	0.010	1008	DRY	2.60	
BH21	0.30	0.0	1.9	0.0	1.9	19.0	0	0	0.1	0.2	0.000	0.004	1009	3.29	5.60	
BH22	0.00	0.0	0.9	0.0	0.9	17.9	0	0	0.0	0.4	0.000	0.004	1008	3.51	5.75	
WS66																Unable to locate borehole.
BH19	0.00	0.0	6.2	0.0	6.0	5.5	0	0	0.0	0.2	0.000	0.012	1009	0.44	4.80	
BH15	0.10	0.1	2.0	0.1	2.0	16.0	1	0	0.0	0.3	0.000	0.006	1008	2.13	4.83	
BH66																Borehole destroyed.
BH17	0.35	0.0	1.8	0.0	1.8	18.1	0	0	0.1	0.8	0.000	0.014	1009	2.55	17.30	
BH16	0.30	0.0	2.9	0.0	2.9	19.0	0	0	0.0	1.1	0.000	0.032	1008	3.01	7.00	
BH18	0.30	0.1	2.2	0.1	22.0	17.9	1	0	0.0	0.1	0.000	0.002	1007	2.03	6.97	
BH14	0.33	0.2	3.1	0.1	2.7	16.9	0	0	1.0	1.1	0.002	0.034	1009	2.22	4.13	
WS48	0.22	0.3	6.2	0.1	6.2	15.9	3	0	0.0	0.8	0.002	0.050	1008	1.88	2.15	
WS50	0.10	0.1	4.9	0.1	4.9	18.6	2	0	0.0	0.6	0.001	0.029	1009	Dry	3.98	
WS54	0.30	0.2	1.9	0.1	1.8	16.8	0	0	0.0	0.3	0.001	0.006	1008	0.88	4.45	
BH12	0.30	0.0	5.3	0.0	5.1	13.8	1	0	0.0	0.7	0.000	0.037	1007	2.33	4.75	
BH11	0.00	0.1	0.3	0.1	0.2	17.1	2	0	0.0	0.1	0.0	0.000	1008	3.42	5.85	

Background Gas Levels:

	CH_4 (%)	CO_2 (%)	O_2 (%)	Atmos (mbar)
Before Monitoring	0.0	0.1	21.2	1008
After Monitoring	0.0	0.1	21.3	1009

Characteristic Gas Situation	
1	
2	
3	
4	

[1] The peak reading is the maximum recorded level during a monitoring event.

[2] The steady reading is the level which remained constant after approximately 1 minute.

TETRA TECH ENVIRONMENT

Geneva Building, Lakeview Drive, Sherwood Business Park, Annesley, Nottingham, NG15 0ED
Tel: 01623 684550

TETRA TECH

GROUNDWATER / GAS MONITORING RECORD SHEET

Client:	HE	**Job No.:**	B026948	**Instruments Used:**	GA5000
Project:	A46 Newark	**Date:**	30.11.21	**Make / Model:**	
Weather:	Frosty	**Monitored By:**	AH	**Serial Number:**	

Installation No.	Elevation of cover (m agl)	Peak [1]		Steady [2]					PID (ppm)	Total gas flow rate (l/hr)	Peak CH_4 flow rate (l/hr)	Peak CO_2 flow rate (l/hr)	Atmospheric Pressure (mbar)	Water Depth (mbgl)	Base Depth (m bgl)	Remarks
		CH_4 (% vol)	CO_2 (% vol)	CH_4 (% vol)	CO_2 (% vol)	O_2 (% vol)	CO (ppm)	H_2S (ppm)								
BH01	0.30	0.1	1.5	0.1	1.3	17.9	1	0	0.0	0.5	0.001	0.008	1008	1.10	14.30	
BH07	0.00	0.1	2.8	0.1	2.5	16.9	0	0	0.1	0.2	0.000	0.006	1009	1.13	4.00	
BH10	0.00	0.1	1.8	0.0	1.8	18.9	1	0	0.0	0.3	0.000	0.005	1007	1.75	4.24	
BH09	0.00	0.0	1.1	0.0	1.1	19.2	0	0	0.0	0.1	0.000	0.001	1008	1.29	4.35	
WS26	0.00	0.0	1.5	0.0	1.3	18.8	1	0	0.0	0.2	0.000	0.003	1007	1.73	3.25	
BH02	0.00	0.2	2.4	0.1	2.4	17.6	0	0	0.1	0.9	0.002	0.022	1009	1.10	4.30	
WS08	0.00	0.2	0.3	0.0	0.3	18.0	0	0	0.0	0.1	0.000	0.000	1008	1.19	4.88	
WS12	0.30	0.1	4.9	0.1	4.9	13.8	5	0	0.0	0.6	0.001	0.029	1007	0.55	2.44	
BH03A	0.00	0.2	5.5	0.2	5.5	17.2	0	0	0.0	0.4	0.001	0.022	1009	1.16	4.22	
WS15	0.30	0.1	3.5	0.1	3.5	17.7	1	0	0.0	0.1	0.000	0.004	1007	1.26	2.90	
WS31	0.00	0.1	4.4	0.0	4.4	17.9	1	0	1.0	0.1	0.000	0.004	1008	2.15	3.98	
WS25	0.30	0.0	1.1	0.0	1.1	18.4	1	0	0.0	0.1	0.000	0.001	1008	2.44	3.49	
BH56	0.25	0.0	2.5	0.0	2.5	18.0	1	0	1.0	0.8	0.000	0.020	1009	1.12	4.30	
BH05	0.00	0.1	0.7	0.0	0.7	17.9	1	0	0.1	0.1	0.000	0.001	1009	2.24	4.35	

Background Gas Levels:

	CH_4 (%)	CO_2 (%)	O_2 (%)	Atmos (mbar)
Before Monitoring	0.0	0.1	20.9	1008
After Monitoring	0.0	0.1	21.3	1009

Characteristic Gas Situation	
1	
2	
3	
4	

[1] The peak reading is the maximum recorded level during a monitoring event.

[2] The steady reading is the level which remained constant after approximately 1 minute.

TETRA TECH ENVIRONMENT

Geneva Building, Lakeview Drive, Sherwood Business Park, Annesley, Nottingham, NG15 0ED
Tel: 01623 684550

TETRA TECH

GROUNDWATER / GAS MONITORING RECORD SHEET

Client:	HE	**Job No.:**	784-B026948	**Instruments Used:**	
Project:	NNB	**Date:**	14.12.21	**Make / Model:**	Geotech GA5000
Weather:	Fair	**Monitored By:**	AH / JH	**Serial Number:**	

Installation No.	Elevation of cover (m agl)	Peak [1]		Steady [2]					PID (ppm)	Total gas flow rate (l/hr)	Peak CH_4 flow rate (l/hr)	Peak CO_2 flow rate (l/hr)	Atmospheric Pressure (mbar)	Water Depth (mbgl)	Base Depth (m bgl)	Remarks
		CH_4 (% vol)	CO_2 (% vol)	CH_4 (% vol)	CO_2 (% vol)	O_2 (% vol)	CO (ppm)	H_2S (ppm)								
WS67	0.00	0.3	2.5	0.3	2.5	19.2	0	0	0.0	0.2	0.001	0.005	1023	DRY	2.64	Dry at base
BH21	0.30	0.4	0.3	0.4	0.2	20.6	0	0	0.0	0.0	0.000	0.000	1023	3.80	5.30	
BH22	0.00	0.4	0.9	0.4	0.9	20.1	0	0	0.0	0.0	0.000	0.000	1024	4.13	4.67	
WS66	0.25	0.4	0.9	0.4	0.9	20.5	0	0	0.0	0.0	0.000	0.000	1024	2.74	2.84	
WS48	0.40	0.4	2.9	0.4	2.9	18.4	0	0	0.0	0.0	0.000	0.000	1025	DRY	1.92	damp at base
WS50	0.10	0.4	1.0	0.4	0.9	20.5	0	0	0.0	0.0	0.000	0.000	1024	1.96	2.89	
WS54	0.30	0.4	3.1	0.4	3.1	18.2	1	0	0.0	6.0	0.024	0.186	1024	0.80	4.42	
BH14	0.30	0.4	1.3	0.4	1.3	20.0	0	0	0.0	0.2	0.001	0.003	1024	2.10	4.06	
BH12	0.30	0.4	7.3	0.4	7.3	12.2	0	0	0.0	0.0	0.000	0.000	1024	2.71	4.66	
BH18	0.30	0.3	2.8	0.3	2.8	18.7	0	0	0.0	0.0	0.000	0.000	1024	2.46	6.69	
BH16	0.30	0.3	3.6	0.3	3.5	18.1	0	0	0.0	0.0	0.000	0.000	1025	3.41	4.91	
BH17	0.40	0.3	1.1	0.3	1.0	20.3	0	0	0.0	0.0	0.000	0.000	1024	2.19	17.20	
BH06	0.00	0.3	6.4	0.3	6.3	12.1	0	0	0.0	0.1	0.000	0.006	1024	2.12	4.21	
BH60	0.00	0.3	4.0	0.2	4.0	16.0	0	0	0.0	0.0	0.000	0.000	1025	1.50	4.78	
BH61	0.00	0.3	3.1	0.3	3.1	19.2	0	0	0.0	0.2	0.001	0.006	1024	1.22	5.62	
WS31	0.00	0.3	1.7	0.3	1.7	17.9	0	0	0.0	0.3	0.0	0.005	1024	1.82	3.99	

Background Gas Levels:

	CH_4 (%)	CO_2 (%)	O_2 (%)	Atmos (mbar)
Before Monitoring	0.2	0.1	21.0	1025
After Monitoring	0.0	0.1	20.1	1024

Characteristic Gas Situation	
1	
2	
3	
4	

[1] The peak reading is the maximum recorded level during a monitoring event.

[2] The steady reading is the level which remained constant after approximately 1 minute.

TETRA TECH ENVIRONMENT

Geneva Building, Lakeview Drive, Sherwood Business Park, Annesley, Nottingham, NG15 0ED
Tel: 01623 684550

TETRA TECH

GROUNDWATER / GAS MONITORING RECORD SHEET

Client:	HE	**Job No.:**	784-B026948	**Instruments Used:**	
Project:	NNB	**Date:**	15.12.21	**Make / Model:**	Geotech GA5000
Weather:	Fair	**Monitored By:**	AH / JH	**Serial Number:**	

Installation No.	Elevation of cover (m agl)	Peak [1]		Steady [2]					PID (ppm)	Total gas flow rate (l/hr)	Peak CH_4 flow rate (l/hr)	Peak CO_2 flow rate (l/hr)	Atmospheric Pressure (mbar)	Water Depth (mbgl)	Base Depth (m bgl)	Remarks
		CH_4 (% vol)	CO_2 (% vol)	CH_4 (% vol)	CO_2 (% vol)	O_2 (% vol)	CO (ppm)	H_2S (ppm)								
BH01	0.30	0.2	1.0	0.2	1.0	19.9	1	0	0.0	2.1	0.004	0.021	1027	1.12		
WS25	0.00	0.1	1.3	0.1	1.3	19.9	0	0	0.0	0.2	0.000	0.003	1027	1.96	3.27	
BH02																Unable to locate. Area covered in thick mud
BH19	0.00	0.0	5.8	0.0	5.8	3.5	0	0	0.0	0.1	0.000	0.006	1027	0.63	4.80	
BH03A	0.00	0.2	1.2	0.2	1.2	18.2	1	0	0.0	0.3	0.001	0.004	1028	1.54	4.22	
WS12	0.35	0.2	2.0	0.2	2.0	16.8	0	0	0.0	0.0	0.000	0.000	1028	0.89	2.44	
WS08	0.00	0.3	1.4	0.1	1.4	18.5	0	0	0.0	0.2	0.001	0.003	1028	1.24	4.88	Top hat cover flattened
WS15	0.20	0.1	1.7	0.1	1.7	19.0	0	0	0.0	0.1	0.000	0.002	1027	1.30	4.22	
BH09	0.00	0.2	1.0	0.2	1.0	16.7	1	0	0.0	5.9	0.012	0.059	1028	1.13	4.26	
BH10	0.00	0.2	0.3	0.2	0.3	20.5	0	0	0.0	0.3	0.001	0.001	1027	1.60	4.06	
BH05	0.00	0.2	1.0	0.2	1.0	19.4	0	0	0.0	0.1	0.000	0.001	1028	2.12	4.03	
BH56	0.25	0.2	2.3	0.2	2.3	19.2	0	0	0.0	0.3	0.001	0.007	1028	1.40	3.65	
BH07	0.00	0.1	2.0	0.1	2.0	18.8	0	0	0.0	0.2	0.000	0.004	1028	1.28	4.00	
WS26	0.30	0.1	2.0	0.1	2.0	18.0	1	0	0.0	0.3	0.000	0.006	1028	1.43	2.93	
BH11	0.0	0.1	0.3	0.1	0.3	16.4	1	0	0.0	0.1	0.000	0.000	1028	3.31	5.85	
BH15	0.30	0.2	4.0	0.1	3.9	16.6	2	0	0.0	0.1	0.0	0.004	1027	1.10	2.90	

Background Gas Levels:

	CH_4 (%)	CO_2 (%)	O_2 (%)	Atmos (mbar)
Before Monitoring	0.2	0.1	21.0	1027
After Monitoring	0.0	0.1	20.1	1028

Characteristic Gas Situation	
1	
2	
3	
4	

[1] The peak reading is the maximum recorded level during a monitoring event.

[2] The steady reading is the level which remained constant after approximately 1 minute.

TETRA TECH GEO-ENVIRONMENT

Geneva Building, Lake View Drive
Sherwood Business Park, Annesley
Notinghamshire, NG15 0ED

TETRA TECH

Groundwater Field Parameters Record Sheet

Client:	HE	**Job No.:**	**B026948**		
Project:	A46 Newark	**Date:**	**15-18/02/2022**	**Monitored By:**	**AH**
Weather:	Warm, sunny	**Round**	**3**	**Instruments Used:**	Peristaltic pump and AquaTroll

Installation	Intake level	pH	Temp	Actual Conductivity	Specific Conductivity	Dissolved oxygen	Dissolved oxygen	Redox	ORP	Density	Salinity	TDS	Water depth	Base depth
No.	m bgl		°C	µS/cm	µS/cm	mg/L	% Saturation	pH/mV	mV	g/cm^3	%	ppm	mbgl	mbgl
BH06	3.5	7.90	10.34	2864.3	3321.00	4.00	67.5	5	48.3	2	0.44	0.9	2.23	4.09
BH60	3.5	6.92	9.33	4389.2	4921.10	6.3	52.45	3.2	47.2	1	0.99	1	1.52	5.79
BH61	3.50	6.45	10.03	1775.2	1807.20	4.33	47.5	3	55.3	2	0.55	0.55	1.54	5.62
BH03A	3	7.12	11.30	1401.2	1523.50	0.84	2.0	2	-12	2	0.69	1.1	1.45	4.22
WS12	1.5	6.75	11.97	1587.5	1739.40	0.53	5.7	-5	-11.3	2	0.49	0.5	0.69	2.44
WS54	2.50	6.34	10.10	1200.4	1300.00	0.72	5.5	38	15.12	1	0.87	0.65	1.125	4.43
BH01	10.00	7.25	10.60	3003.9	3410.20	0.60	7.22	9.12	-4.4	1	0.83	0.66	1.5	14.3
BH02	2.50	8.01	11.20	783.9	900.02	0.65	7.2	-7.1	45.45	1	0.73	0.76	1.15	4.31

TETRA TECH GEO-ENVIRONMENT

Geneva Building, Lake View Drive
Sherwood Business Park, Annesley
Notinghamshire, NG15 0ED

TETRA TECH

Groundwater Field Parameters Record Sheet

Client:	HE	**Job No.:**	**B026948**			
Project:	A46 Newark	**Date:**	**15-18/02/2022**	**Monitored By:**	**AH**	
Weather:	Warm, sunny	**Round**	**3**	**Instruments Used:**	Peristaltic pump and AquaTroll	

Installation No.	Intake level m bgl	pH	Temp °C	Actual Conductivity µS/cm	Specific Conductivity µS/cm	Dissolved oxygen mg/L	Dissolved oxygen % Saturation	Redox pH/mV	ORP mV	Density g/cm^3	Salinity %	TDS ppm	Water depth mbgl	Base depth mbgl
BH14	3	8.10	10.72	2204.2	2899.30	1.10	7.0	-11.5	-2	1	1.34	2.1	2.45	4.13
WS08	3.5	7.80	11.40	1001.1	999.56	1.19	7.2	-87	-3.2	1	1.5	0.66	1.32	4.88
WS15	2.5	7.50	10.34	993.3	1002.10	4.35	28.4	4.2	58.36	1	0.56	0.32	1.5	2.9
BH56	3.50	6.90	10.68	1234.5	1746.30	2.86	12.7	-8	83.95	1	0.66	1.01	1.34	4.3
WS25	3	8.20	9.59	1432.8	1586.40	1.34	5.8	-9.869	82	1	0.81	1.42	2.77	3.49
WS26	3	7.30	11.20	813.5	100.20	5.87	48.3	4.3	36.34	1	0.74	0.88	2.16	3.25
WS31	3.5	7.45	10.85	884.3	936.50	5.34	45.5	2.11	58.45	1	0.87	0.71	2.55	3.98
BH07	3.00	7.80	13.33	1866.2	2476.90	1.22	9.3	-13.2	74.3	1	0.99	1.1	1.55	4

TETRA TECH GEO-ENVIRONMENT

Geneva Building, Lake View Drive
Sherwood Business Park, Annesley
Notinghamshire, NG15 0ED

TETRA TECH

Groundwater Field Parameters Record Sheet

Client:	HE	**Job No.:**	**B026948**			
Project:	A46 Newark	**Date:**	**15-18/02/2022**	**Monitored By:**	**AH**	
Weather:	Warm, sunny	**Round**	**3**	**Instruments Used:**	Peristaltic pump and AquaTroll	

Installation	Intake level	pH	Temp	Actual Conductivity	Specific Conductivity	Dissolved oxygen	Dissolved oxygen	Redox	ORP	Density	Salinity	TDS	Water depth	Base depth
No.	m bgl		°C	µS/cm	µS/cm	mg/L	% Saturation	pH/mV	mV	g/cm^3	%	ppm	mbgl	mbgl
BH09	3.5	8.20	11.21	965.6	1176.50	1.54	10.34	-10	39.5	1	0.88	0.65	1.54	4.35
BH10	3.5	7.30	10.85	2048.9	2365.70	1.23	7.0	1.5	5.6	1	1.45	2.04	2.045	4.24
BH11	4.5	8.30	11.20	1799.6	23033.40	0.77	3.4	-25.8	0.99	1	1.24	2.05	3.63	5.89
BH15	3	7.34	10.34	2789.4	3256.00	0.97	5.45	-34.5	84.3	1	2.43	2	2.32	3.32
BH12	3.5	7.20	10.45	1998.6	2265.50	1.34	7.1	-4.67	-0.9	1	2.35	1.78	2.75	4.75
BH19	3.5	7.30	11.48	2621.1	2567.20	0.85	4.0	6.7	85.67	1	0.99	1.19	1.09	4.85
BH22	5	6.73	9.56	1103.0	1452.20	7.87	55.3	-9.45	76	1	0.66	1.2	2.4	5.75

TETRA TECH GEO-ENVIRONMENT

Geneva Building, Lake View Drive

Sherwood Business Park, Annesley

Notinghamshire, NG15 0ED

TETRA TECH

Groundwater Field Parameters Record Sheet

Client:	HE			**Job No.:**	**B026948**									
Project:	A46 Newark			**Date:**	**15-18/02/2022**			**Monitored By:**			**AH**			
Weather:	Warm, sunny			**Round**	**3**			**Instruments Used:**			Peristaltic pump and AquaTroll			
Installation No.	Intake level m bgl	pH	Temp °C	Actual Conductivity µS/cm	Specific Conductivity µS/cm	Dissolved oxygen mg/L	Dissolved oxygen % Saturation	Redox pH/mV	ORP mV	Density g/cm^3	Salinity %	TDS ppm	Water depth mbgl	Base depth mbgl
BH21	4.5	6.72	11.02	704.1	846.77	10.20	61.11	-10	201.2	5.01	1.1	0.88	3.86	5.5
BH16	4.5	8.10	9.78	2001.2	2978.80	55.8	-10	150.2	8	8.3	3.11	5.02	3.52	5.95
BH18	5.00	8.20	10.13	1822.0	2997.30	5.10	19.3	-10.3	238	10	0.76	1.32	2.025	6.98
BH17	6.5	7.91	10.58	1875.1	1898.60	8.03	88	-1.01	287.4	3.1	1.21	1.08	2.54	17.72

APPENDIX E – GEOTECHNICAL LABORATORY TEST RESULTS

LABORATORY REPORT

4043

Contract Number: PSL21/3476

Report Date: 07 June 2021

Client's Reference: 784-B026948

Client Name: Tetra Tech
54 Hagley Road
Birmingham
B16 8PE

For the attention of: Nicholas Bool

Contract Title: A46 Newark NNB

Date Received: 28/4/2021
Date Commenced: 28/4/2021
Date Completed: 7/6/2021

Notes: Opinions and Interpretations are outside the UKAS Accreditation

Checked and Approved Signatories:

A Watkins (Director)
[redacted]

R Berriman (Quality Manager)

S Royle (Laboratory Manager)

L Knight (Assistant Laboratory Manager)

S Eyre (Senior Technician)

T Watkins (Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AR
[redacted]

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH17	6	B	0.60	1.20	Brown gravelly silty SAND.
BH21	6	B	0.80	1.20	Brown very gravelly slightly clayey silty SAND.
TP34	4	B	0.60	1.00	Brown very gravelly silty SAND.
TP37	3	B	0.40	0.80	Brown very gravelly silty SAND.
TP43	5	B	0.80	1.20	Brown very gravelly slightly silty SAND.
TP44	4	B	0.80	1.20	Brown very gravelly slightly silty SAND.
TP45	5	B	1.00	1.20	Brown very gravelly silty SAND.
TP46	4	B	1.00	1.20	Brown slightly gravelly clayey silty SAND.
TP47	4	B	0.90	1.20	Brown very gravelly clayey silty SAND.
TP50	4	B	0.90	1.20	Brown slightly gravelly clayey SAND.
WS46	6	B	1.00	1.20	MADE GROUND dark brown very gravelly slightly clayey silty sand.
WS46	14	B	3.20	3.60	Brown very gravelly slightly clayey silty SAND.
WS46	17	B	4.20	4.50	Brown very sandy slightly silty GRAVEL.
WS46	12	D	2.60	2.60	Brown gravelly slightly clayey silty SAND.
WS48	9	B	2.50	2.80	Brown very gravelly slightly clayey silty SAND.
WS48	12	B	3.50	3.80	Brown very gravelly slightly silty SAND.
WS48	14	B	4.50	4.80	Brown gravelly silty SAND.
WS48	4	B	0.70	1.00	MADE GROUND dark brown silty sand & gravel.
WS48	15	D	5.00	5.00	Brown gravelly slightly clayey silty SAND.

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
WS50A	7	B	1.60	1.90	Brown slightly sandy CLAY.
WS50A	12	B	3.20	3.70	Brown very sandy slightly silty GRAVEL.
WS50A	5	D	1.20	1.20	Brown slightly sandy CLAY.
WS50A	8	D	2.00	2.00	Brown slightly sandy CLAY.
WS54	4	B	0.80	1.20	Brown slightly sandy CLAY.
WS54	11	B	3.20	3.60	Brown slightly gravelly slightly sandy organic CLAY.
WS54	13	B	4.80	5.00	Brown very sandy slightly silty GRAVEL.
WS54	7	D	2.00	2.00	Brown slightly sandy CLAY.
WS54	10	D	3.00	3.00	Brown slightly gravelly slightly sandy CLAY with some organic material.
WS54	12	D	4.00	4.00	Brown slightly gravelly sandy CLAY.
WS57	6	B	1.00	1.20	Brown gravelly slightly silty SAND.
WS57	9	B	2.00	2.50	Brown slightly gravelly silty SAND.
WS57	10	B	2.60	3.00	Brown slightly gravelly very clayey SAND.
WS57	12	B	3.50	4.00	Brown very gravelly very clayey SAND.
WS57	14	B	5.50	6.00	Brown very gravelly very clayey SAND.
WS64	5	B	0.80	1.20	Brown gravelly silty SAND.
WS64	10	B	3.30	3.60	Brown gravelly slightly clayey silty SAND.
WS65	3	B	0.20	0.50	Brown TOPSOIL.
WS65	7	B	1.50	2.00	Reddish brown slightly gravelly silty SAND.

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
WS66	9	B	2.30	2.60	Reddish brown slightly gravelly slightly clayey very silty SAND.
WS67	6	B	1.30	1.60	Brown very gravelly silty SAND.
WS68	5	B	0.80	1.20	Brown very gravelly slightly clayey silty SAND.
WS68	8	B	2.00	2.50	Brown gravelly silty SAND.
WS68	10	B	3.00	3.50	Brown gravelly silty SAND.
WS68	12	D	4.00	4.00	Brown very gravelly silty SAND.
WS69	14	B	5.00	5.20	Brown very sandy slightly silty GRAVEL.
WS71	5	B	0.80	1.20	Brown slightly gravelly slightly silty SAND.
WS71	8	B	2.00	2.30	Brown slightly gravelly silty SAND.
WS72	2	B	0.40	0.70	Brown very gravelly silty SAND.
WS72	12	B	4.00	4.30	Brown slightly gravelly slightly clayey silty SAND.
WS72	13	D	4.80	4.80	Brown slightly gravelly very sandy CLAY.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
WS46	12	D	2.60	2.60	15				NP			
WS50A	5	D	1.20	1.20	33			65	27	38	100	High Plasticity CH
WS50A	8	D	2.00	2.00	28			58	25	33	100	High Plasticity CH
WS54	4	B	0.80	1.20	37			68	30	38	97	High Plasticity CH
WS54	7	D	2.00	2.00	34			63	26	37	100	High Plasticity CH
WS54	10	D	3.00	3.00	53			68	29	39	96	High Plasticity CH
WS54	12	D	4.00	4.00	27			47	23	24	91	Intermediate Plasticity CI
WS57	10	B	2.60	3.00	11			30	14	16	97	Low Plasticity CL
WS65	3	B	0.20	0.50	9.3			28	15	13	70	Low Plasticity CL
WS68	5	B	0.80	1.20	6.2				NP			
WS68	10	B	3.00	3.50	12				NP			
WS72	13	D	4.80	4.80	25			27	13	14	96	Low Plasticity CL

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL Professional Soils Laboratory

A46 Newark NNB

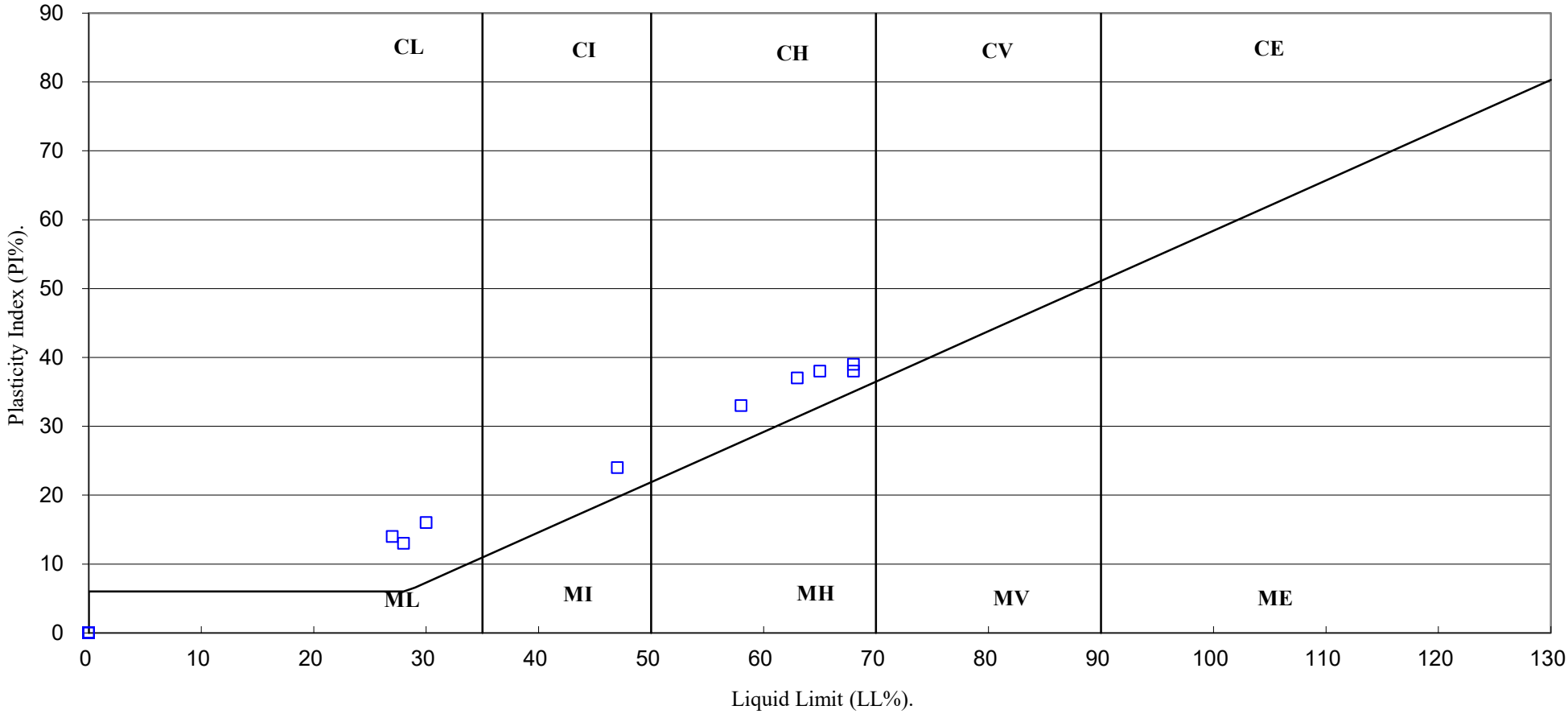
Contract No:

PSL21/3476

Client Ref:

784-B026948

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



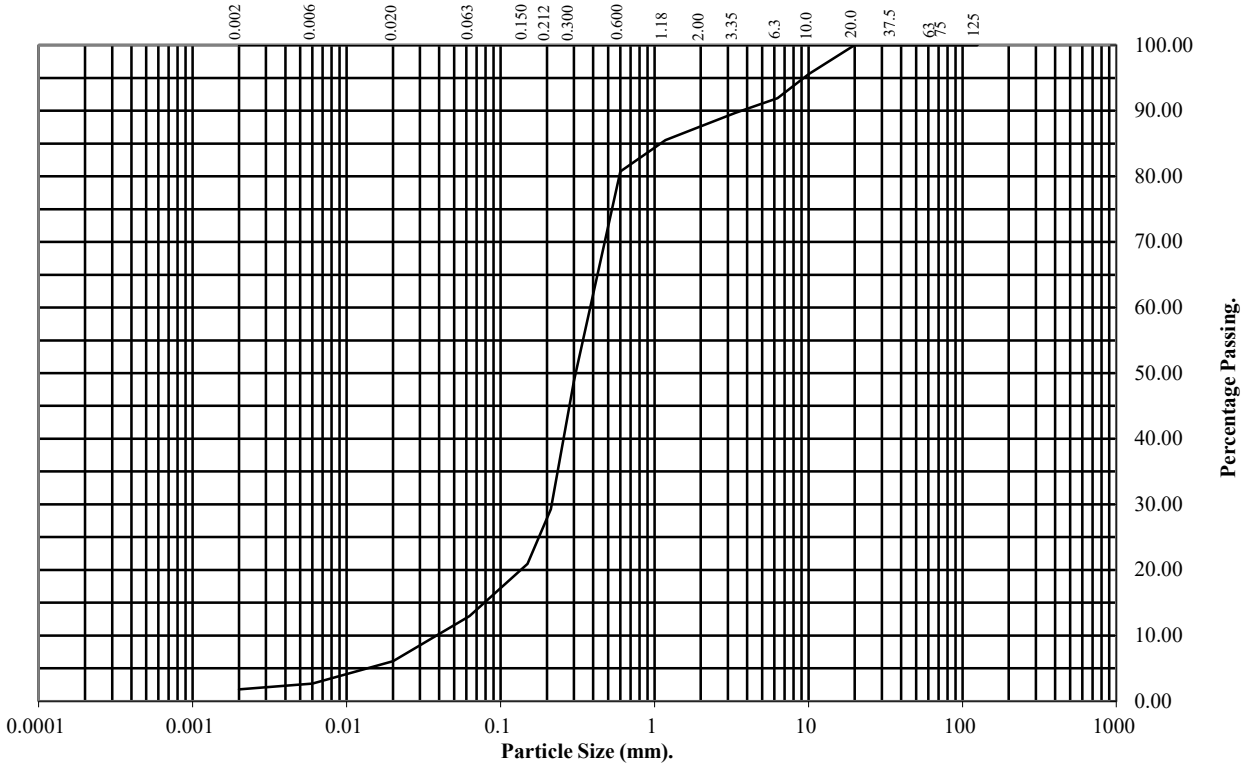
UKAS TESTING 4043	PSL Professional Soils Laboratory	A46 Newark NNB	Contract No: PSL21/3476 Client Ref: 784-B026948

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH17**	**Top Depth (m):**	**0.60**
Sample Number:	**6**	**Base Depth(m):**	**1.20**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	96
6.3	92
3.35	90
2	88
1.18	86
0.6	81
0.3	49
0.212	29
0.15	21
0.063	13

Particle Diameter	Percentage Passing
0.02	6
0.006	3
0.002	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	12
Sand	75
Silt	11
Clay	2

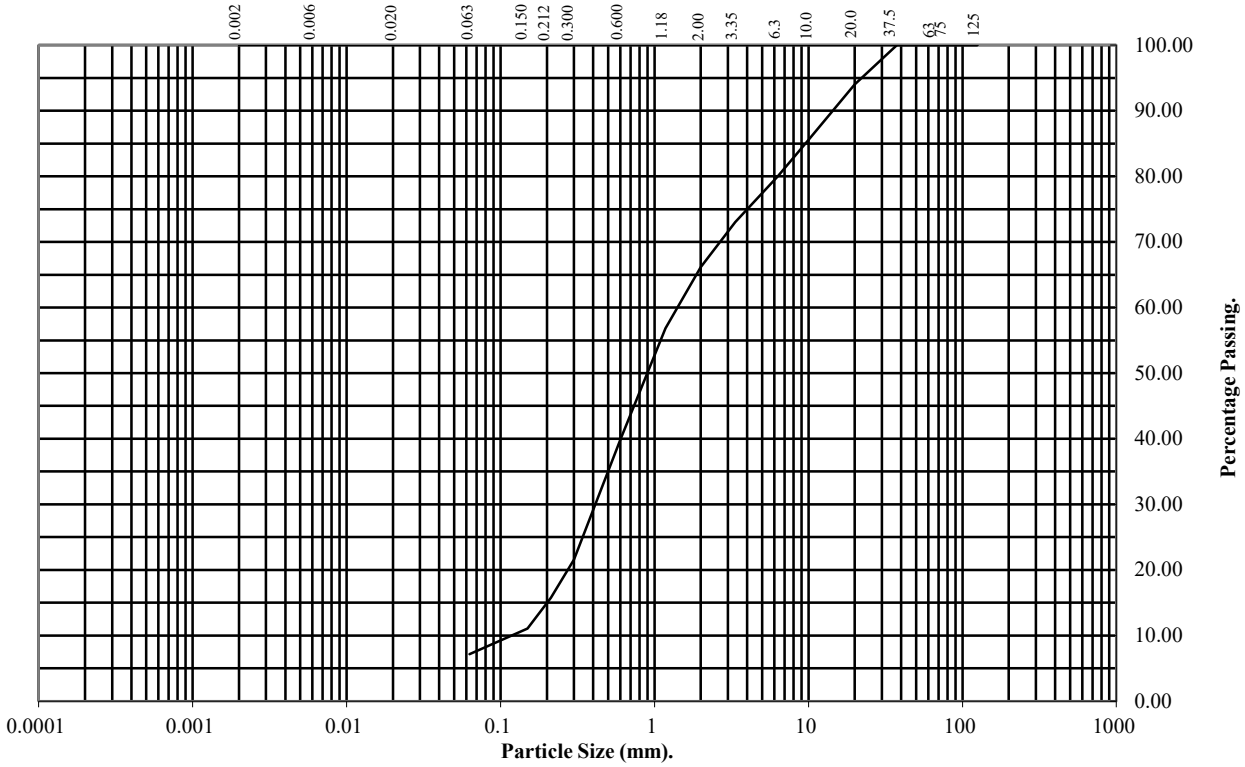
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH21**	**Top Depth (m):**	**0.80**
Sample Number:	**6**	**Base Depth(m):**	**1.20**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	94
10	86
6.3	80
3.35	73
2	66
1.18	57
0.6	40
0.3	22
0.212	16
0.15	11
0.063	7

Soil Fraction	Total Percentage
Cobbles	0
Gravel	34
Sand	59
Silt/Clay	7

Remarks:

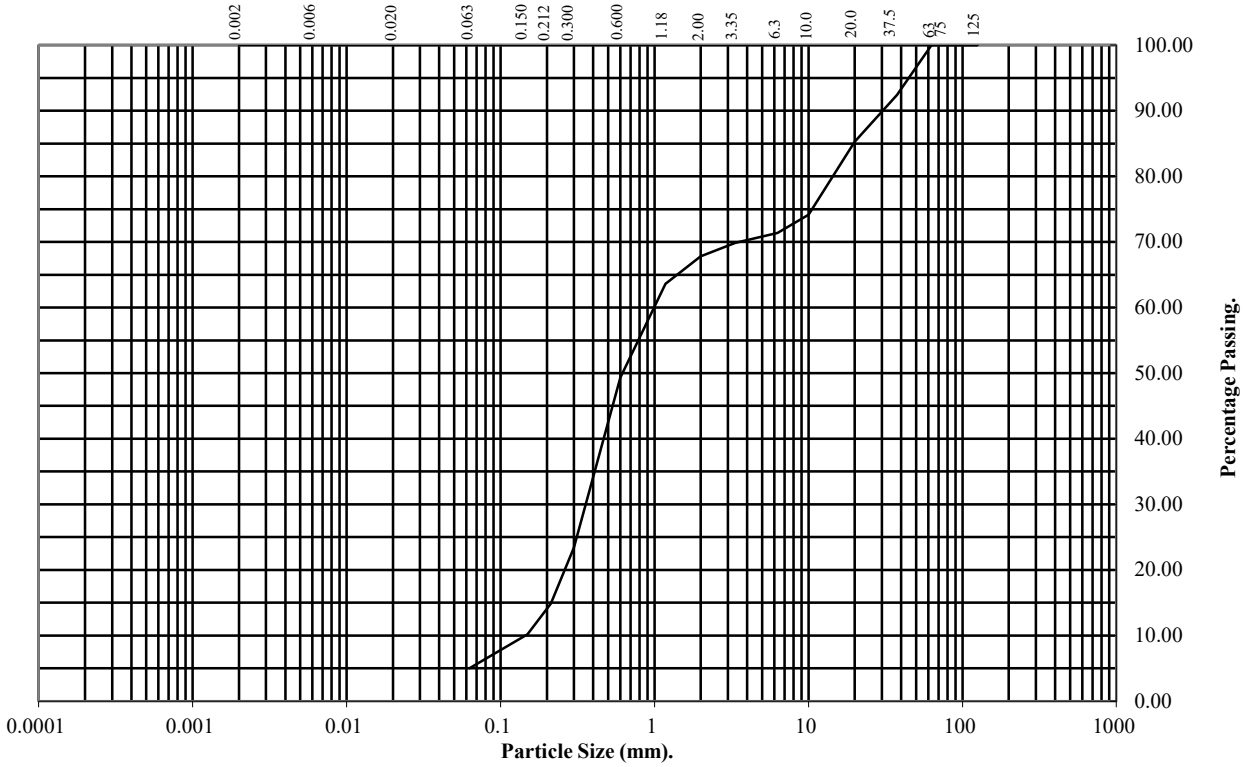
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**TP34**	**Top Depth (m):**	**0.60**
Sample Number:	**4**	**Base Depth(m):**	**1.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	92
20	85
10	74
6.3	71
3.35	70
2	68
1.18	64
0.6	49
0.3	23
0.212	15
0.15	10
0.063	5

Soil Fraction	Total Percentage
Cobbles	0
Gravel	32
Sand	63
Silt/Clay	5

Remarks:

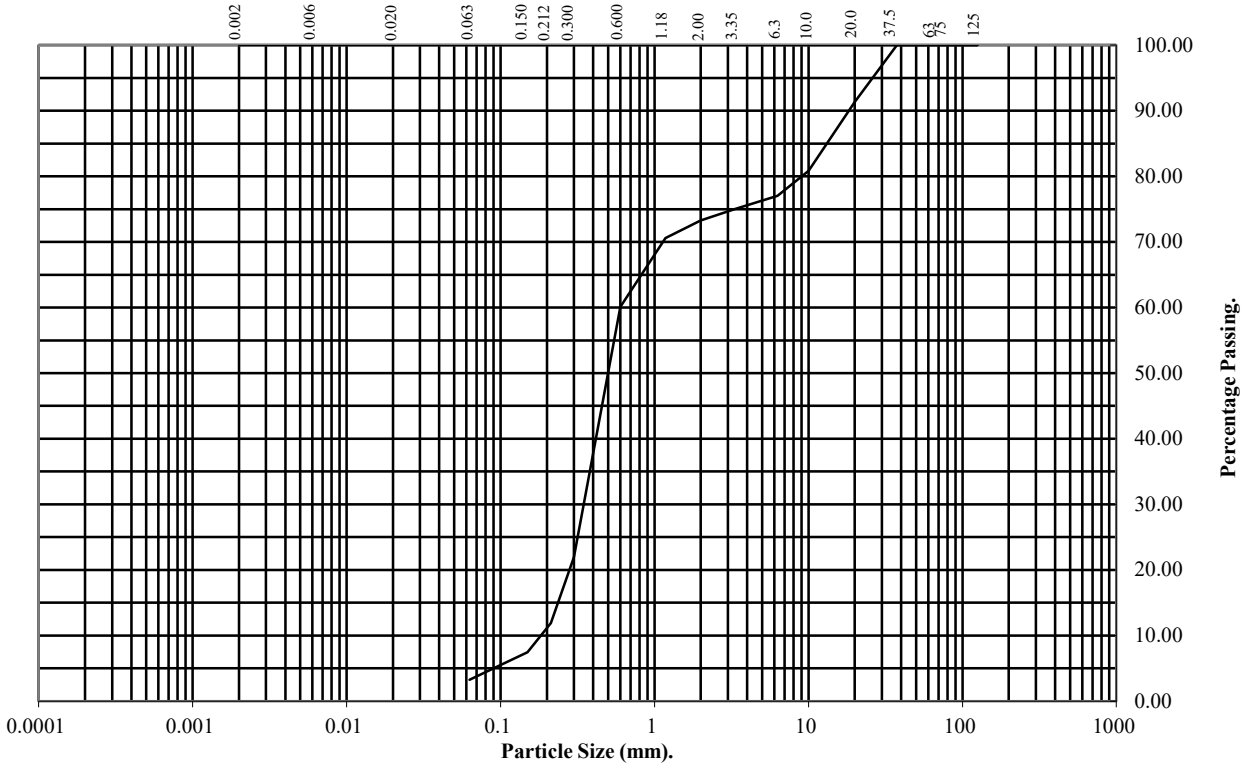
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**TP37**	**Top Depth (m):**	**0.40**
Sample Number:	**3**	**Base Depth(m):**	**0.80**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	91
10	81
6.3	77
3.35	75
2	73
1.18	71
0.6	60
0.3	22
0.212	12
0.15	7
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	27
Sand	70
Silt/Clay	3

Remarks:

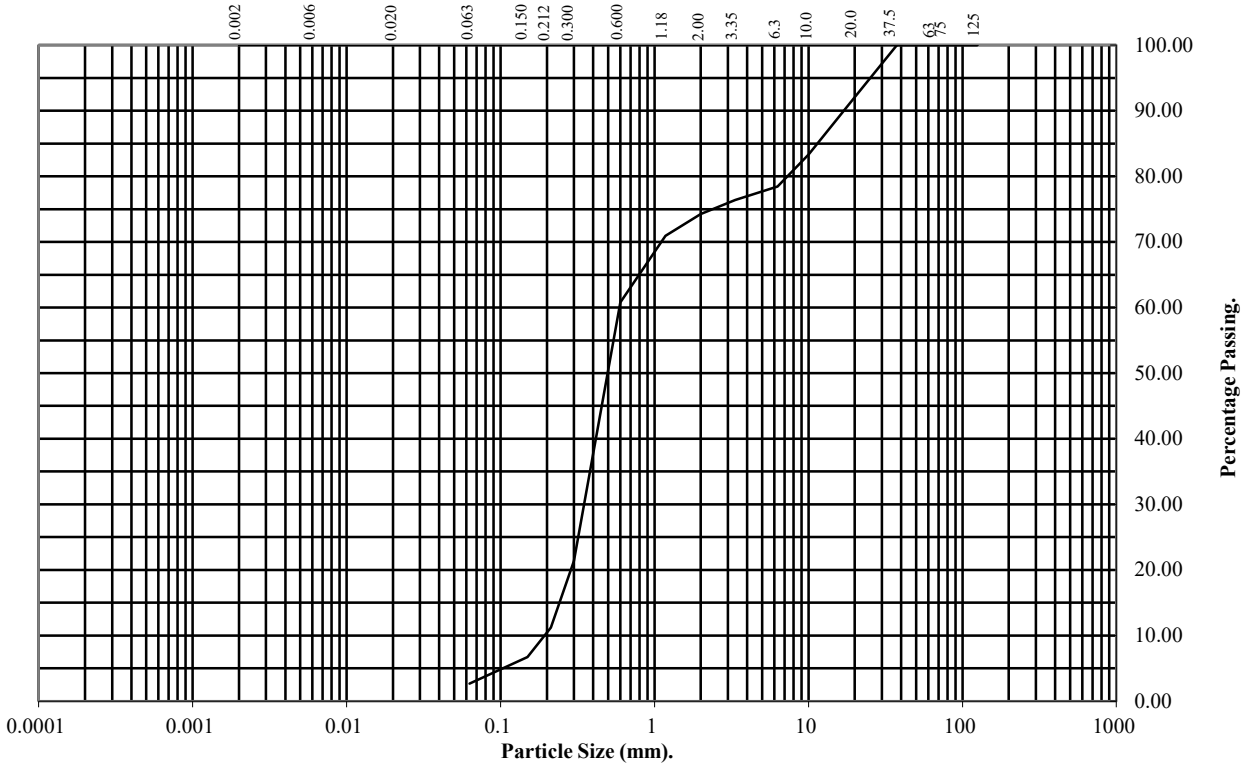
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**TP43**	**Top Depth (m):**	**0.80**
Sample Number:	**5**	**Base Depth(m):**	**1.20**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	92
10	83
6.3	78
3.35	76
2	74
1.18	71
0.6	61
0.3	21
0.212	11
0.15	7
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	26
Sand	71
Silt/Clay	3

Remarks:

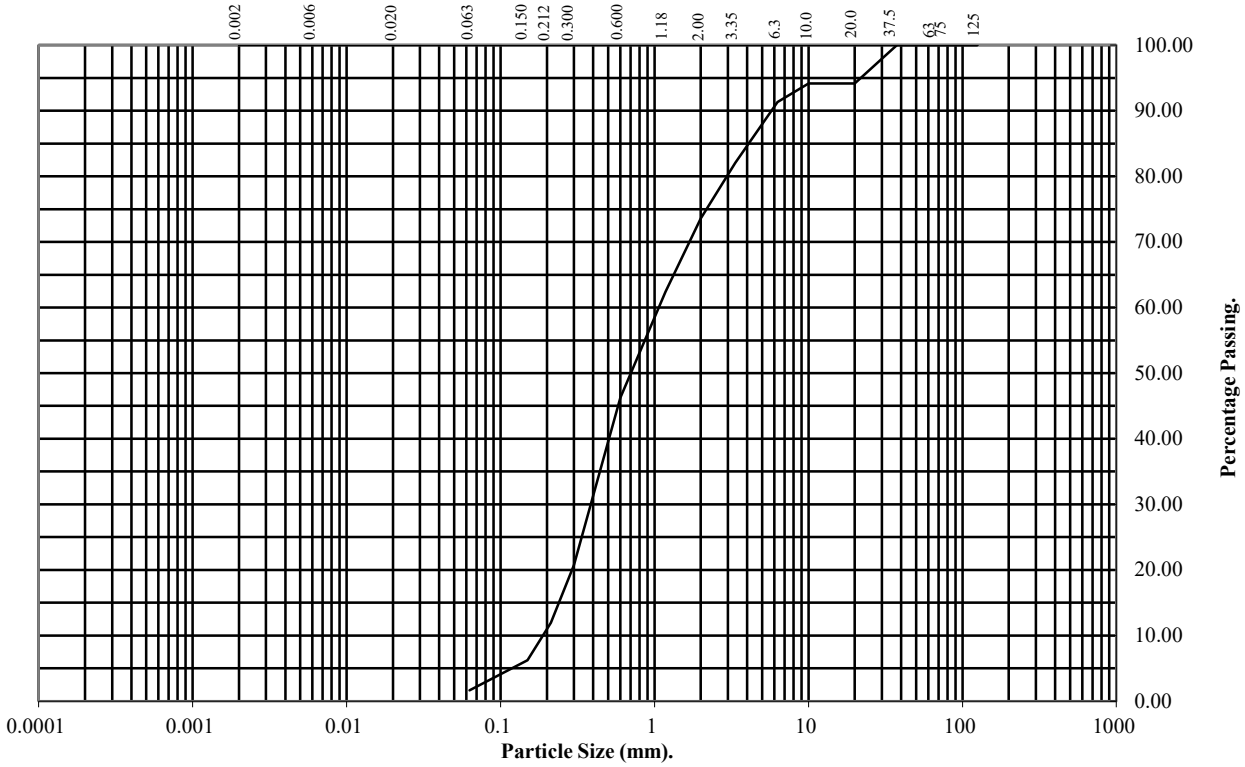
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**TP44**	**Top Depth (m):**	**0.80**
Sample Number:	**4**	**Base Depth(m):**	**1.20**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	94
10	94
6.3	91
3.35	82
2	74
1.18	62
0.6	46
0.3	21
0.212	12
0.15	6
0.063	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	26
Sand	72
Silt/Clay	2

Remarks:

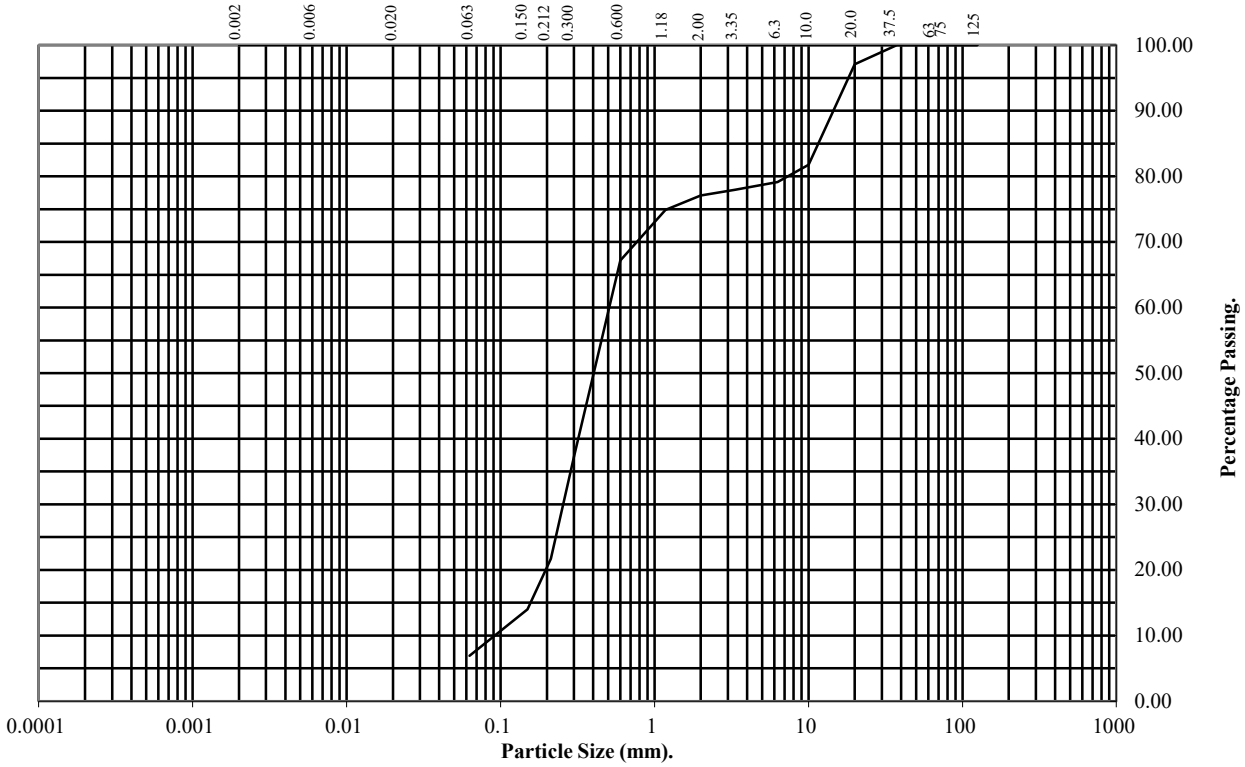
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**TP45**	**Top Depth (m):**	**1.00**
Sample Number:	**5**	**Base Depth(m):**	**1.20**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	97
10	82
6.3	79
3.35	78
2	77
1.18	75
0.6	67
0.3	37
0.212	22
0.15	14
0.063	7

Soil Fraction	Total Percentage
Cobbles	0
Gravel	23
Sand	70
Silt/Clay	7

Remarks:

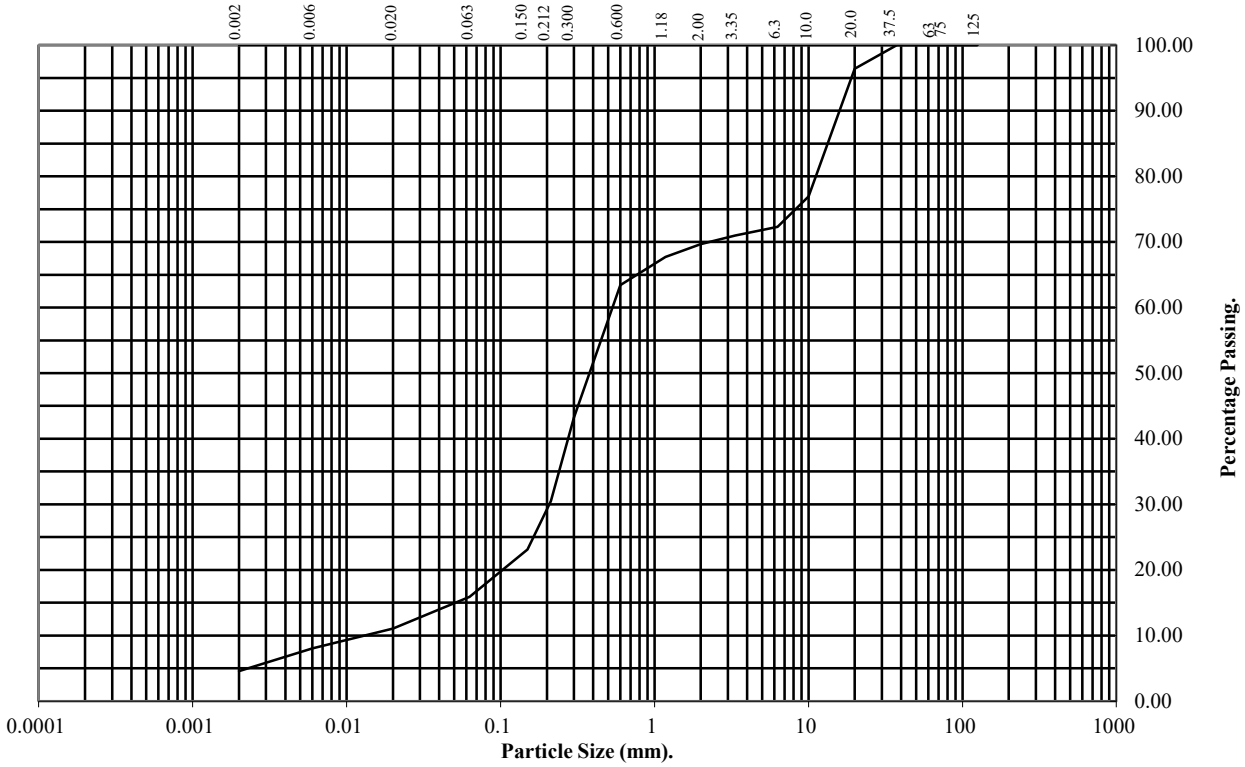
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**TP47**	**Top Depth (m):**	**0.90**
Sample Number:	**4**	**Base Depth(m):**	**1.20**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	96
10	77
6.3	72
3.35	71
2	70
1.18	68
0.6	63
0.3	43
0.212	31
0.15	23
0.063	16

Particle Diameter	Percentage Passing
0.02	11
0.006	8
0.002	5

Soil Fraction	Total Percentage
Cobbles	0
Gravel	30
Sand	54
Silt	11
Clay	5

Remarks:

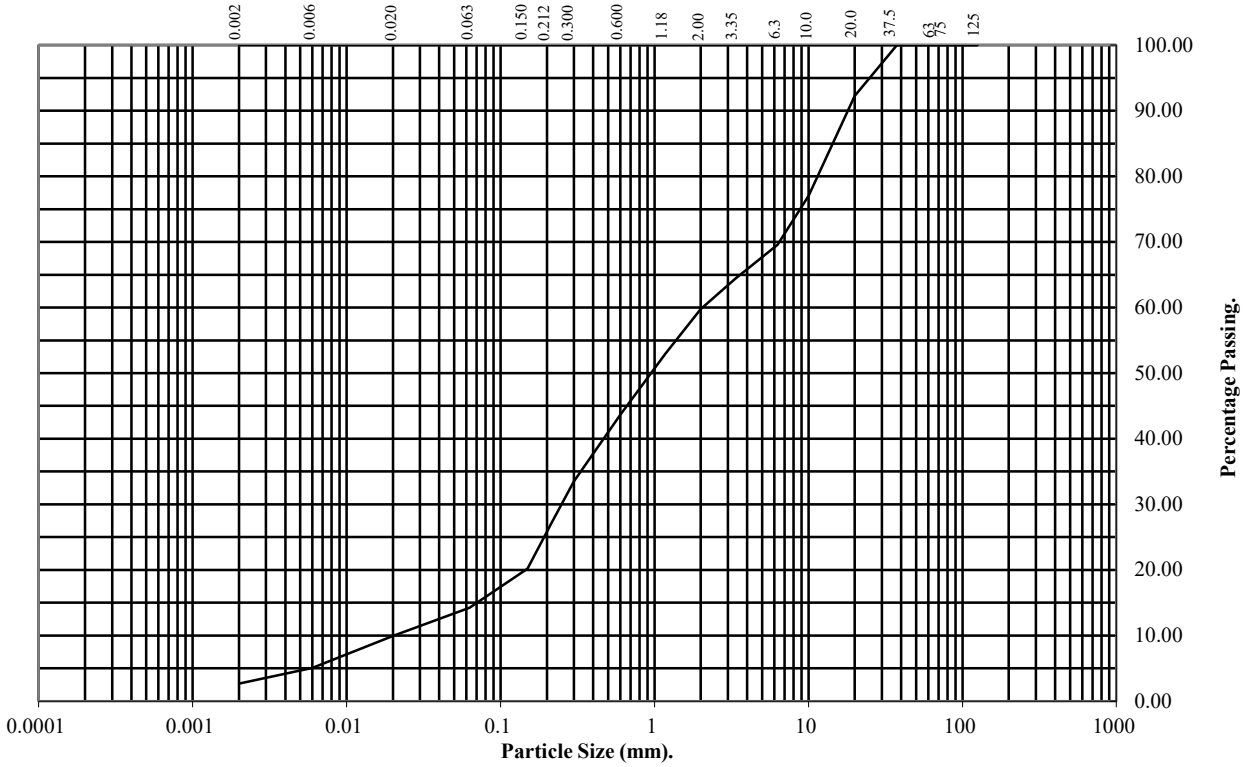
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**WS46**	**Top Depth (m):**	**1.00**
Sample Number:	**6**	**Base Depth(m):**	**1.20**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	92
10	77
6.3	70
3.35	64
2	60
1.18	53
0.6	44
0.3	34
0.212	27
0.15	20
0.063	14

Particle Diameter	Percentage Passing
0.02	10
0.006	5
0.002	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	40
Sand	46
Silt	11
Clay	3

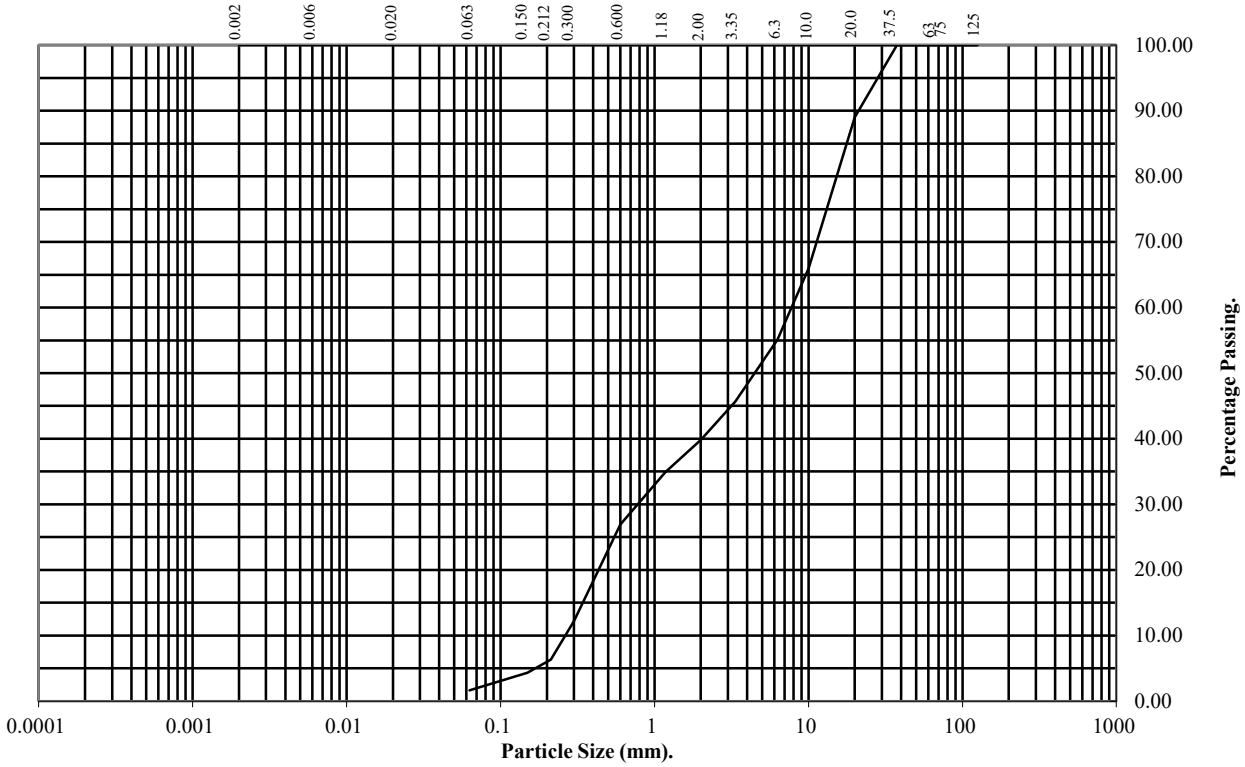
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS46**	**Top Depth (m):**	**4.20**
Sample Number:	**17**	**Base Depth(m):**	**4.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	89
10	66
6.3	55
3.35	46
2	40
1.18	35
0.6	27
0.3	12
0.212	6
0.15	4
0.063	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	60
Sand	38
Silt/Clay	2

Remarks:

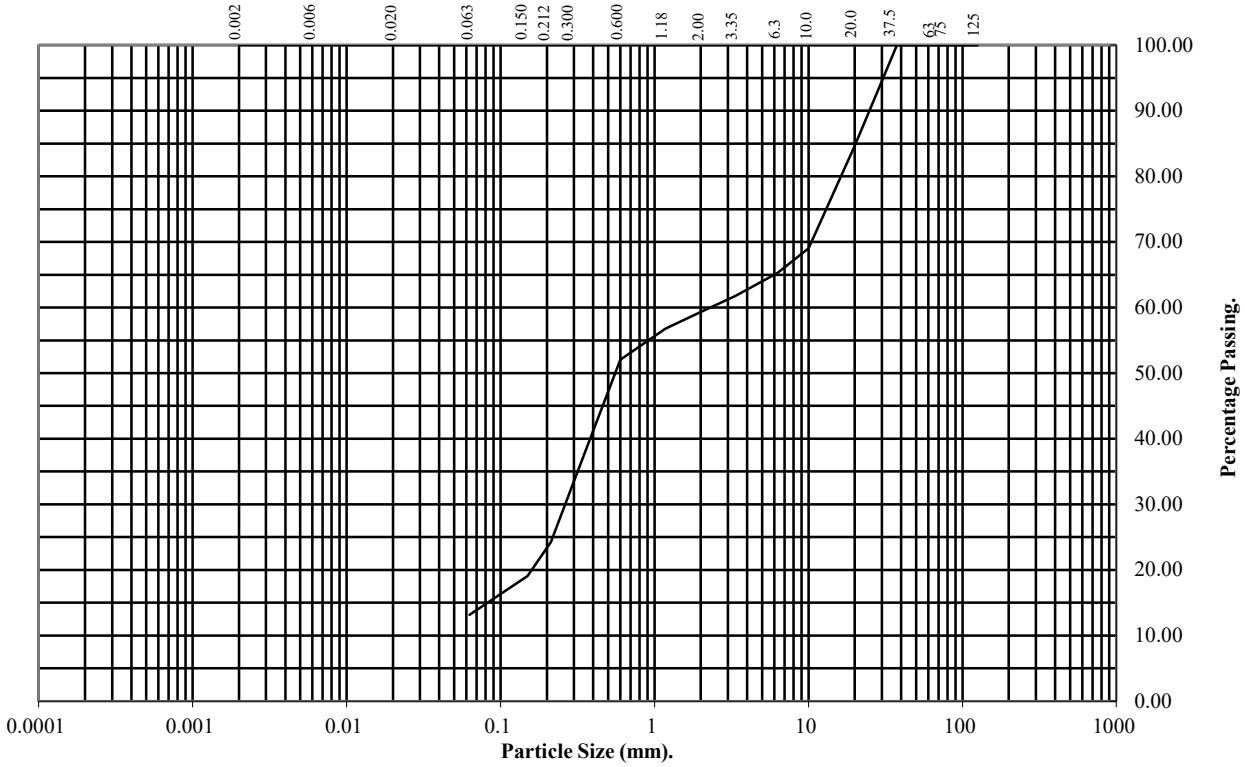
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS48**	**Top Depth (m):**	**0.70**
Sample Number:	**4**	**Base Depth(m):**	**1.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	85
10	69
6.3	65
3.35	62
2	59
1.18	57
0.6	52
0.3	33
0.212	24
0.15	19
0.063	13

Soil Fraction	Total Percentage
Cobbles	0
Gravel	41
Sand	46
Silt/Clay	13

Remarks:

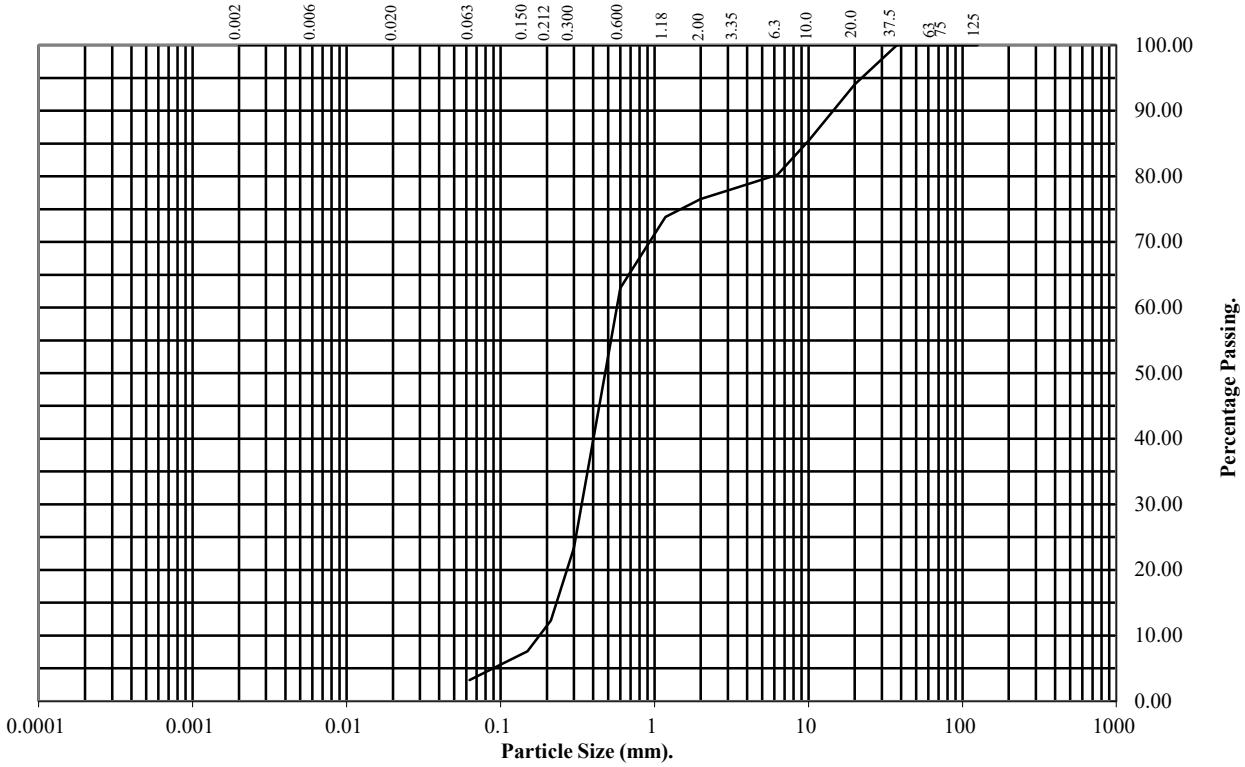
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS48**	**Top Depth (m):**	**3.50**
Sample Number:	**12**	**Base Depth(m):**	**3.80**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	94
10	85
6.3	80
3.35	78
2	77
1.18	74
0.6	63
0.3	23
0.212	12
0.15	8
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	23
Sand	74
Silt/Clay	3

Remarks:

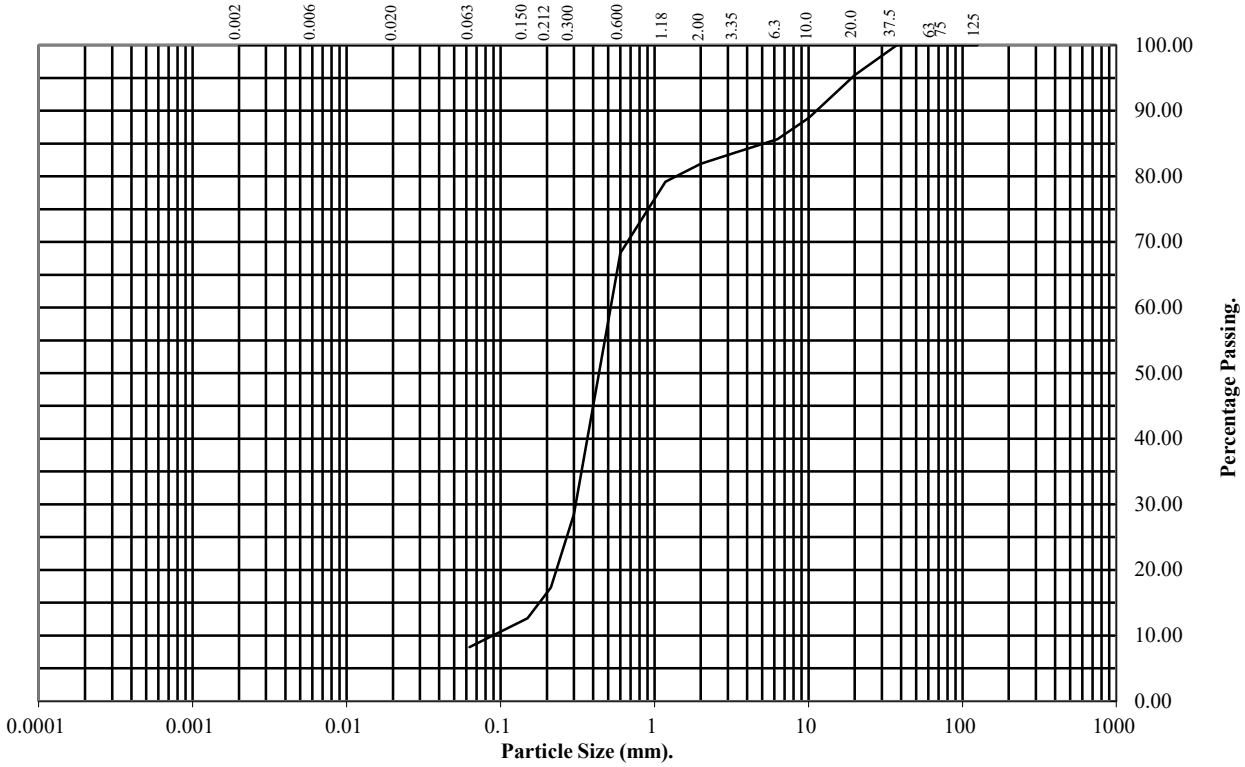
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS48**	**Top Depth (m):**	**5.00**
Sample Number:	**15**	**Base Depth(m):**	**5.00**
Sample Type:	**D**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	95
10	89
6.3	86
3.35	84
2	82
1.18	79
0.6	68
0.3	28
0.212	17
0.15	13
0.063	8

Soil Fraction	Total Percentage
Cobbles	0
Gravel	18
Sand	74
Silt/Clay	8

Remarks:

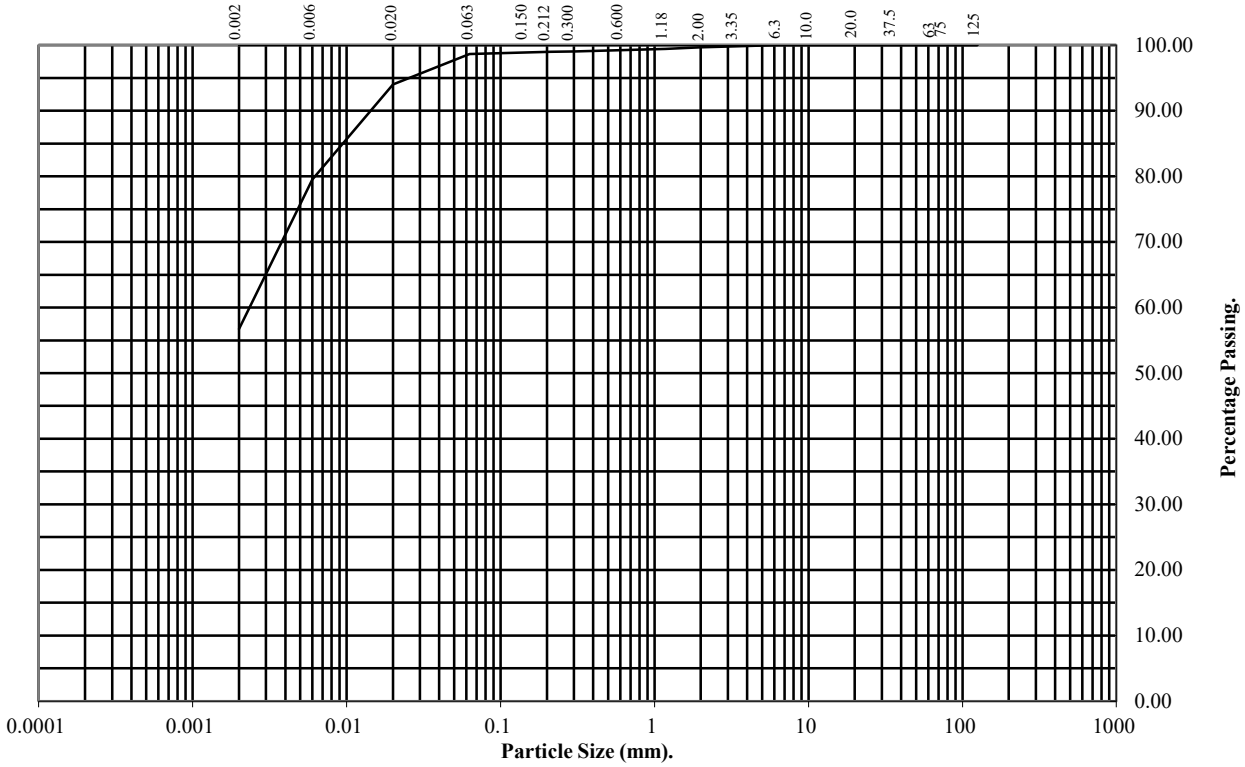
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**WS50A**	**Top Depth (m):**	**1.60**
Sample Number:	**7**	**Base Depth(m):**	**1.90**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	99
0.6	99
0.3	99
0.212	99
0.15	99
0.063	99

Particle Diameter	Percentage Passing
0.02	94
0.006	80
0.002	57

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	1
Silt	42
Clay	57

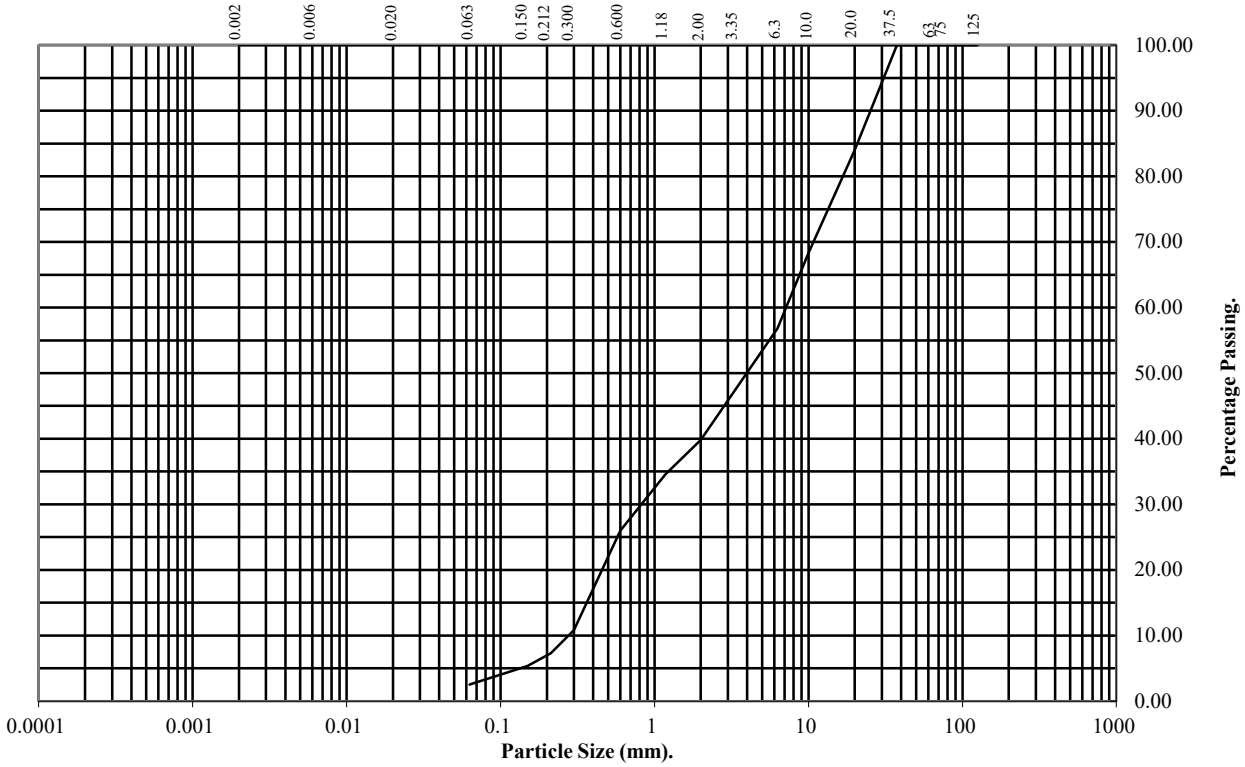
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS50A**	**Top Depth (m):**	**3.20**
Sample Number:	**12**	**Base Depth(m):**	**3.70**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	84
10	68
6.3	57
3.35	47
2	40
1.18	35
0.6	26
0.3	11
0.212	7
0.15	5
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	60
Sand	37
Silt/Clay	3

Remarks:

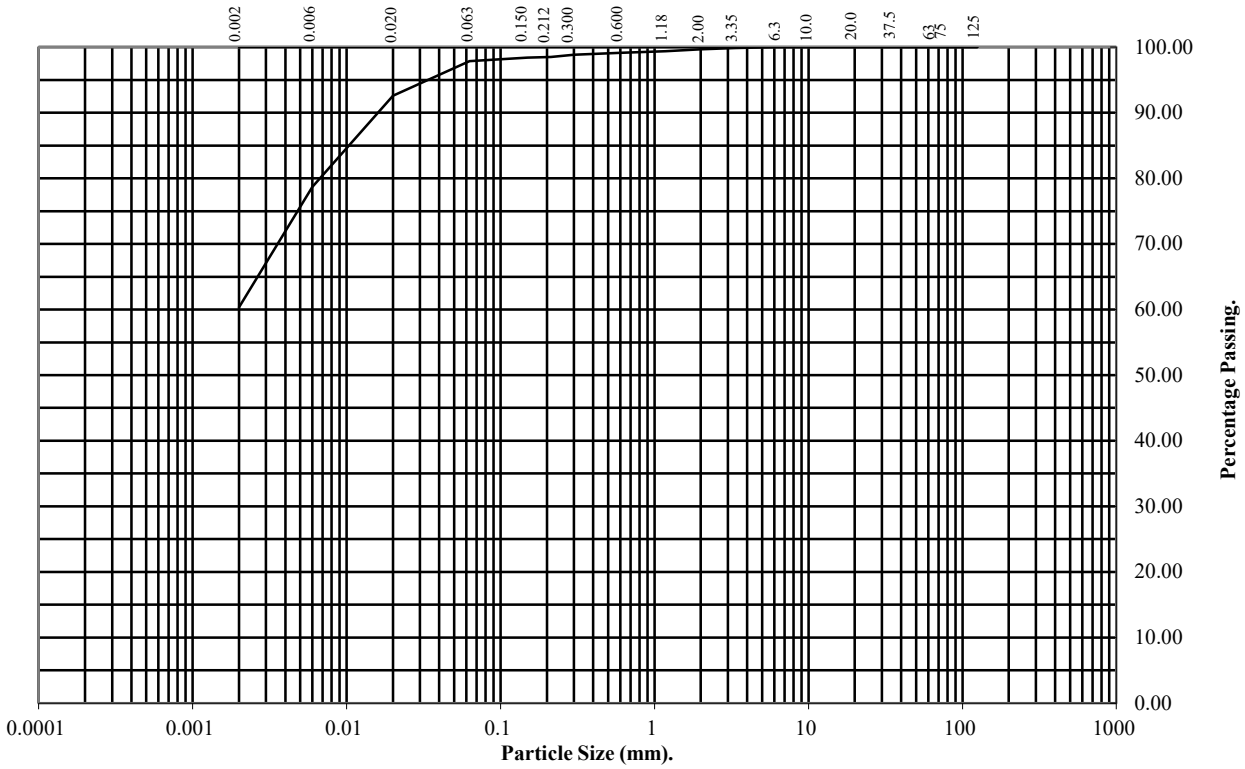
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**WS54**	**Top Depth (m):**	**0.80**
Sample Number:	**4**	**Base Depth(m):**	**1.20**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	99
0.6	99
0.3	99
0.212	99
0.15	98
0.063	98

Particle Diameter	Percentage Passing
0.02	93
0.006	79
0.002	60

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	2
Silt	38
Clay	60

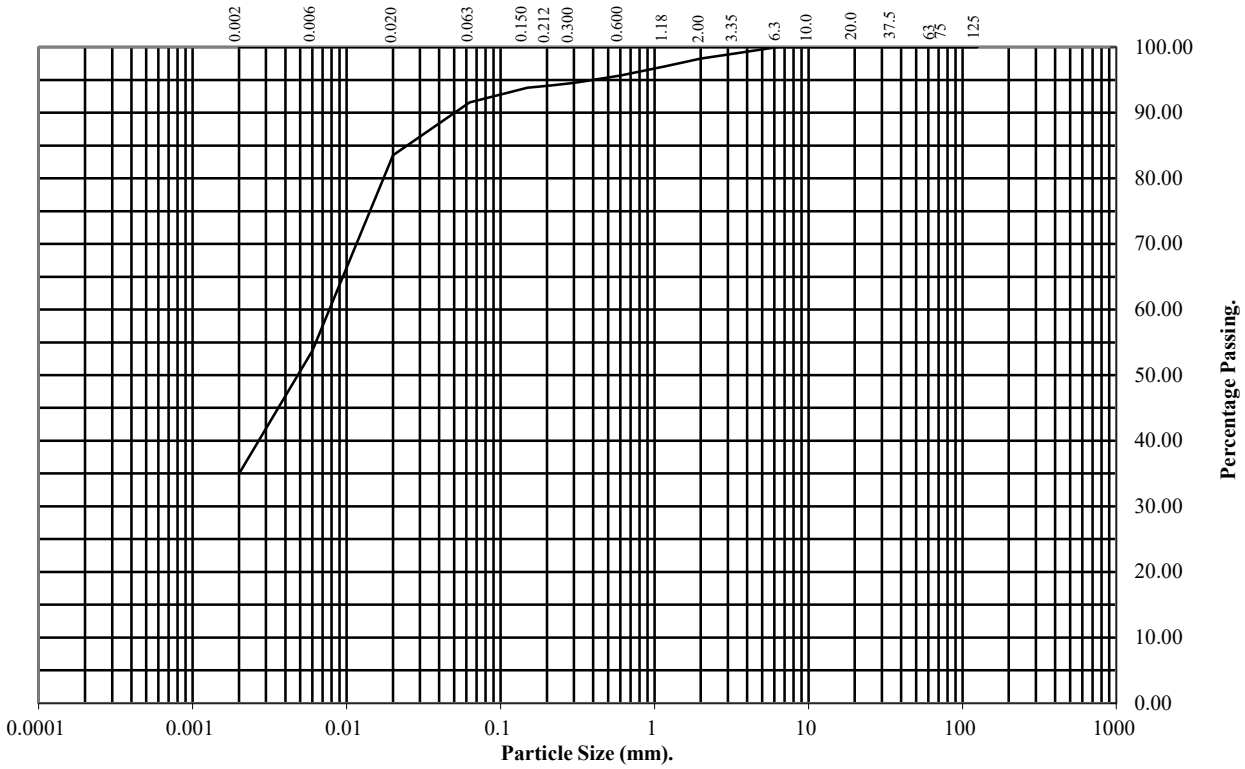
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**WS54**	**Top Depth (m):**	**3.20**
Sample Number:	**11**	**Base Depth(m):**	**3.60**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	99
2	98
1.18	97
0.6	96
0.3	95
0.212	94
0.15	94
0.063	92

Particle Diameter	Percentage Passing
0.02	84
0.006	54
0.002	35

Soil Fraction	Total Percentage
Cobbles	0
Gravel	2
Sand	6
Silt	57
Clay	35

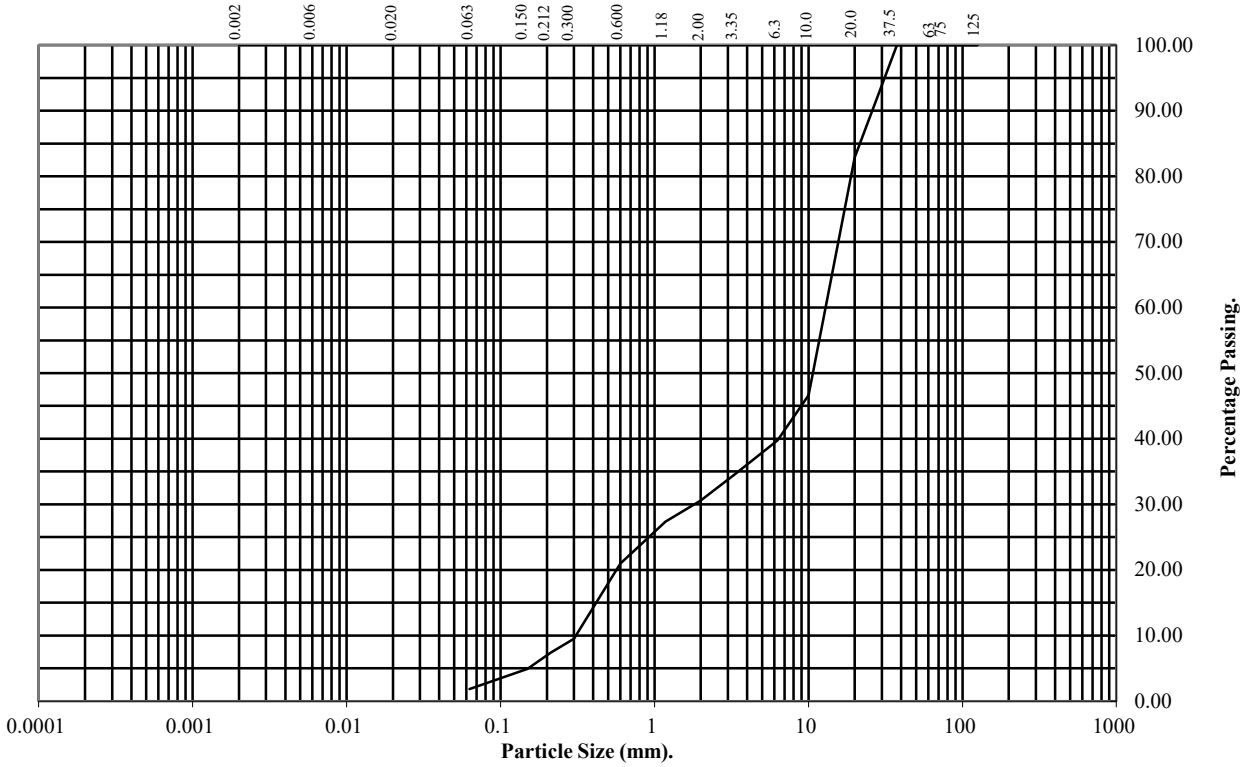
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS54**	**Top Depth (m):**	**4.80**
Sample Number:	**13**	**Base Depth(m):**	**5.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	83
10	47
6.3	40
3.35	35
2	31
1.18	27
0.6	21
0.3	9
0.212	7
0.15	5
0.063	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	69
Sand	29
Silt/Clay	2

Remarks:

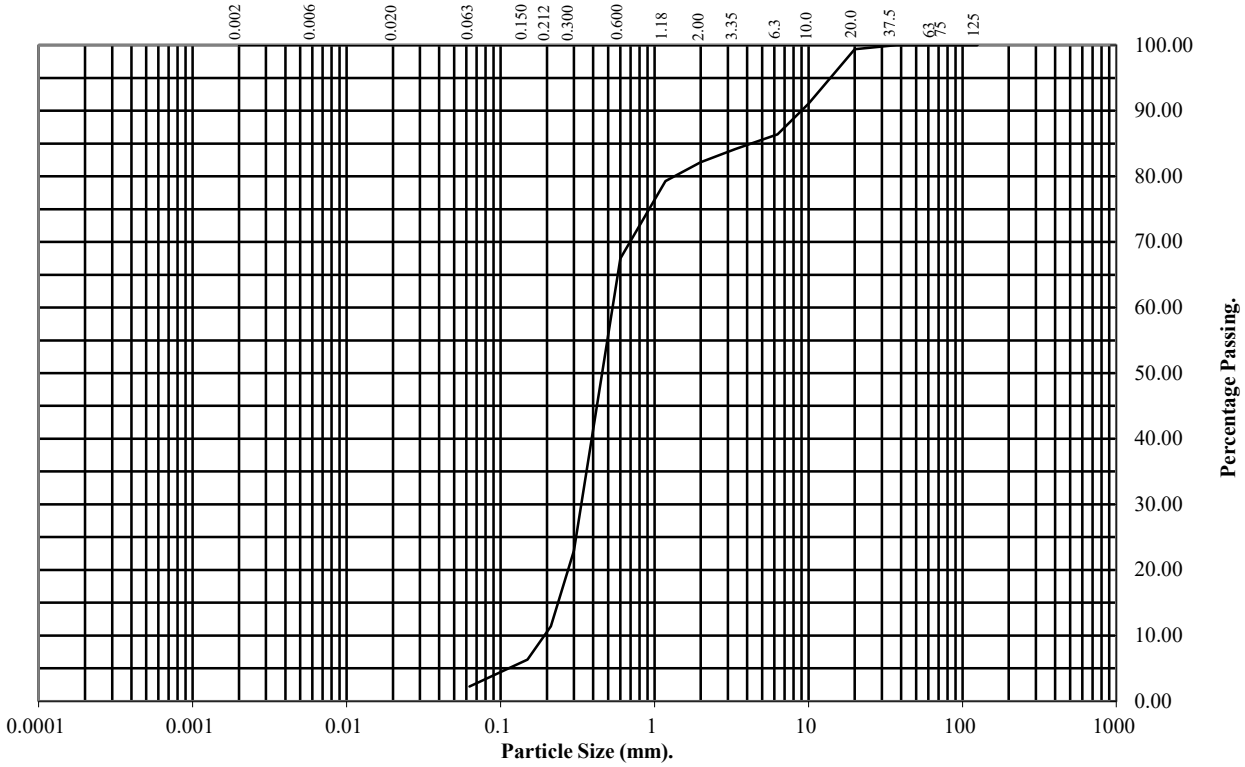
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS57**	**Top Depth (m):**	**1.00**
Sample Number:	**6**	**Base Depth(m):**	**1.20**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	99
10	91
6.3	86
3.35	84
2	82
1.18	79
0.6	67
0.3	23
0.212	11
0.15	6
0.063	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	18
Sand	80
Silt/Clay	2

Remarks:

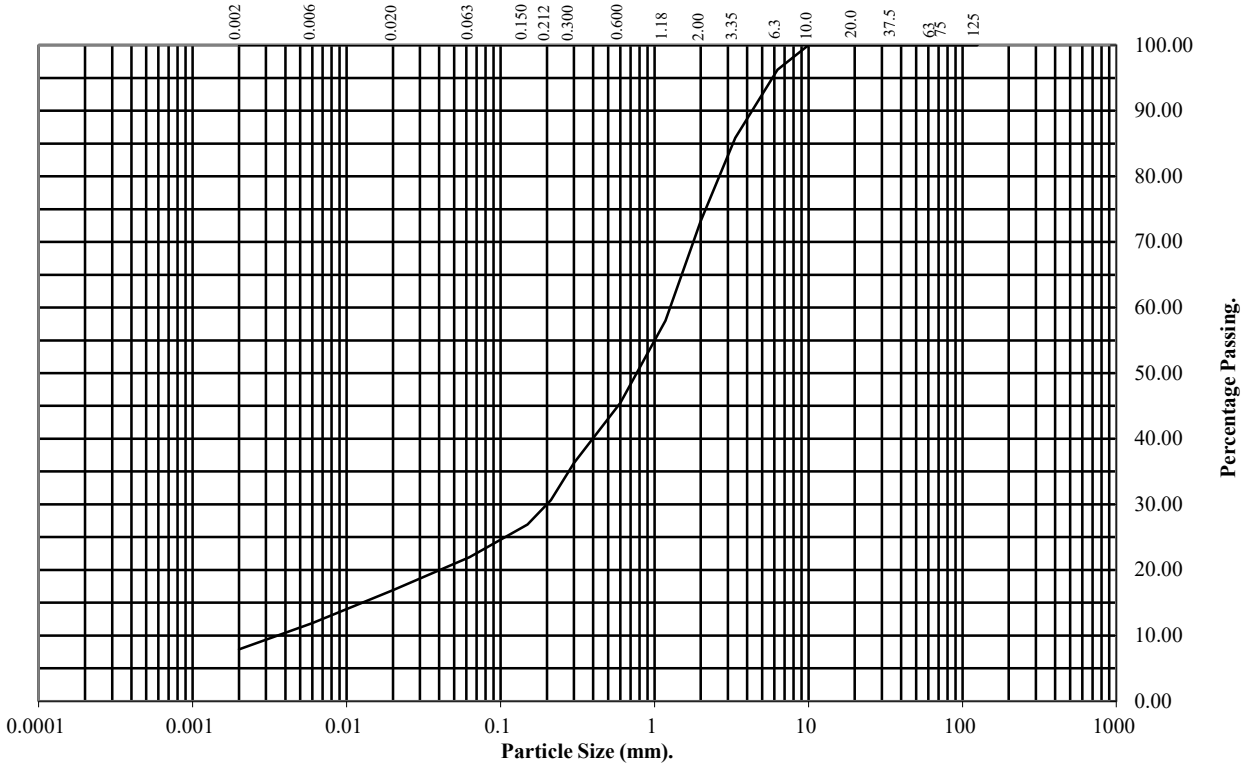
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**WS57**	**Top Depth (m):**	**3.50**
Sample Number:	**12**	**Base Depth(m):**	**4.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	96
3.35	86
2	73
1.18	58
0.6	45
0.3	36
0.212	31
0.15	27
0.063	22

Particle Diameter	Percentage Passing
0.02	17
0.006	12
0.002	8

Soil Fraction	Total Percentage
Cobbles	0
Gravel	27
Sand	51
Silt	14
Clay	8

Remarks:

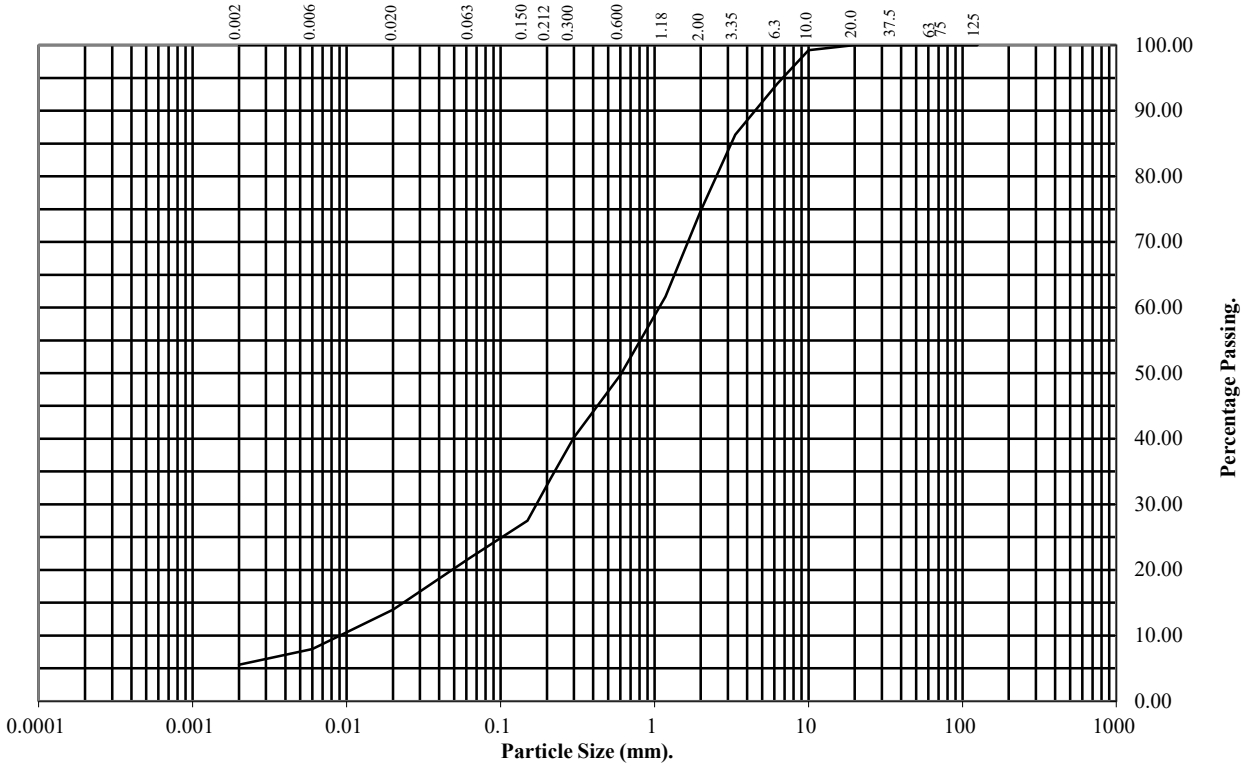
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**WS57**	**Top Depth (m):**	**5.50**
Sample Number:	**14**	**Base Depth(m):**	**6.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	99
6.3	94
3.35	86
2	75
1.18	62
0.6	50
0.3	40
0.212	34
0.15	27
0.063	22

Particle Diameter	Percentage Passing
0.02	14
0.006	8
0.002	6

Soil Fraction	Total Percentage
Cobbles	0
Gravel	25
Sand	53
Silt	16
Clay	6

Remarks:

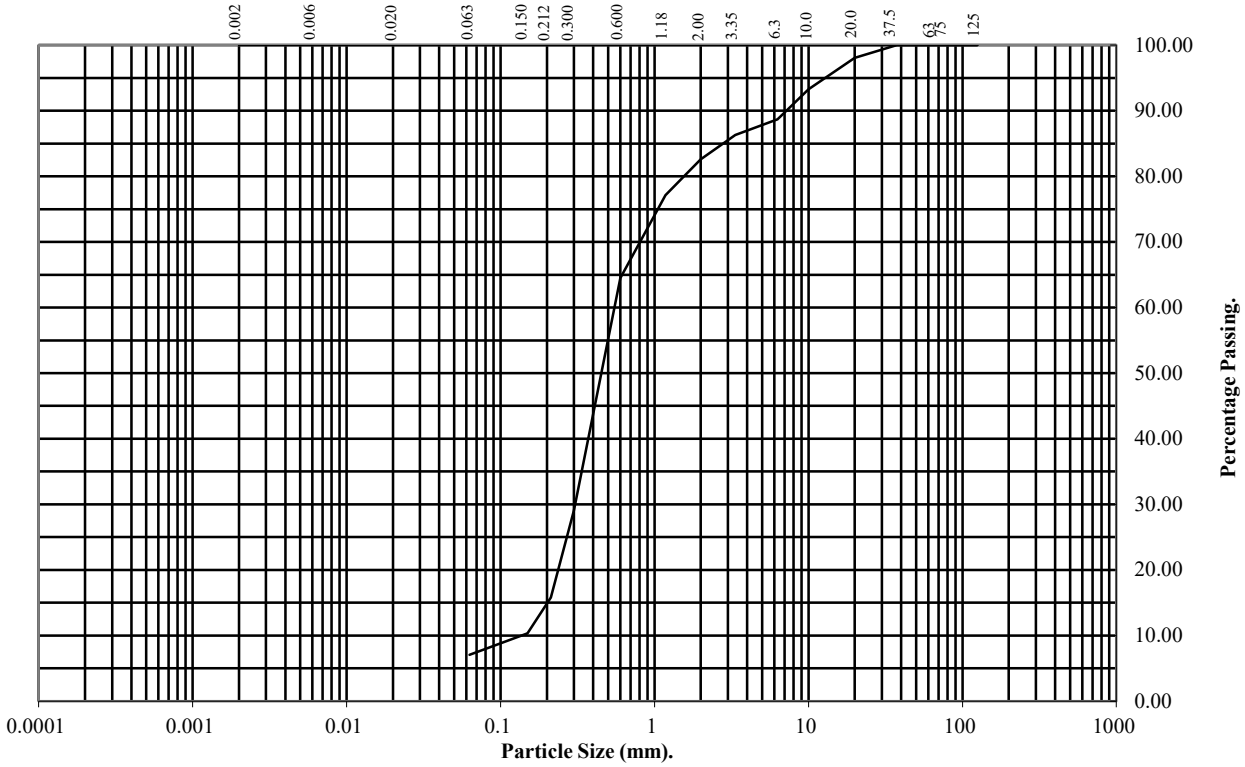
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS64**	**Top Depth (m):**	**0.80**
Sample Number:	**5**	**Base Depth(m):**	**1.20**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	98
10	93
6.3	89
3.35	86
2	83
1.18	77
0.6	65
0.3	29
0.212	16
0.15	10
0.063	7

Soil Fraction	Total Percentage
Cobbles	0
Gravel	17
Sand	76
Silt/Clay	7

Remarks:

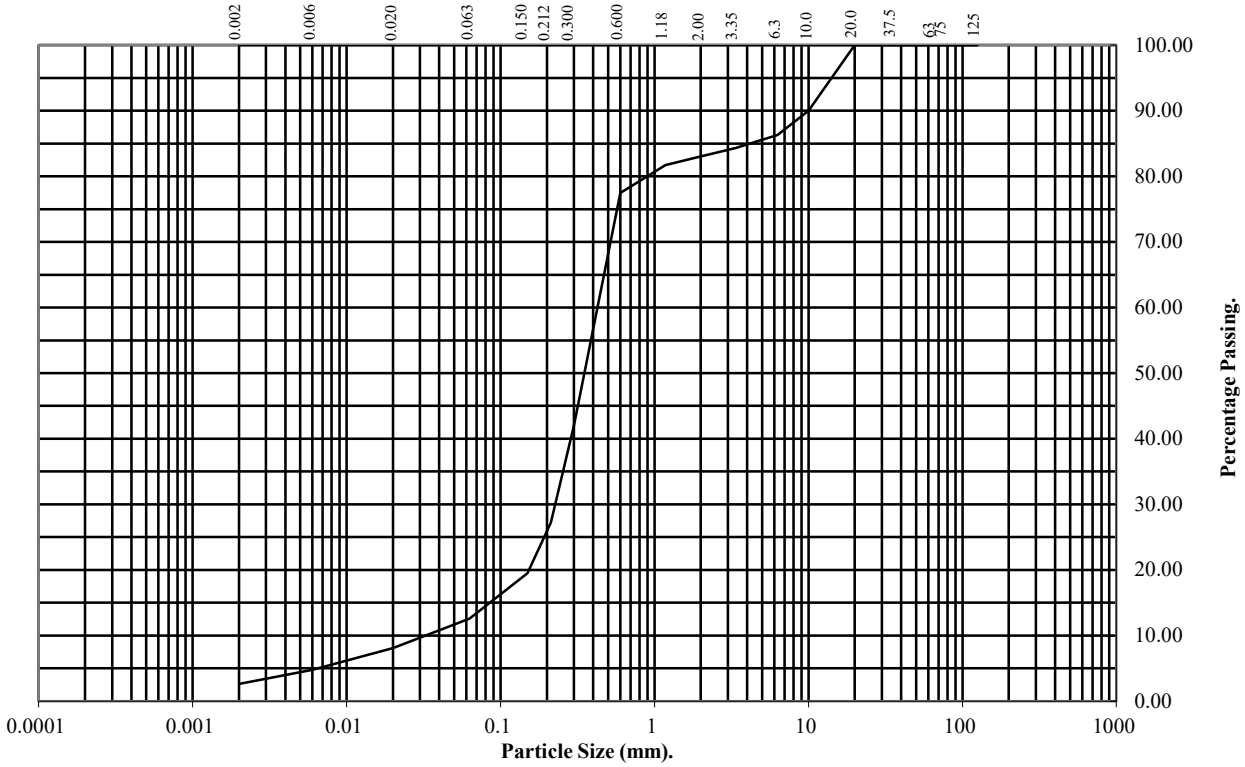
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**WS64**	**Top Depth (m):**	**3.30**
Sample Number:	**10**	**Base Depth(m):**	**3.60**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	90
6.3	86
3.35	84
2	83
1.18	82
0.6	77
0.3	42
0.212	27
0.15	19
0.063	13

Particle Diameter	Percentage Passing
0.02	8
0.006	5
0.002	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	17
Sand	70
Silt	10
Clay	3

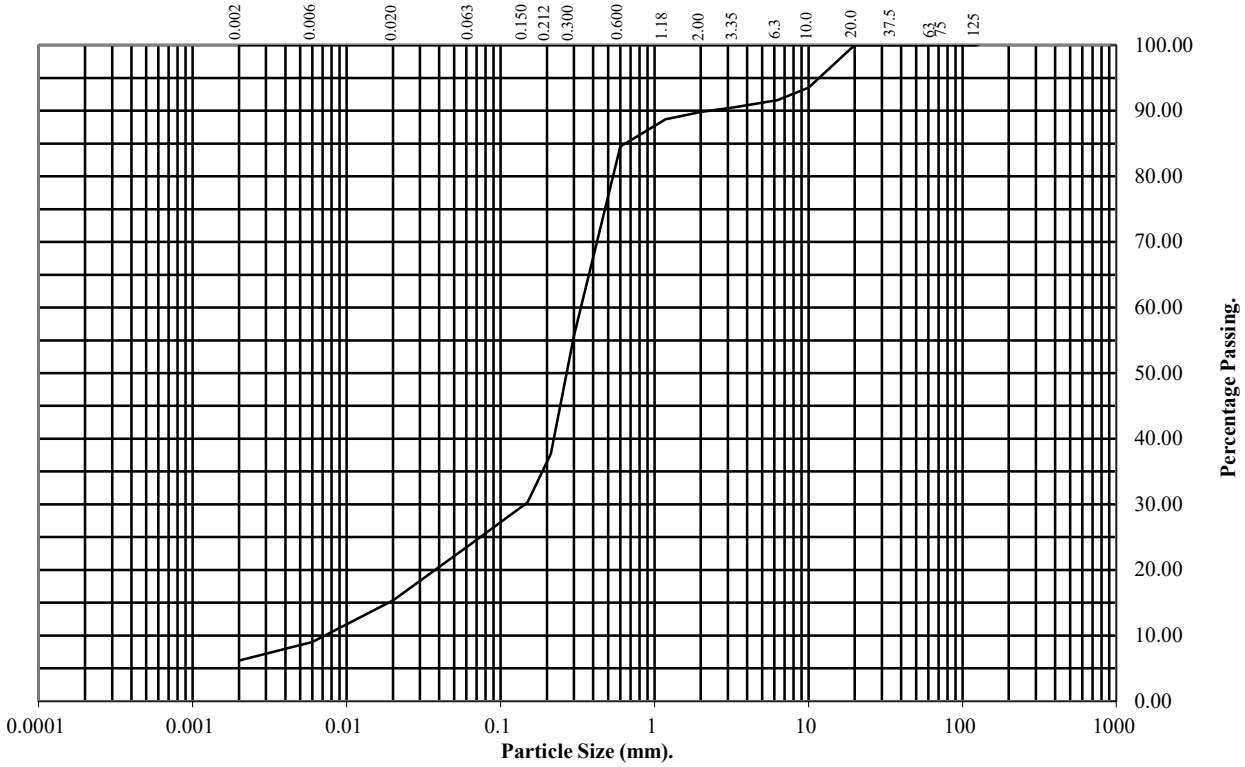
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**WS65**	**Top Depth (m):**	**0.20**
Sample Number:	**3**	**Base Depth(m):**	**0.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	94
6.3	92
3.35	91
2	90
1.18	89
0.6	85
0.3	56
0.212	38
0.15	30
0.063	24

Particle Diameter	Percentage Passing
0.02	15
0.006	9
0.002	6

Soil Fraction	Total Percentage
Cobbles	0
Gravel	10
Sand	66
Silt	18
Clay	6

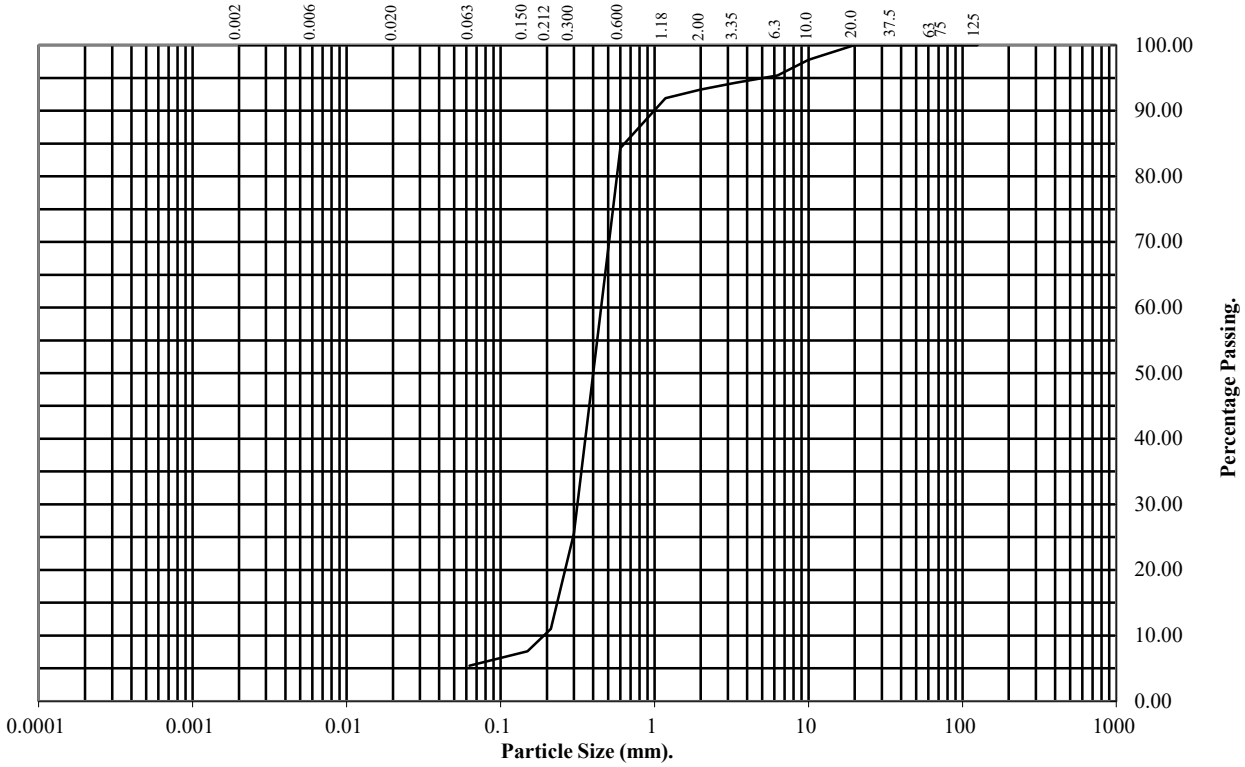
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS65**	**Top Depth (m):**	**1.50**
Sample Number:	**7**	**Base Depth(m):**	**2.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	98
6.3	95
3.35	94
2	93
1.18	92
0.6	84
0.3	26
0.212	11
0.15	8
0.063	5

Soil Fraction	Total Percentage
Cobbles	0
Gravel	7
Sand	88
Silt/Clay	5

Remarks:

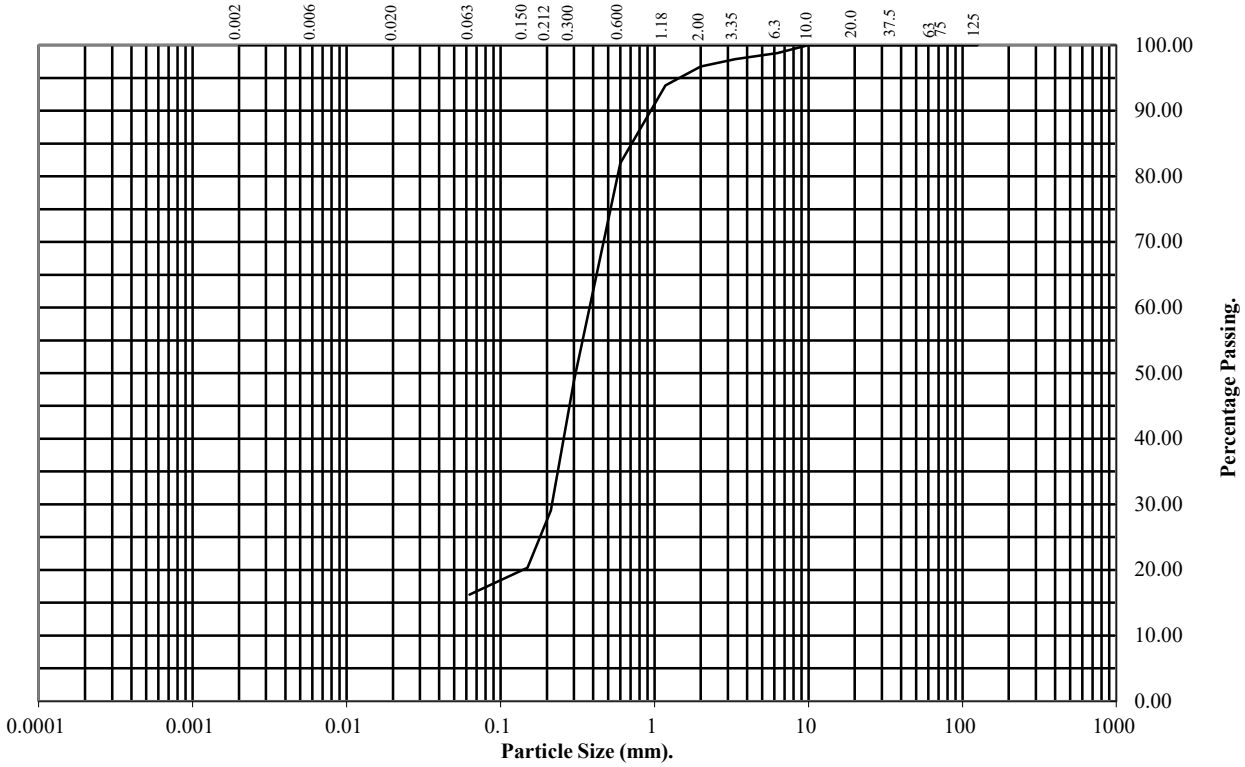
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS66**	**Top Depth (m):**	**2.30**
Sample Number:	**9**	**Base Depth(m):**	**2.60**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	99
3.35	98
2	97
1.18	94
0.6	82
0.3	49
0.212	29
0.15	20
0.063	16

Soil Fraction	Total Percentage
Cobbles	0
Gravel	3
Sand	81
Silt/Clay	16

Remarks:

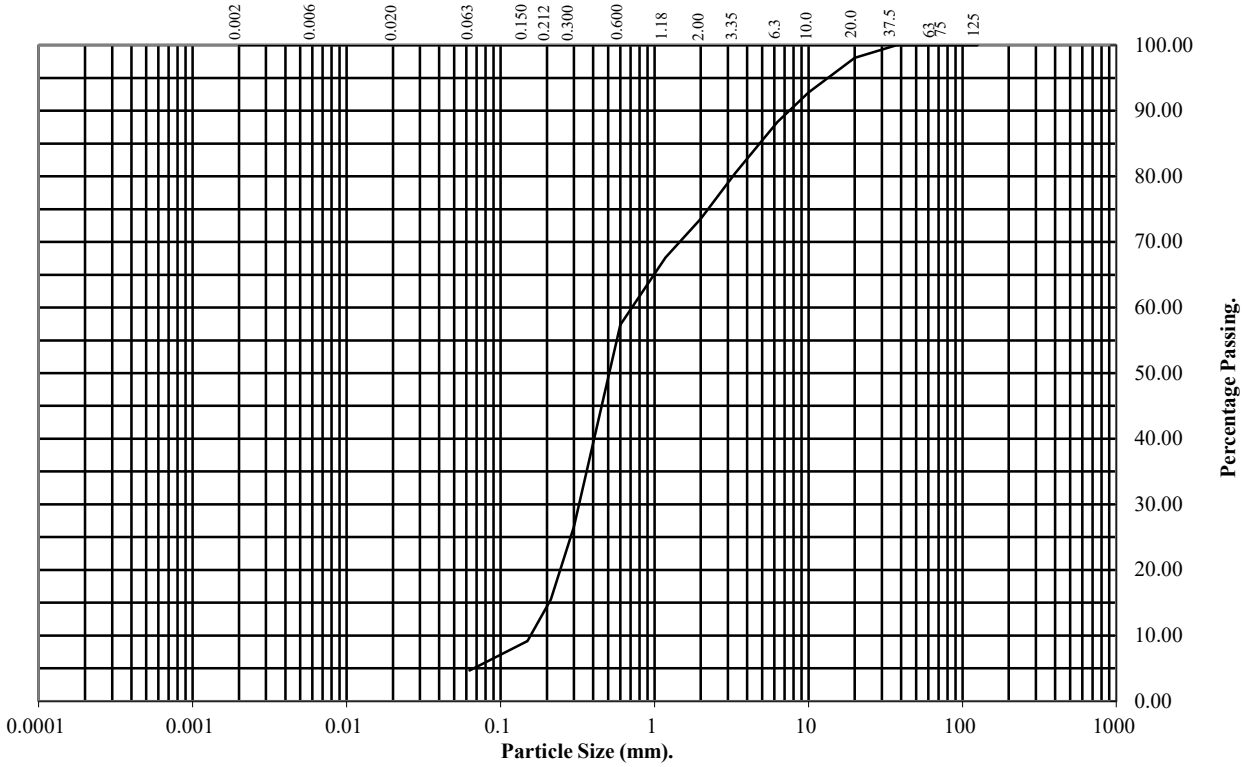
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS67**	**Top Depth (m):**	**1.30**
Sample Number:	**6**	**Base Depth(m):**	**1.60**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	98
10	93
6.3	88
3.35	80
2	74
1.18	68
0.6	57
0.3	27
0.212	15
0.15	9
0.063	5

Soil Fraction	Total Percentage
Cobbles	0
Gravel	26
Sand	69
Silt/Clay	5

Remarks:

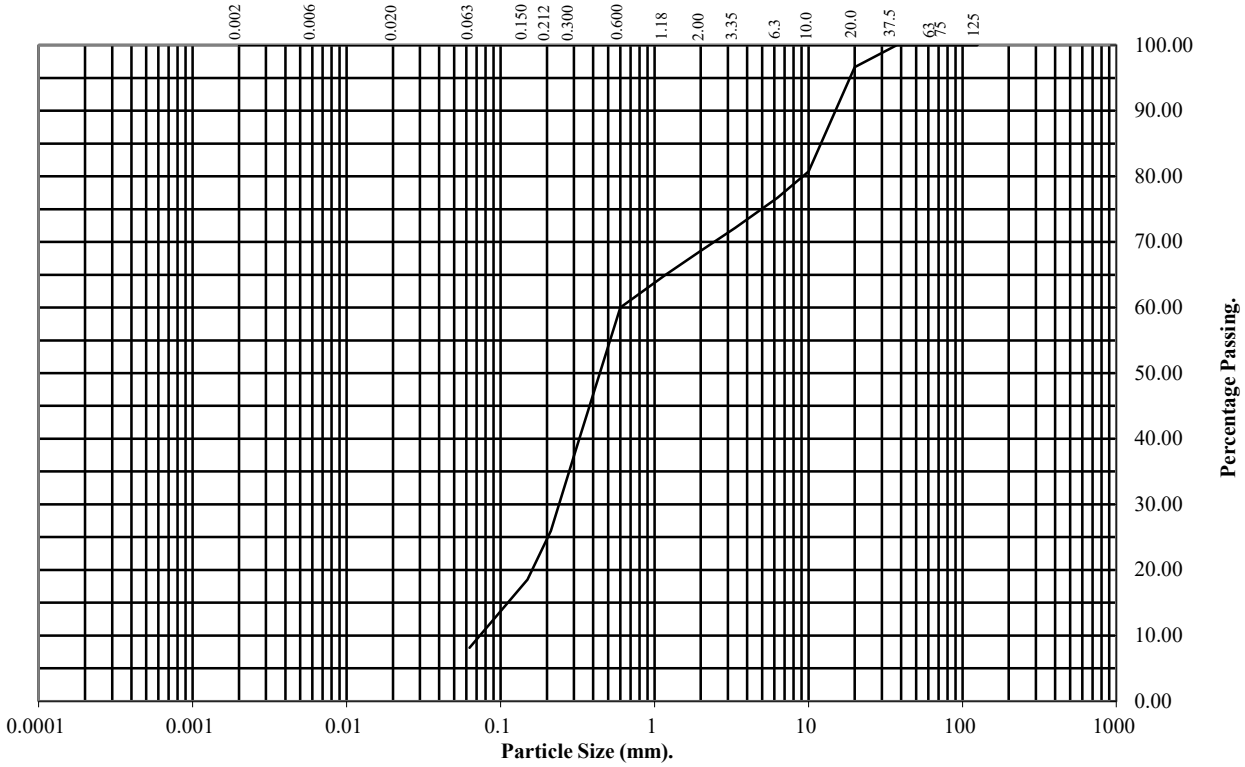
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS68**	**Top Depth (m):**	**0.80**
Sample Number:	**5**	**Base Depth(m):**	**1.20**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	97
10	81
6.3	77
3.35	72
2	69
1.18	65
0.6	60
0.3	37
0.212	26
0.15	19
0.063	8

Soil Fraction	Total Percentage
Cobbles	0
Gravel	31
Sand	61
Silt/Clay	8

Remarks:

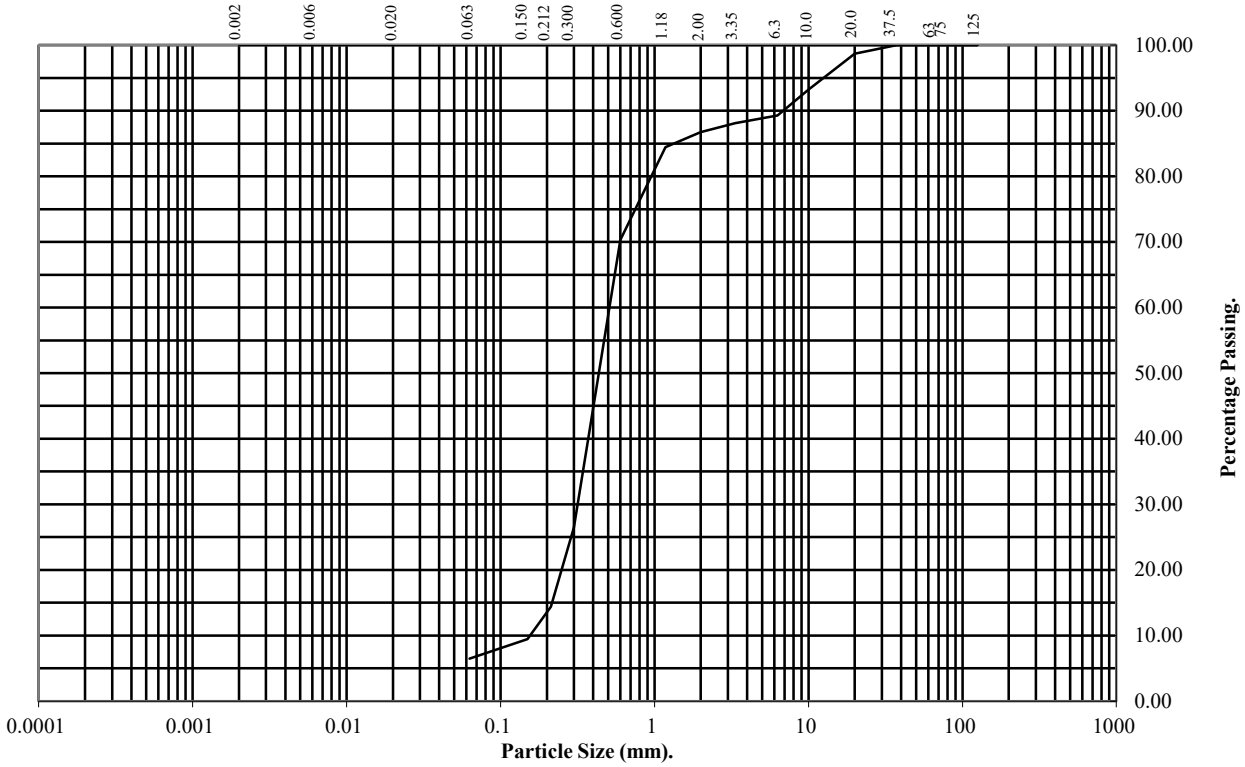
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS68**	**Top Depth (m):**	**3.00**
Sample Number:	**10**	**Base Depth(m):**	**3.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	99
10	93
6.3	89
3.35	88
2	87
1.18	84
0.6	70
0.3	26
0.212	14
0.15	9
0.063	6

Soil Fraction	Total Percentage
Cobbles	0
Gravel	13
Sand	81
Silt/Clay	6

Remarks:

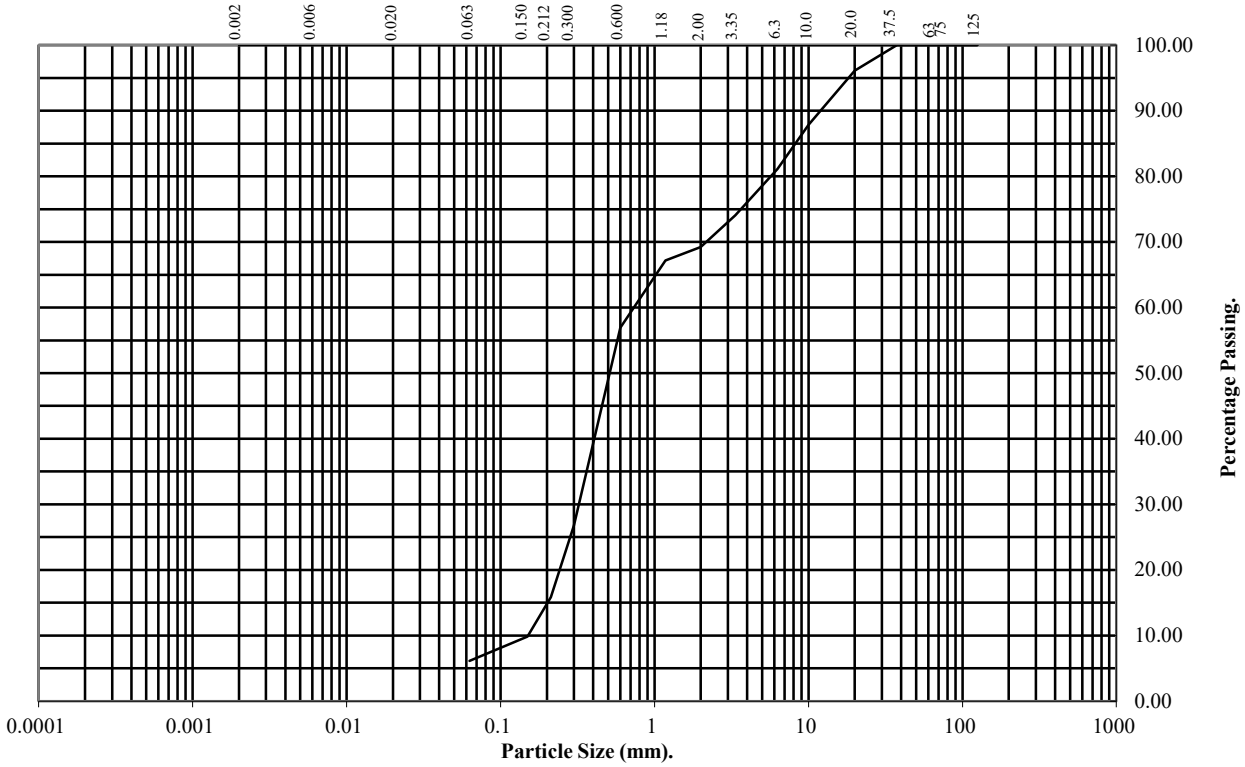
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS68**	**Top Depth (m):**	**4.00**
Sample Number:	**12**	**Base Depth(m):**	**4.00**
Sample Type:	**D**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	96
10	88
6.3	81
3.35	74
2	69
1.18	67
0.6	57
0.3	27
0.212	16
0.15	10
0.063	6

Soil Fraction	Total Percentage
Cobbles	0
Gravel	31
Sand	63
Silt/Clay	6

Remarks:

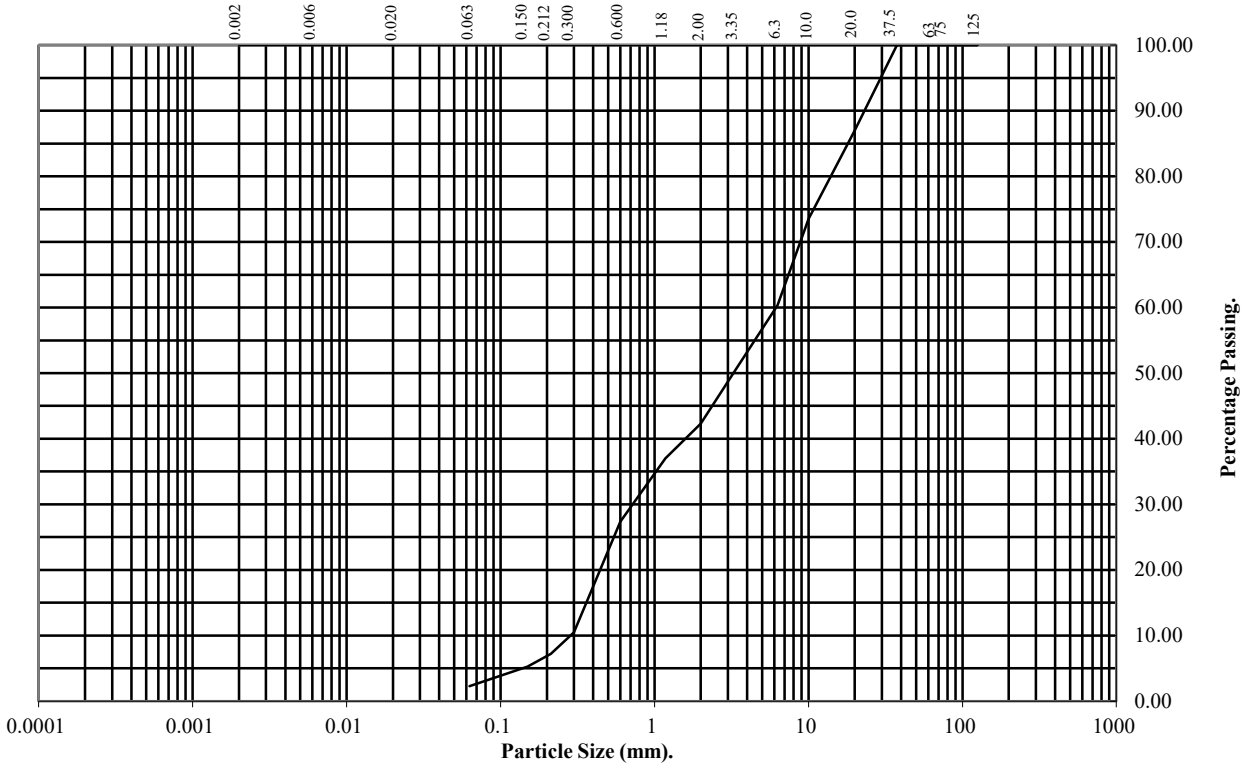
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS69**	**Top Depth (m):**	**5.00**
Sample Number:	**14**	**Base Depth(m):**	**5.20**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	87
10	74
6.3	60
3.35	50
2	42
1.18	37
0.6	27
0.3	10
0.212	7
0.15	5
0.063	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	58
Sand	40
Silt/Clay	2

Remarks:

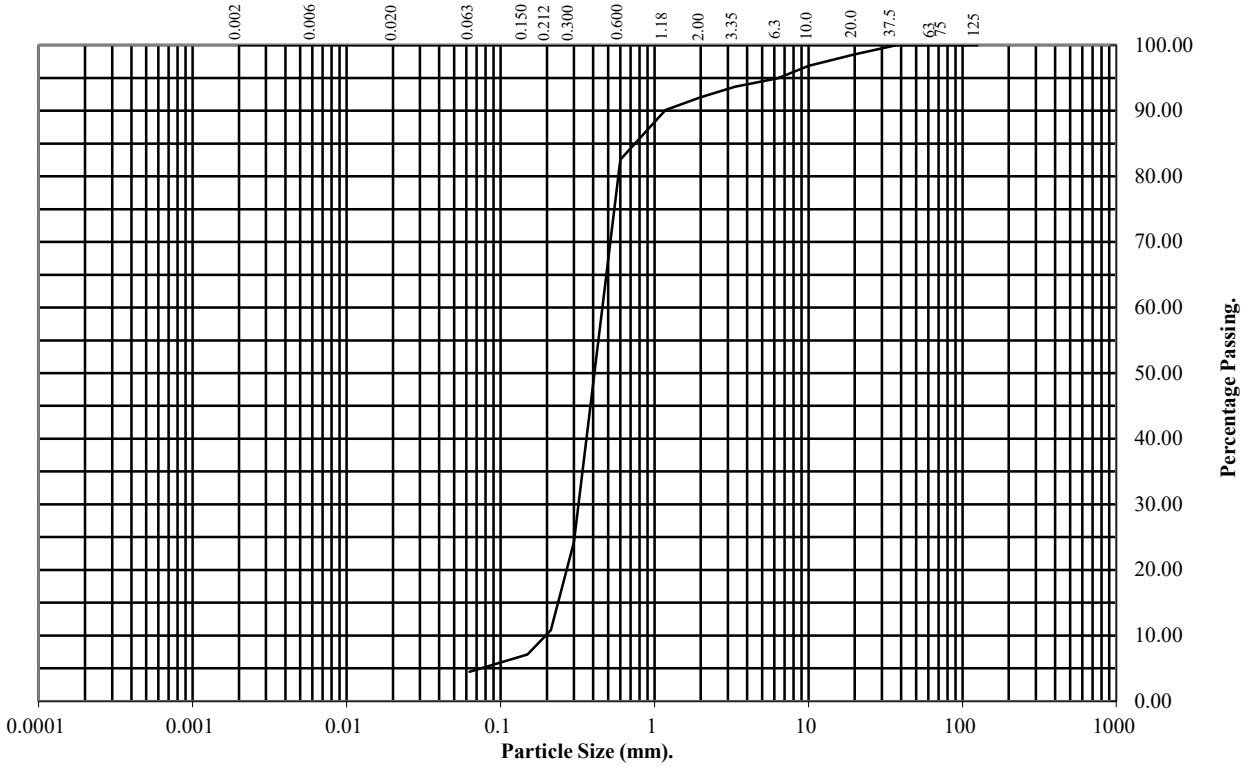
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS71**	**Top Depth (m):**	**0.80**
Sample Number:	**5**	**Base Depth(m):**	**1.20**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	99
10	97
6.3	95
3.35	94
2	92
1.18	90
0.6	83
0.3	24
0.212	11
0.15	7
0.063	4

Soil Fraction	Total Percentage
Cobbles	0
Gravel	8
Sand	88
Silt/Clay	4

Remarks:

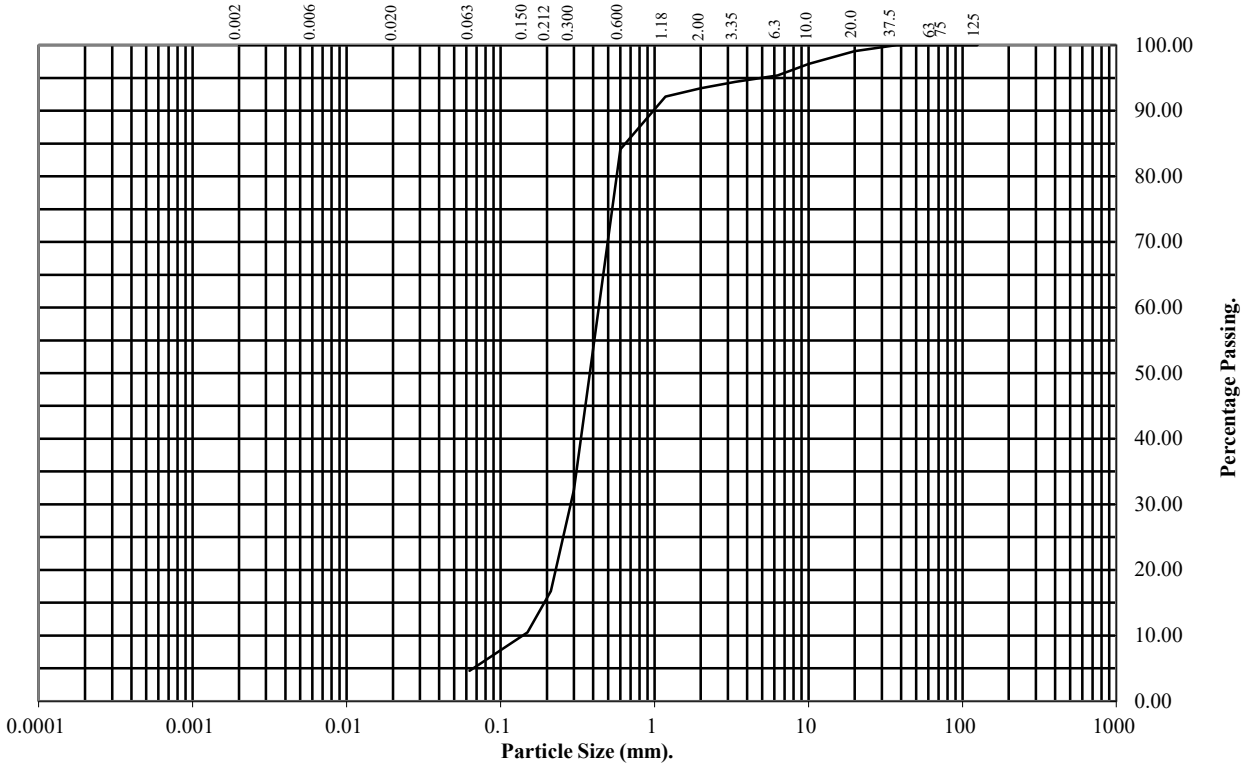
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS71**	**Top Depth (m):**	**2.00**
Sample Number:	**8**	**Base Depth(m):**	**2.30**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	99
10	97
6.3	95
3.35	94
2	93
1.18	92
0.6	84
0.3	32
0.212	17
0.15	10
0.063	5

Soil Fraction	Total Percentage
Cobbles	0
Gravel	7
Sand	88
Silt/Clay	5

Remarks:

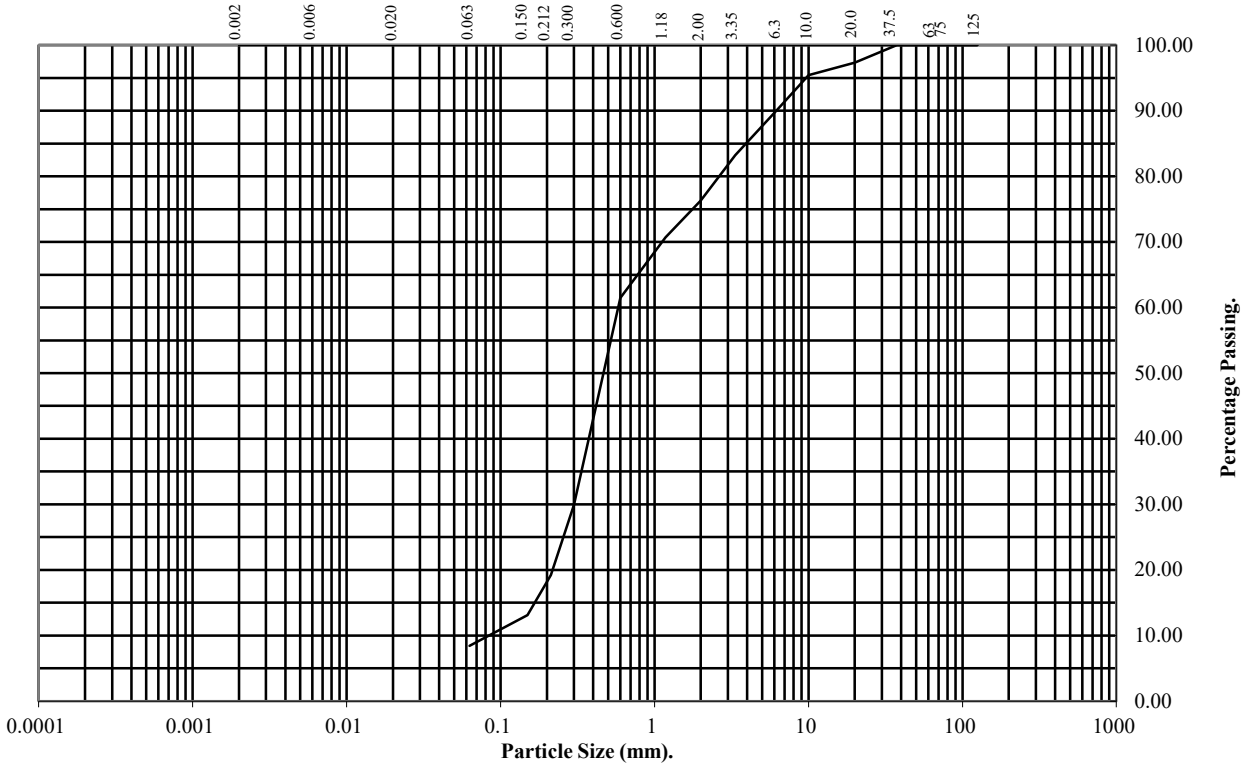
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS72**	**Top Depth (m):**	**0.40**
Sample Number:	**2**	**Base Depth(m):**	**0.70**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	97
10	95
6.3	90
3.35	83
2	76
1.18	71
0.6	61
0.3	30
0.212	19
0.15	13
0.063	8

Soil Fraction	Total Percentage
Cobbles	0
Gravel	24
Sand	68
Silt/Clay	8

Remarks:

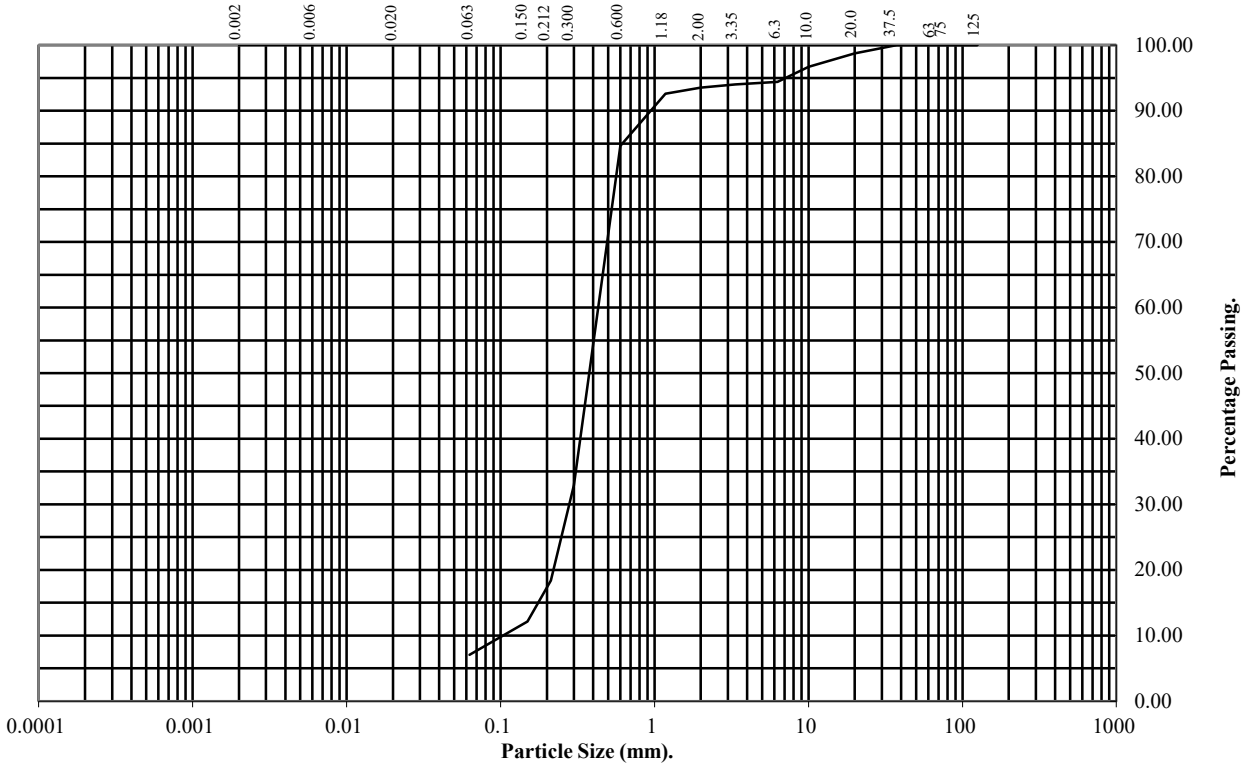
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS72**	**Top Depth (m):**	**4.00**
Sample Number:	**12**	**Base Depth(m):**	**4.30**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	99
10	97
6.3	94
3.35	94
2	94
1.18	93
0.6	85
0.3	33
0.212	18
0.15	12
0.063	7

Soil Fraction	Total Percentage
Cobbles	0
Gravel	6
Sand	87
Silt/Clay	7

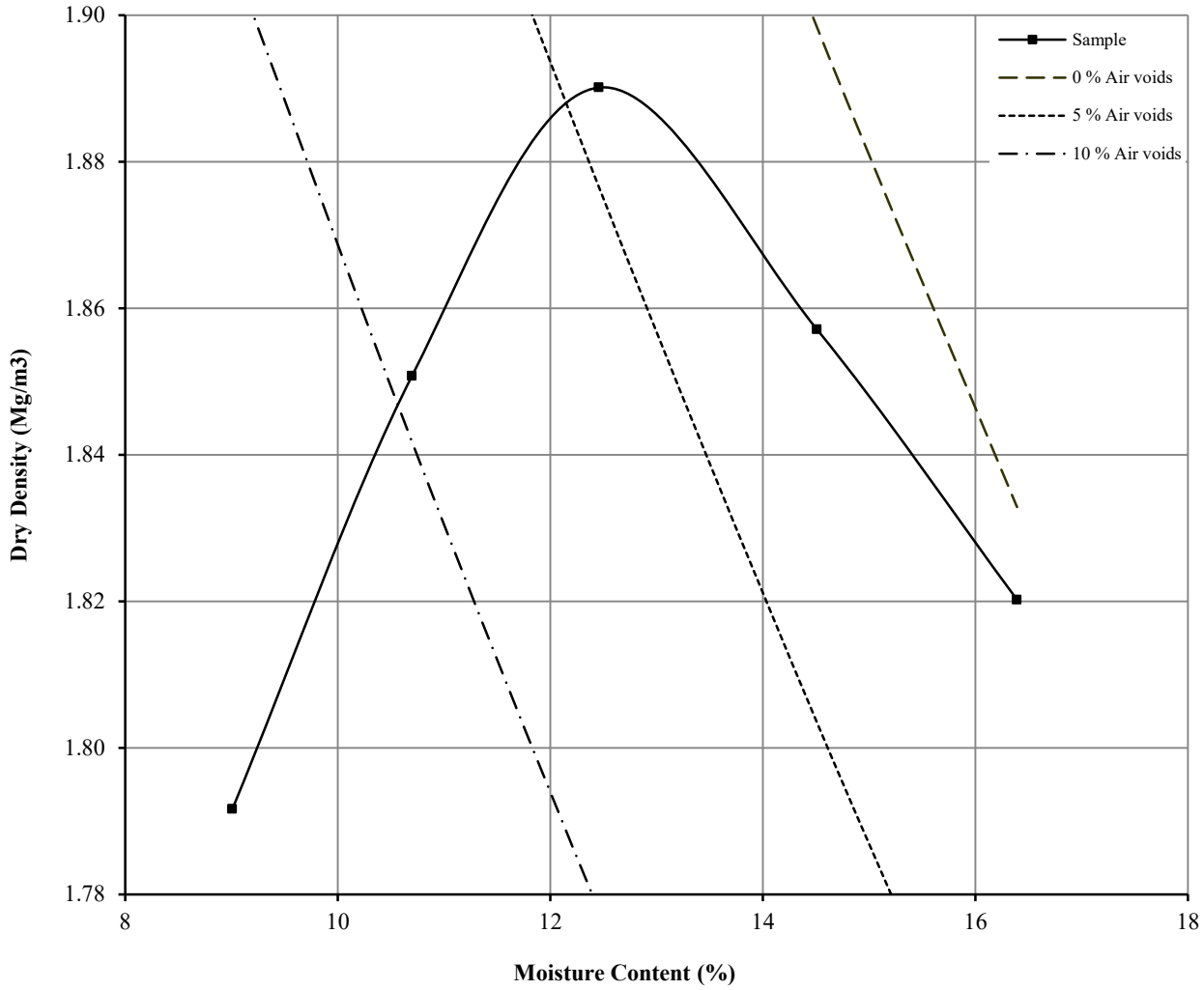
Remarks:

See Summary of Soil Descriptions

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**TP46**	**Top Depth (m) :**	**1.00**
Sample Number:	**4**	**Base Depth (m) :**	**1.20**
Sample Type:	**B**		

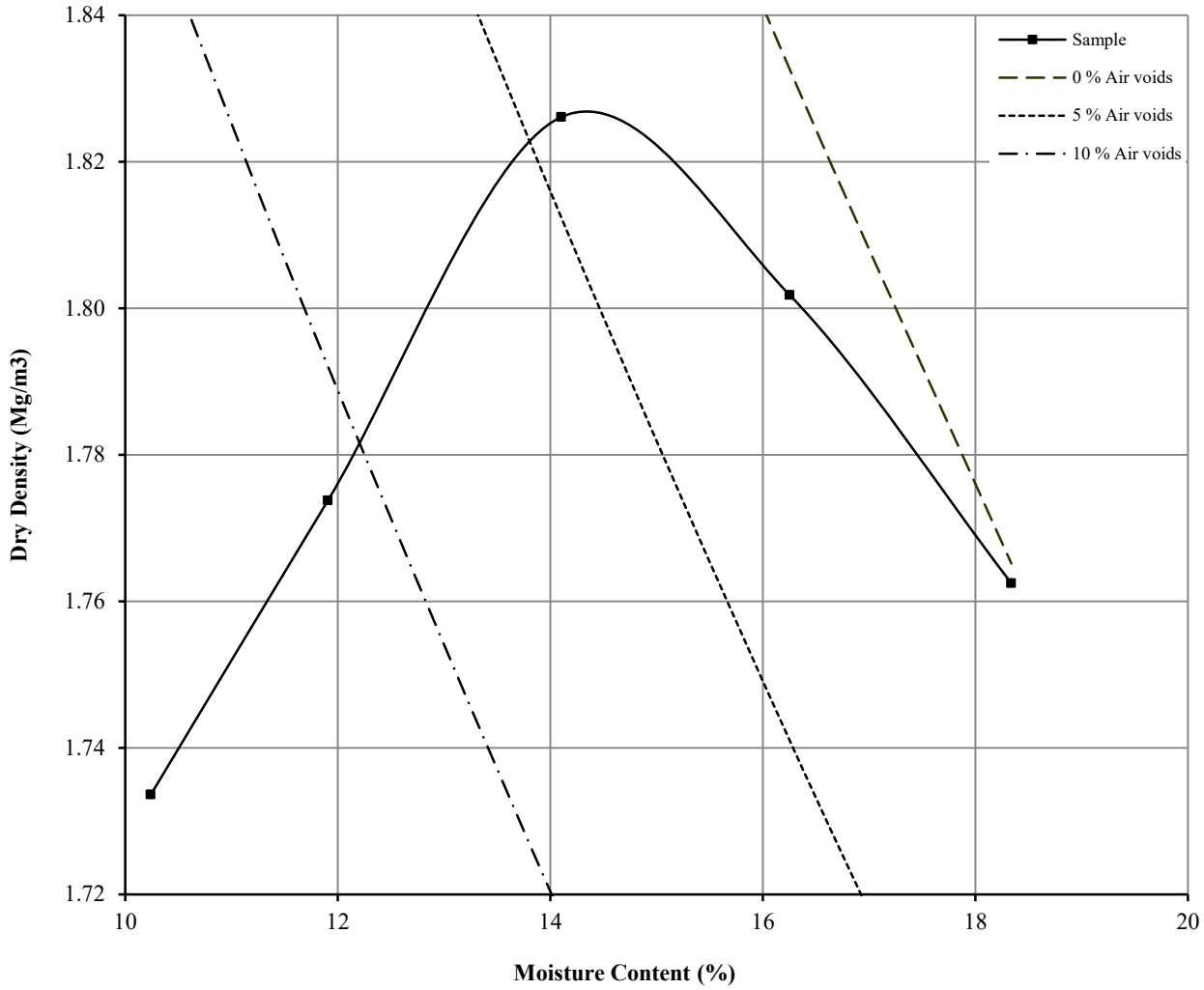


Initial Moisture Content:		12	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.62	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.89	Material Retained on 20.0 mm Test Sieve (%):		1
Optimum Moisture Content (%):		12			
Remarks See summary of soil descriptions					

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**TP50**	**Top Depth (m) :**	**0.90**
Sample Number:	**4**	**Base Depth (m) :**	**1.20**
Sample Type:	**B**		

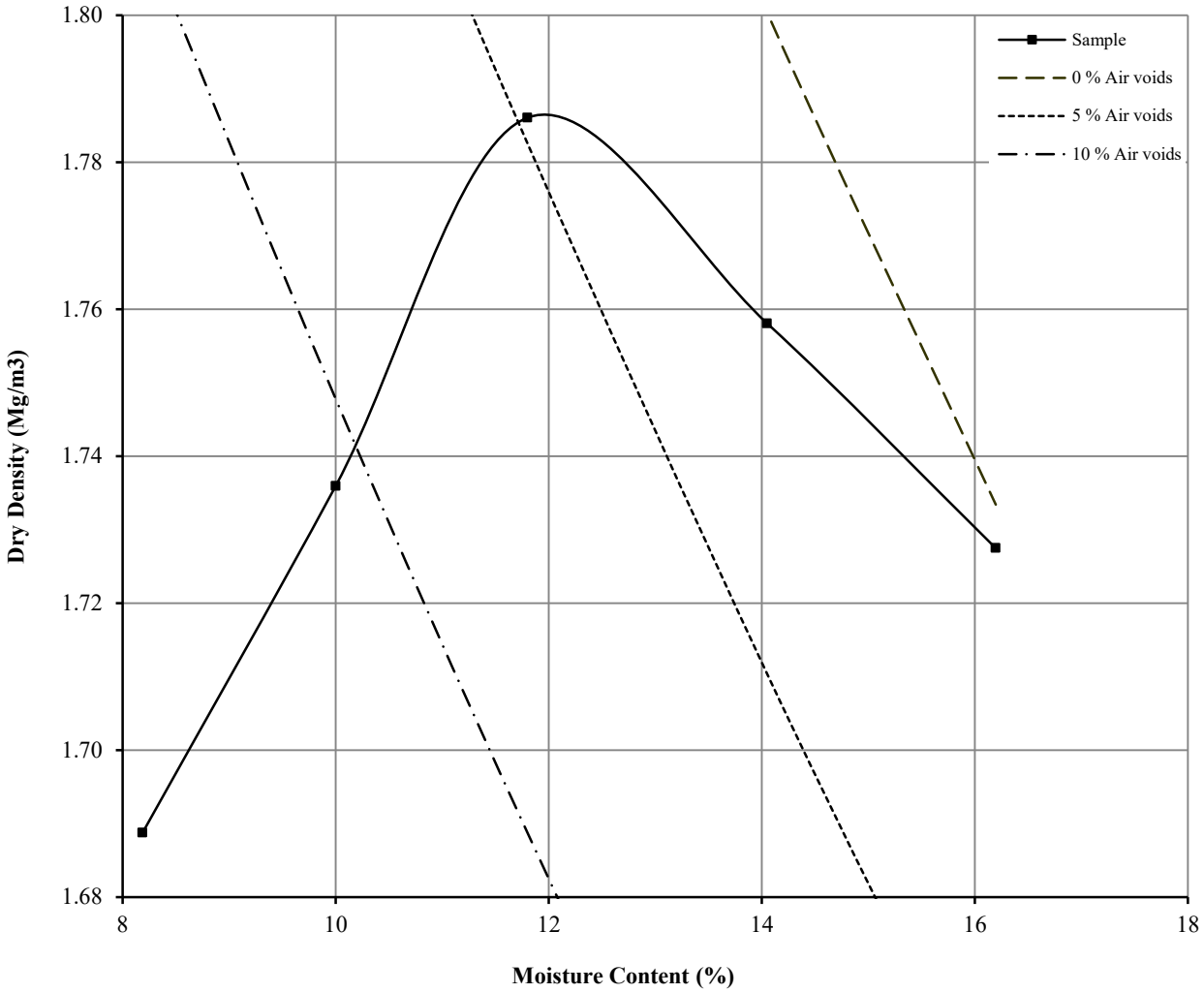


Initial Moisture Content:		16	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.61	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.83	Material Retained on 20.0 mm Test Sieve (%):		3
Optimum Moisture Content (%):		14			
Remarks See summary of soil descriptions					

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.4 : 1990

Hole Number:	**WS48**	**Top Depth (m) :**	**4.50**
Sample Number:	**14**	**Base Depth (m) :**	**4.80**
Sample Type:	**B**		

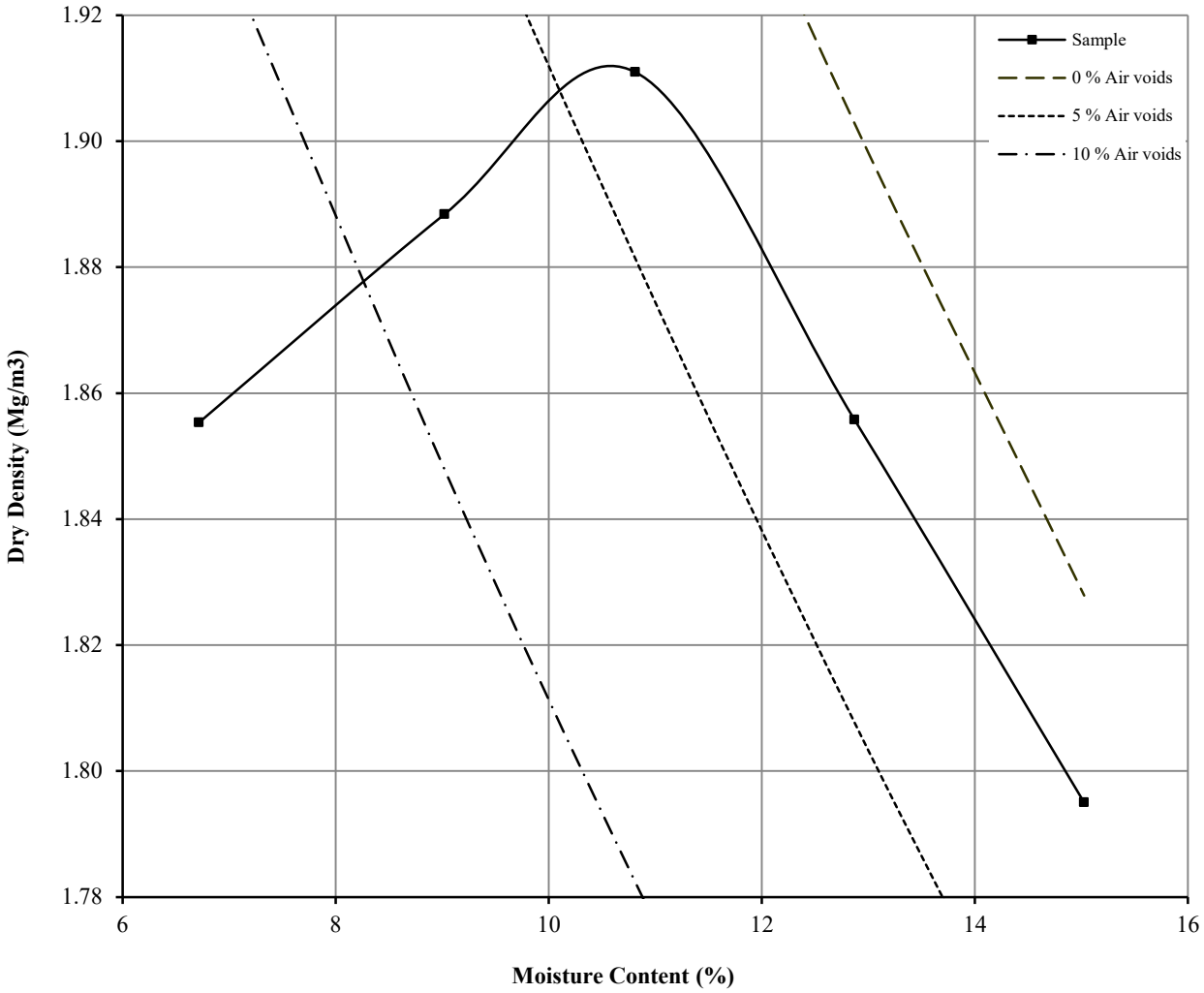


Initial Moisture Content:		18	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.41	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.79	Material Retained on 20.0 mm Test Sieve (%):		6
Optimum Moisture Content (%):		12			
Remarks See summary of soil descriptions					

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**WS57**	**Top Depth (m) :**	**2.60**
Sample Number:	**10**	**Base Depth (m) :**	**3.00**
Sample Type:	**B**		



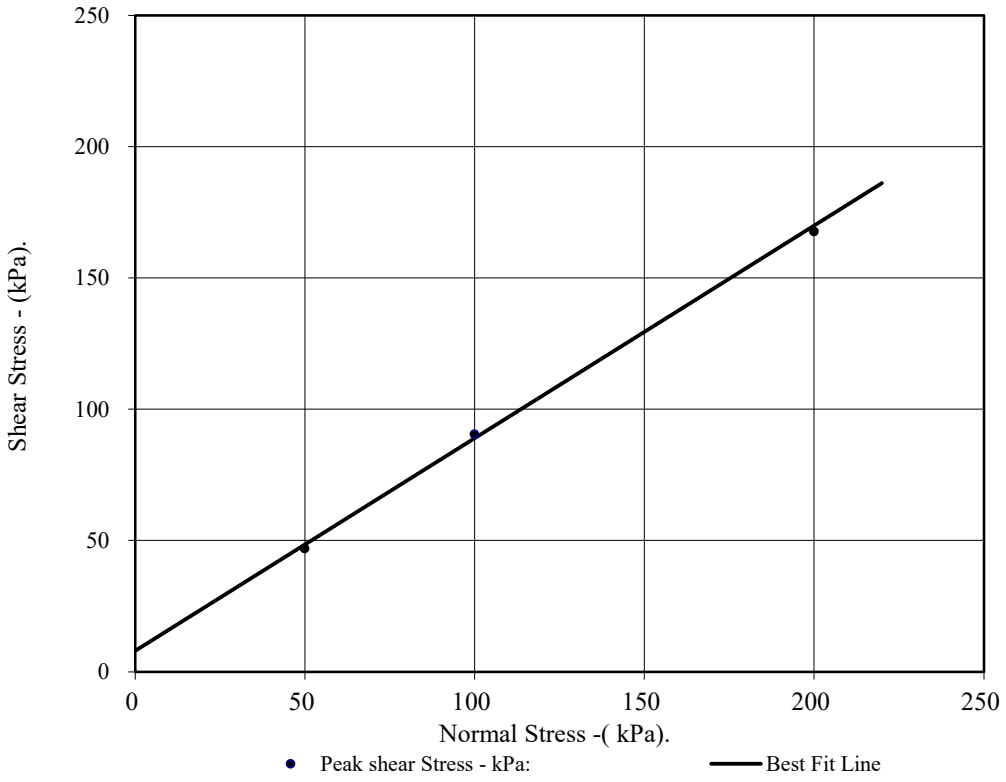
Initial Moisture Content:		11	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.52	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.91	Material Retained on 20.0 mm Test Sieve (%):		4
Optimum Moisture Content (%):		11			
Remarks See summary of soil descriptions					

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**WS46**		Top Depth:	**3.20**
Sample Number:	**14**		Base Depth:	**3.60**
Sample Conditions:	Dry		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 2mm sieve Remoulded using hand tamped effort			
Sample Description:	**See summary of soil descriptions**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	20.05	20.05	20.05
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	12	12	12
Bulk Density - Mg/m3:	2.00	2.00	2.00
Dry Density - Mg/m3:	1.79	1.78	1.79
Voids Ratio:	0.483	0.488	0.483
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	19.62	19.54	19.32
Shearing Stage			
Rate of Strain (mm/min)	0.050	0.050	0.050
Displacement at peak shear stress (mm)	2.50	3.00	3.00
Peak shear Stress - kPa:	47	90	168
Final Consolidated Conditions			
Moisture Content - %:	9.6	9.4	9.2
Bulk Density - Mg/m3:	2.05	2.05	2.08
Dry Density - Mg/m3:	1.87	1.87	1.90
Peak			
Angle of Shearing Resistance:(~~θ~~)	**39**		
Effective Cohesion - kPa:	**8**		

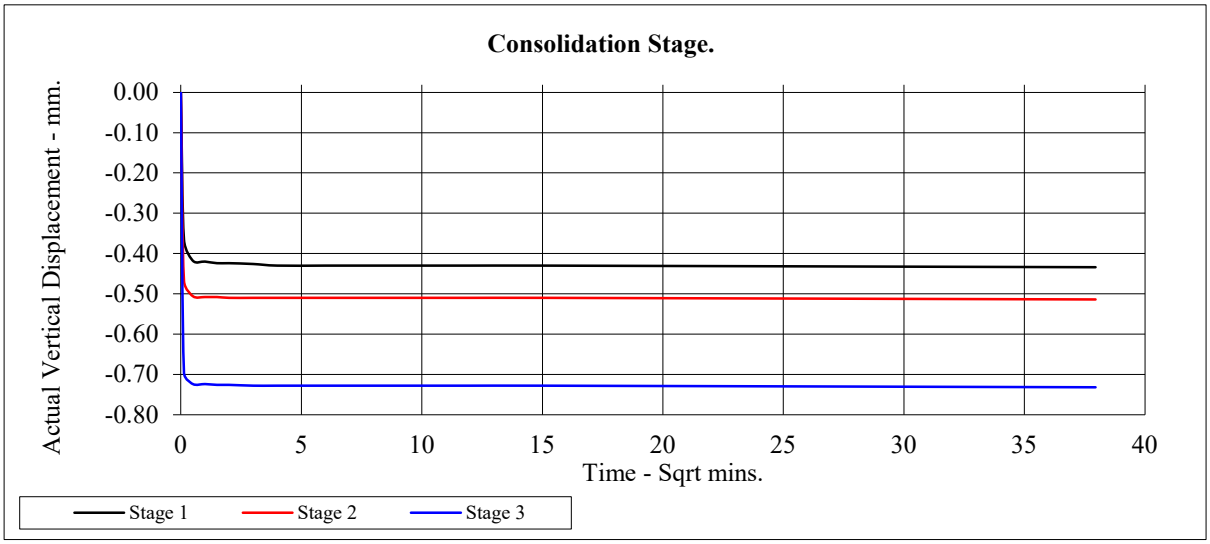


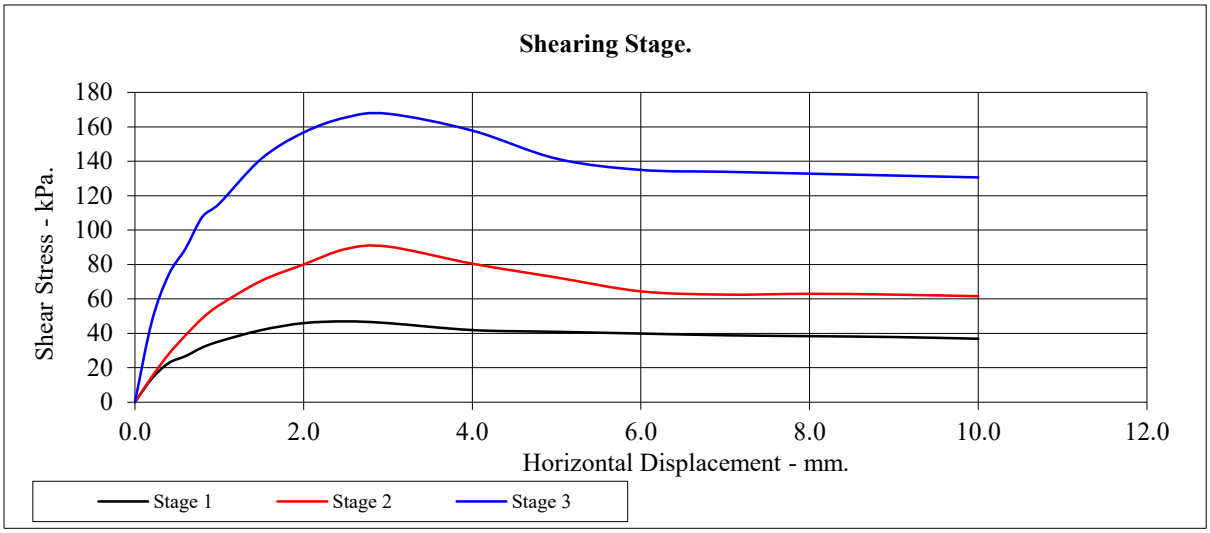
UKAS TESTING 4043	PSL Professional Soils Laboratory	**A46 Newark NNB**	**Contract No:** PSL21/3476 **Client Ref:** 784-B026948

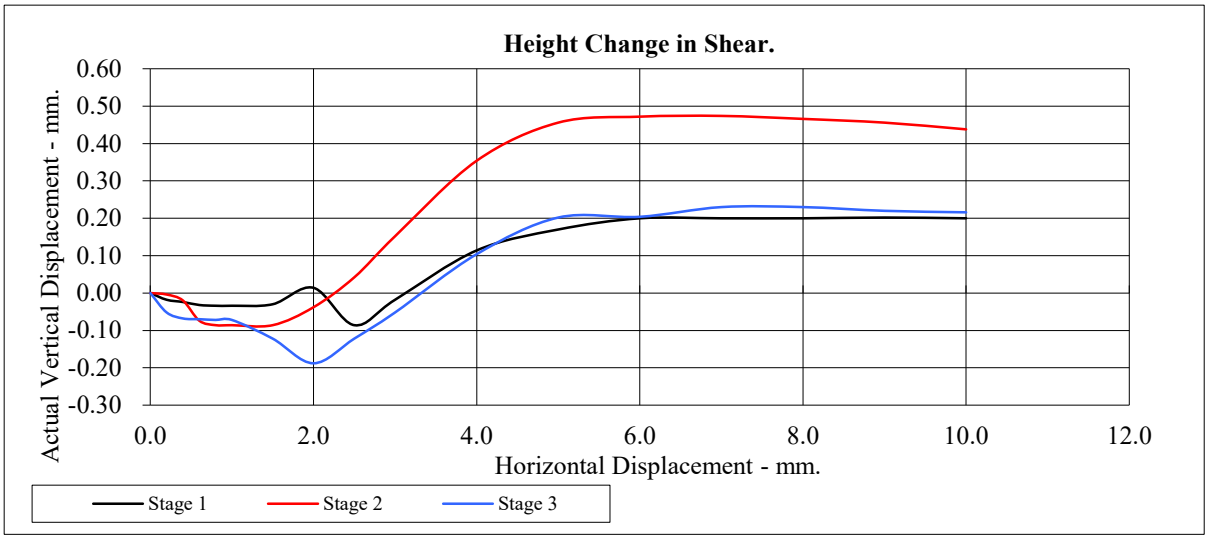
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**WS46**	Top Depth:	**3.20**
Sample Number:	**14**	Base Depth:	**3.60**





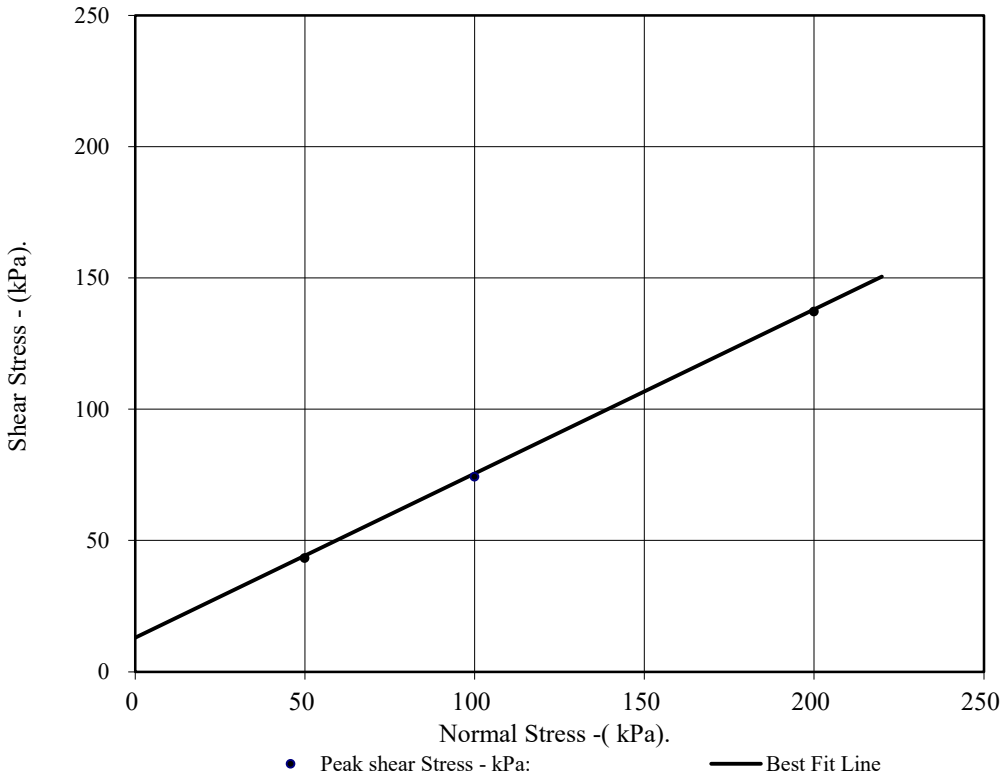


CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**WS48**		Top Depth:	**2.50**
Sample Number:	**9**		Base Depth:	**2.80**
Sample Conditions:	Dry		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 2mm sieve Remoulded using hand tamped effort			
Sample Description:	**See summary of soil descriptions**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	20.05	20.05	20.05
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	19	19	19
Bulk Density - Mg/m3:	2.07	2.07	2.07
Dry Density - Mg/m3:	1.74	1.73	1.73
Voids Ratio:	0.524	0.528	0.531
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	19.21	19.03	18.97
Shearing Stage			
Rate of Strain (mm/min)	0.050	0.050	0.050
Displacement at peak shear stress (mm)	4.00	4.00	4.00
Peak shear Stress - kPa:	43	74	137
Final Consolidated Conditions			
Moisture Content - %:	20	19	18
Bulk Density - Mg/m3:	2.16	2.18	2.19
Dry Density - Mg/m3:	1.80	1.84	1.85
Peak			
Angle of Shearing Resistance:(~~θ~~)	**32**		
Effective Cohesion - kPa:	**13**		

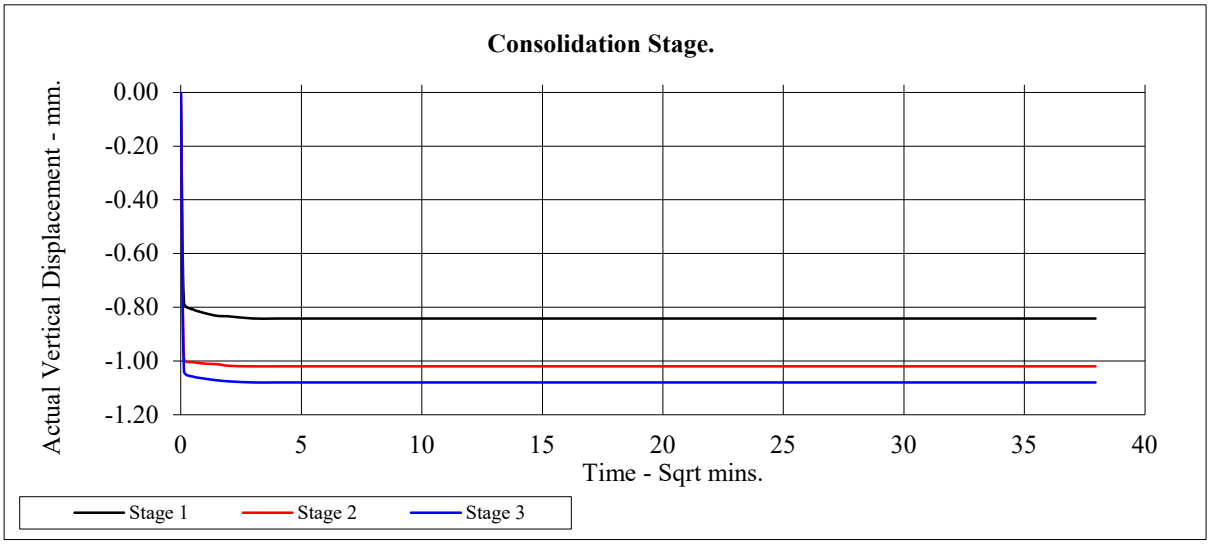


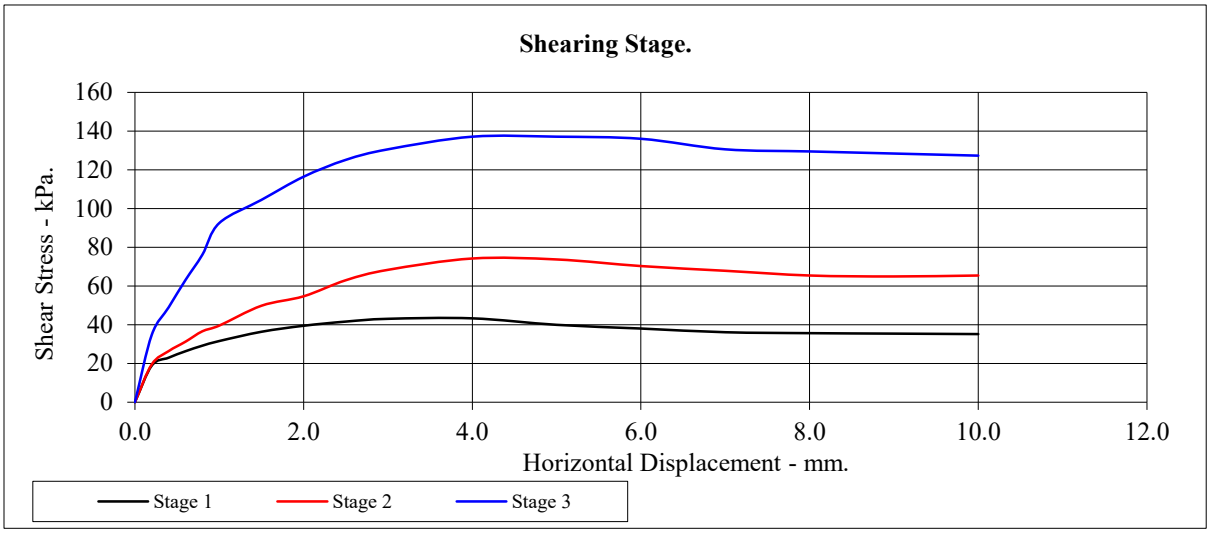
UKAS TESTING 4043	PSL Professional Soils Laboratory	**A46 Newark NNB**	**Contract No:** PSL21/3476 **Client Ref:** 784-B026948

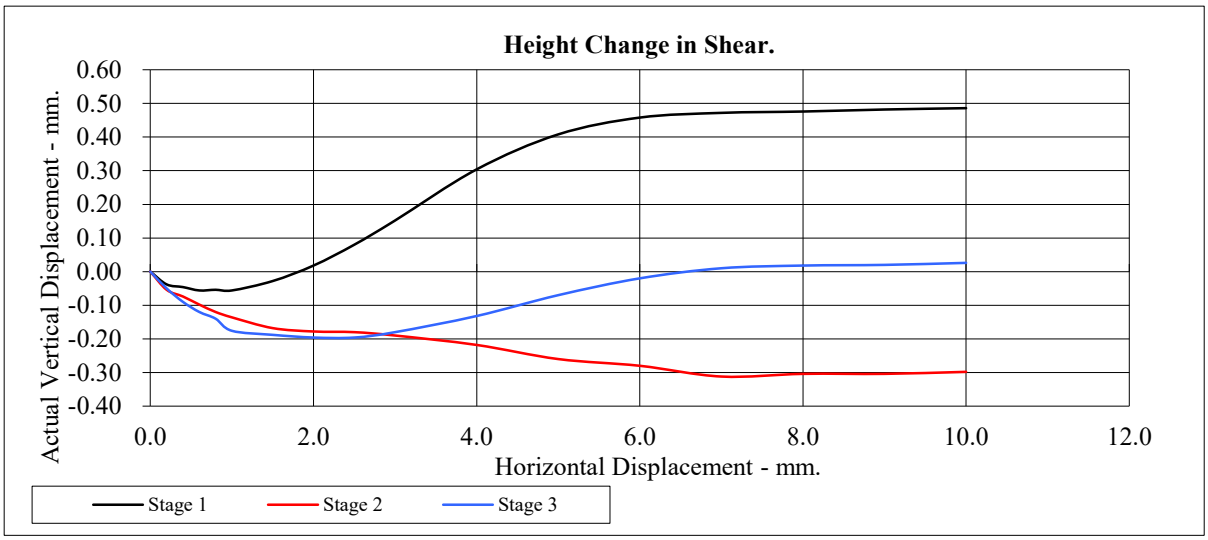
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**WS48**	Top Depth:	**2.50**
Sample Number:	**9**	Base Depth:	**2.80**







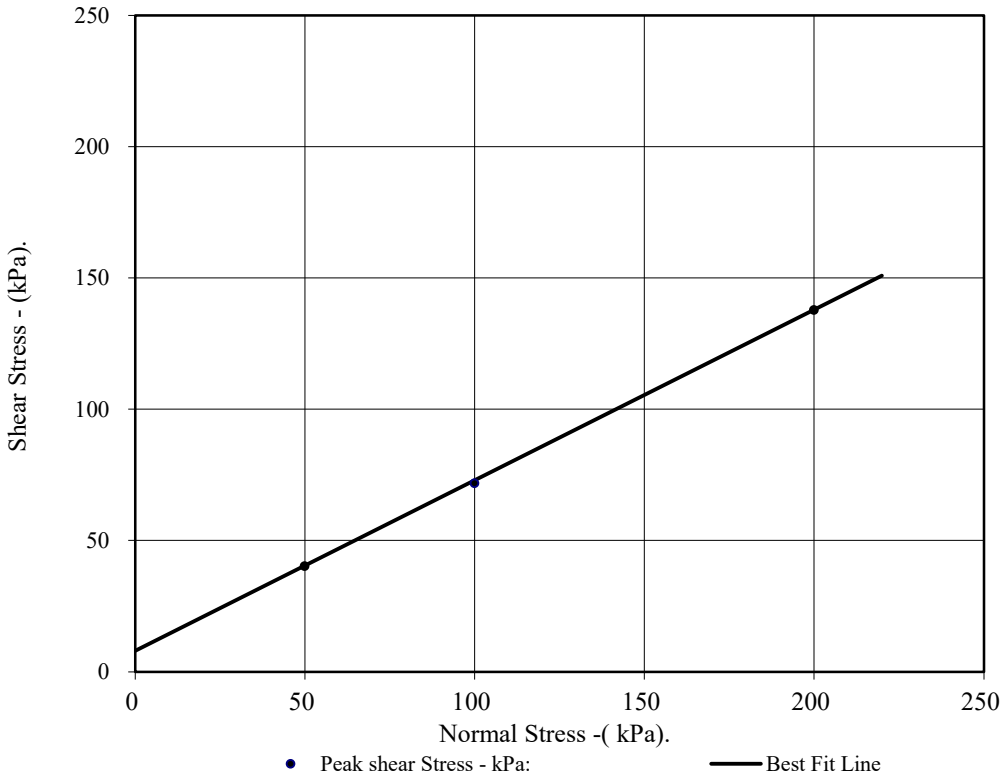
UKAS TESTING 4043	PSL Professional Soils Laboratory	**A46 Newark NNB**	**Contract No: PSL21/3476** **Client Ref: 784-B026948**

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**WS57**		Top Depth:	**2.00**
Sample Number:	**9**		Base Depth:	**2.50**
Sample Conditions:	Dry		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 2mm sieve Remoulded using hand tamped effort			
Sample Description:	**See summary of soil descriptions**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	20.05	20.05	20.05
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	11	11	11
Bulk Density - Mg/m3:	1.96	1.96	1.97
Dry Density - Mg/m3:	1.77	1.76	1.77
Voids Ratio:	0.498	0.503	0.495
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	19.90	19.58	19.13
Shearing Stage			
Rate of Strain (mm/min)	0.050	0.050	0.050
Displacement at peak shear stress (mm)	2.50	4.00	3.00
Peak shear Stress - kPa:	40	72	138
Final Consolidated Conditions			
Moisture Content - %:	12	12	12
Bulk Density - Mg/m3:	1.98	2.01	2.06
Dry Density - Mg/m3:	1.77	1.79	1.85
Peak			
Angle of Shearing Resistance:(~~θ~~)	**33**		
Effective Cohesion - kPa:	**8**		

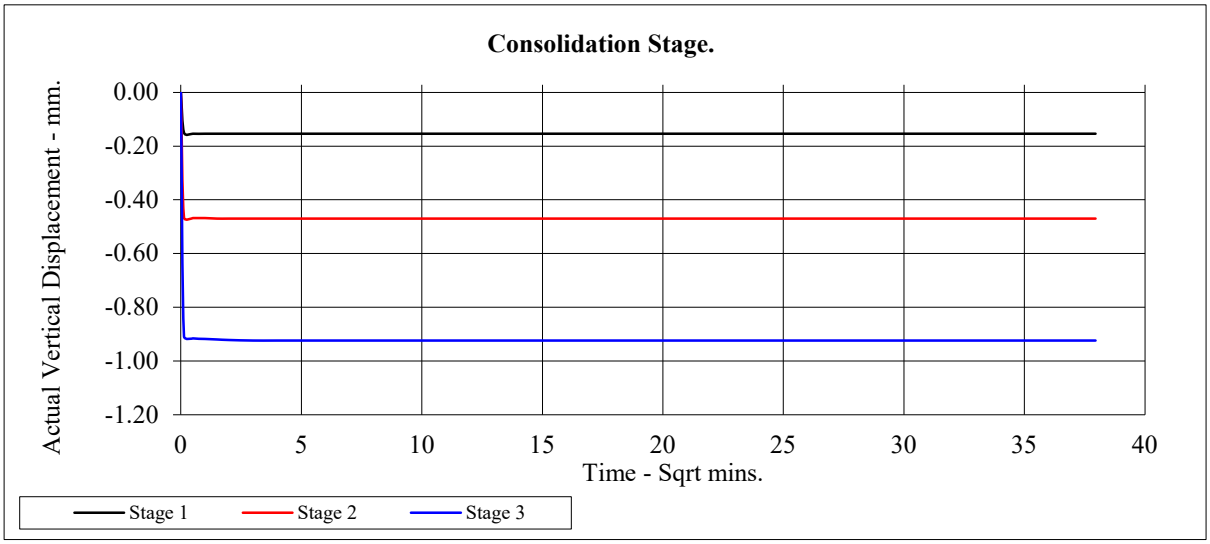


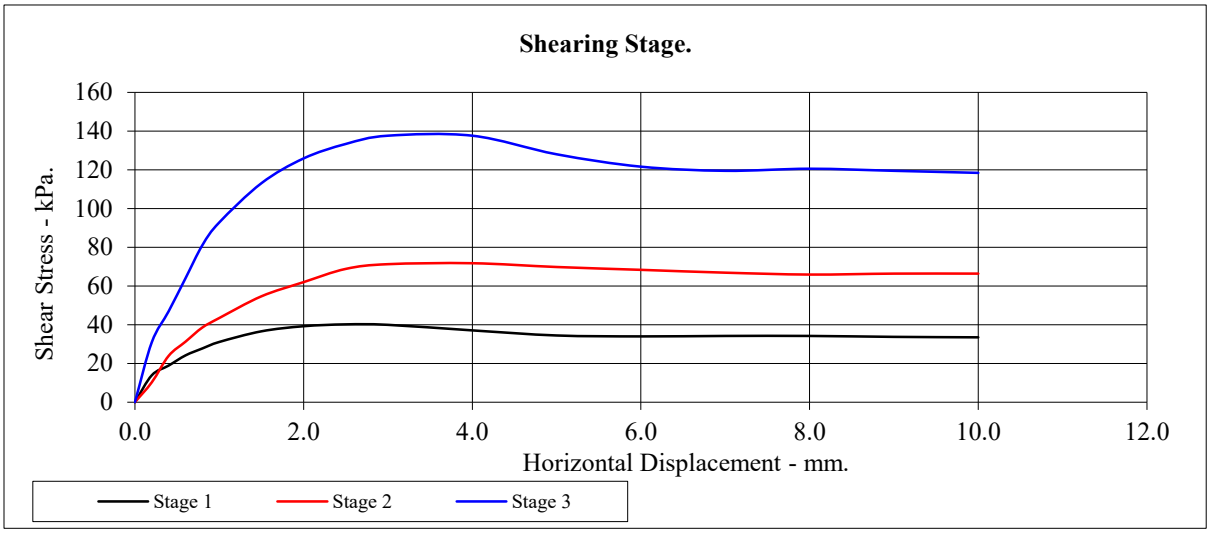
UKAS TESTING 4043	PSL Professional Soils Laboratory	**A46 Newark NNB**	**Contract No:** PSL21/3476 **Client Ref:** 784-B026948

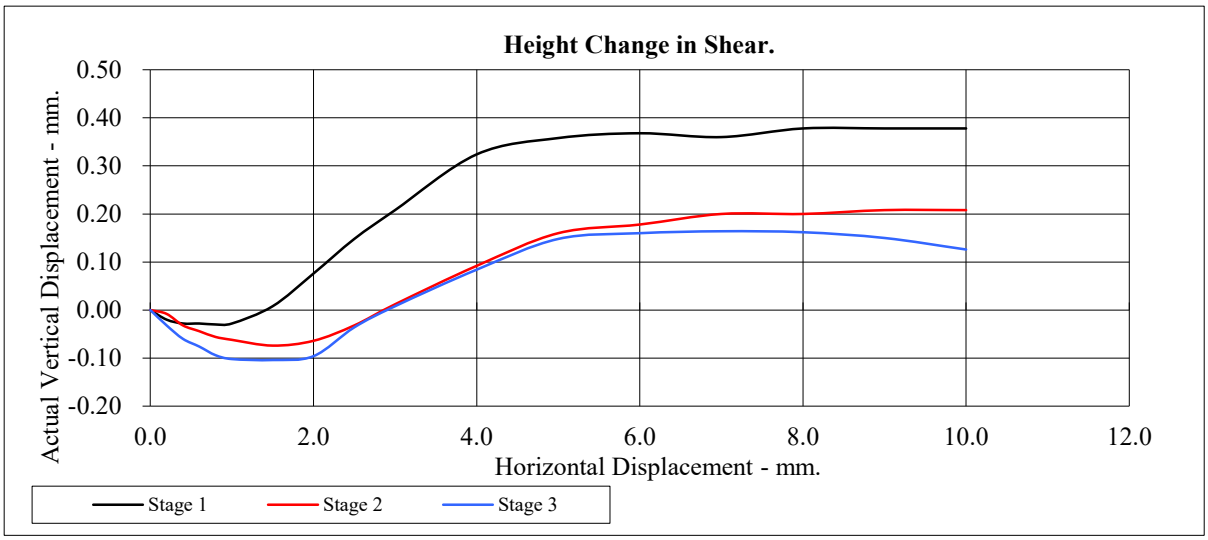
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**WS57**	Top Depth:	**2.00**
Sample Number:	**9**	Base Depth:	**2.50**







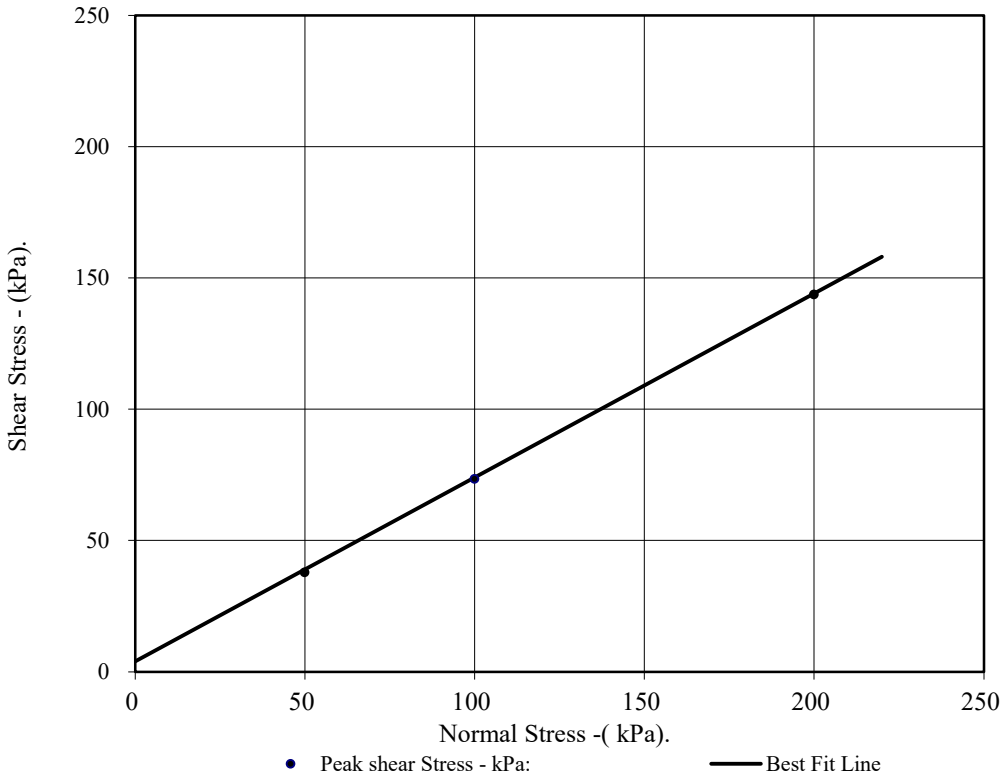
UKAS TESTING 4043	PSL Professional Soils Laboratory	**A46 Newark NNB**	**Contract No: PSL21/3476** **Client Ref: 784-B026948**

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**WS68**		Top Depth:	**2.00**
Sample Number:	**8**		Base Depth:	**2.50**
Sample Conditions:	Dry		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 2mm sieve Remoulded using hand tamped effort			
Sample Description:	**See summary of soil descriptions**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	20.05	20.05	20.05
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	8.7	8.7	8.7
Bulk Density - Mg/m3:	1.79	1.79	1.79
Dry Density - Mg/m3:	1.65	1.65	1.65
Voids Ratio:	0.610	0.609	0.606
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	19.72	19.67	19.14
Shearing Stage			
Rate of Strain (mm/min)	0.050	0.050	0.050
Displacement at peak shear stress (mm)	2.00	2.50	3.00
Peak shear Stress - kPa:	38	73	144
Final Consolidated Conditions			
Moisture Content - %:	9.3	9.2	9.1
Bulk Density - Mg/m3:	1.82	1.83	1.88
Dry Density - Mg/m3:	1.66	1.67	1.72
Peak			
Angle of Shearing Resistance:(~~θ~~)	**35**		
Effective Cohesion - kPa:	**4**		

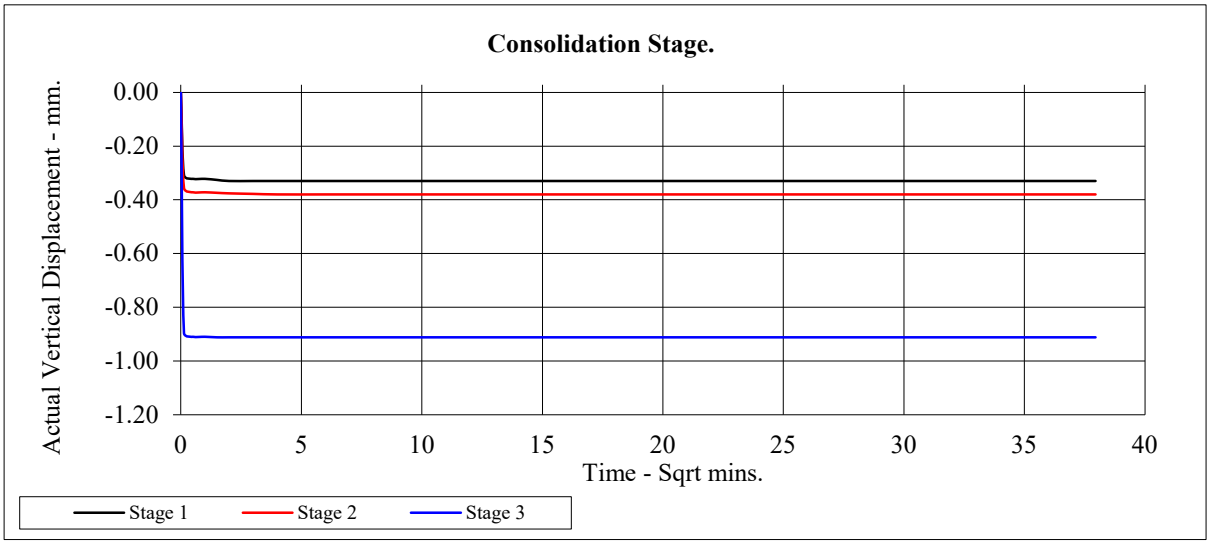


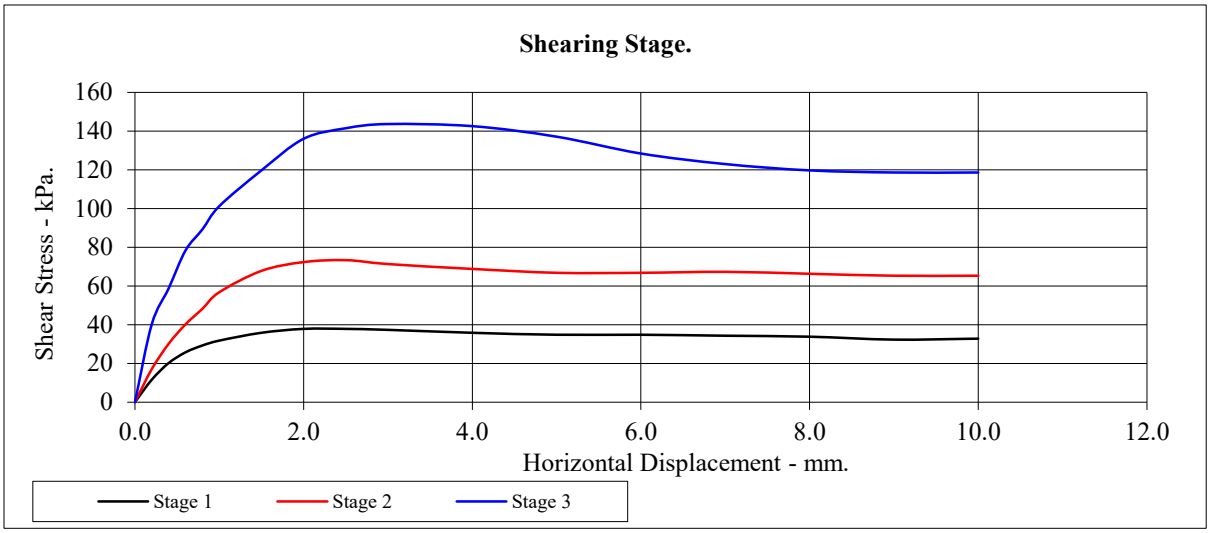
UKAS TESTING 4043	PSL Professional Soils Laboratory	**A46 Newark NNB**	**Contract No:** PSL21/3476 **Client Ref:** 784-B026948

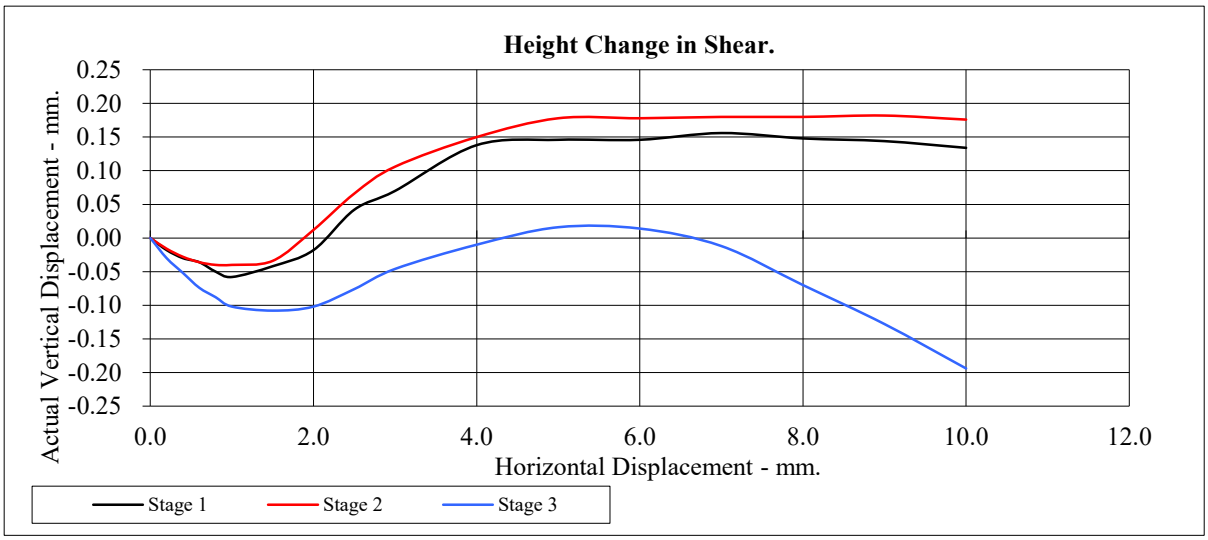
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**WS68**	Top Depth:	**2.00**
Sample Number:	**8**	Base Depth:	**2.50**







LABORATORY REPORT

4043

Contract Number: PSL21/3857

Report Date: 02 July 2021

Client's Reference: 784-B026948

Client Name: Tetra Tech
54 Hagley Road
Birmingham
B16 8PE

For the attention of: Nicholas Bool

Contract Title: A46 Newark

Date Received: 11/5/2021
Date Commenced: 11/5/2021
Date Completed: 2/7/2021

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins (Director)

R Berriman (Quality Manager)

S Royle (Laboratory Manager)

[redacted]

L Knight (Senior Technician)

S Eyre (Senior Technician)

T Watkins (Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AR
[redacted]

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH15	6	B	0.80	1.20	Brown very gravelly clayey SAND.
BH15	104	B	2.30	3.70	Brown very sandy slightly silty GRAVEL.
BH15	106	B	3.80	5.00	Brown slightly gravelly very sandy CLAY.
BH15	112	D	20.00		Brown very sandy CLAY.
BH17	101	B	1.20	2.20	Brown slightly gravelly very sandy CLAY.
BH17	105	B	2.60	3.00	Brown gravelly very sandy CLAY.
BH17	107	B	3.00	3.60	Brown gravelly very sandy CLAY.
BH17	110	D	4.30		Brown slightly gravelly very sandy CLAY.
BH17	112	B	6.00	7.50	Brown slightly gravelly sandy CLAY.
BH17	114	D	10.00		Brown sandy CLAY.
BH19	6	B	0.60	1.10	Brown gravelly very sandy CLAY.
BH19	7	D	1.10		Brown slightly gravelly sandy CLAY.
BH21	104	B	2.90	4.00	Brown very gravelly silty SAND.
BH22	6	B	0.60	1.00	Brown silty SAND.
TP35	4	B	0.80	1.20	Brown very gravelly clayey silty SAND.
TP41	3	B	0.60	0.90	Brown slightly gravelly clayey SAND.
TP48	4	B	0.80	1.20	Brown very gravelly silty SAND.
TP49	4	B	0.80	1.20	Brown slightly gravelly very clayey SAND.
WS04	3	B	0.60	0.80	Brown sandy CLAY.

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
WS04	7	B	1.60	1.90	Brown clayey SAND.
WS04	9	D	3.00		Brown slightly clayey SAND.
WS04	10	B	3.60	3.90	Brown very sandy GRAVEL.
WS06	3	B	0.50	0.70	Brown slightly gravelly sandy CLAY
WS06	6	B	1.50	1.80	Brown clayey SAND.
WS06	9	B	2.20	2.60	Brown slightly gravelly slightly silty SAND
WS08	4	B	0.80	1.20	Brown slightly gravelly silty SAND.
WS08	9	B	2.10	2.50	Brown slightly gravelly SAND.
WS08	10	B	2.60	3.00	Brown very sandy slightly silty GRAVEL.
WS08	15	U76	5.00	5.45	Firm brown sandy CLAY.
WS08	13	B	5.50	5.90	Brown very sandy CLAY
WS10	4	B	0.60	1.00	Brown slightly gravelly very sandy CLAY.
WS10	9	B	2.00	3.00	Brown slightly gravelly very silty SAND.
WS12	3	B	0.50	0.80	Brown slightly gravelly very sandy CLAY.
WS12	7	B	1.60	1.90	Brown very clayey SAND.
WS12	9	B	2.00	3.00	Brown clayey SAND.
WS13	3	B	0.40	0.80	Brown slightly gravelly very sandy CLAY.
WS13	9	B	2.00	3.00	Brown very gravelly slightly silty SAND.
WS15	5	B	0.70	1.20	Brown slightly gravelly very sandy CLAY.

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
WS15	8	B	1.50	1.90	Brown sandy CLAY.
WS15	10	B	2.10	2.50	Brown slightly sandy very silty GRAVEL.
WS17	5	B	0.80	1.20	Brown very gravelly sandy CLAY.
WS17	6	U76	1.20	1.65	Brown sandy CLAY.
WS17	8	D	2.00		Brown sandy CLAY.
WS17	11	B	3.00	4.00	Brown sandy GRAVEL.
WS28	4	B	0.80	1.20	Brown slightly gravelly very sandy CLAY.
WS28	5	U76	1.20	1.65	Stiff brown very sandy CLAY.
WS28	11	B	3.20	3.60	Brown very sandy slightly silty GRAVEL.
WS28	13	B	4.20	4.80	Brown gravelly slightly silty SAND.
WS73	3	B	0.40	0.70	Brown very gravelly clayey SAND.
WS73	7	B	1.60	1.90	Brown very gravelly clayey SAND.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH15	104	B	2.30	3.70	6.2				NP			
BH15	106	B	3.80	5.00	25			38	18	20	61	Intermediate Plasticity CI
BH15	112	D	20.00		19			33	16	17	82	Low Plasticity CL
BH17	105	B	2.60	3.00	24			39	19	20	69	Intermediate Plasticity CI
BH17	110	D	4.30		13			34	17	17	81	Low Plasticity CL
BH17	112	B	6.00	7.50	30			41	20	21	80	Intermediate Plasticity CI
BH17	114	D	10.00		20			41	21	20	84	Intermediate Plasticity CI
BH19	7	D	1.10		19			36	18	18	79	Intermediate Plasticity CI
TP35	4	B	0.80	1.20	6.6			30	15	15	46	Low Plasticity CL
WS04	3	B	0.60	0.80	29			42	20	22	89	Intermediate Plasticity CI
WS04	7	B	1.60	1.90	24				NP			
WS04	9	D	3.00		8.6				NP			
WS06	3	B	0.50	0.70	25			46	22	24	88	Intermediate Plasticity CI
WS06	6	B	1.50	1.80	25				NP			
WS08	4	B	0.80	1.20	21				NP			
WS08	9	B	2.10	2.50	20				NP			
WS10	4	B	0.60	1.00	20			34	17	17	73	Low Plasticity CL
WS12	3	B	0.50	0.80	32			40	20	20	94	Intermediate Plasticity CI
WS12	7	B	1.60	1.90	25			32	16	16	97	Low Plasticity CL

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL Professional Soils Laboratory

A46 Newark

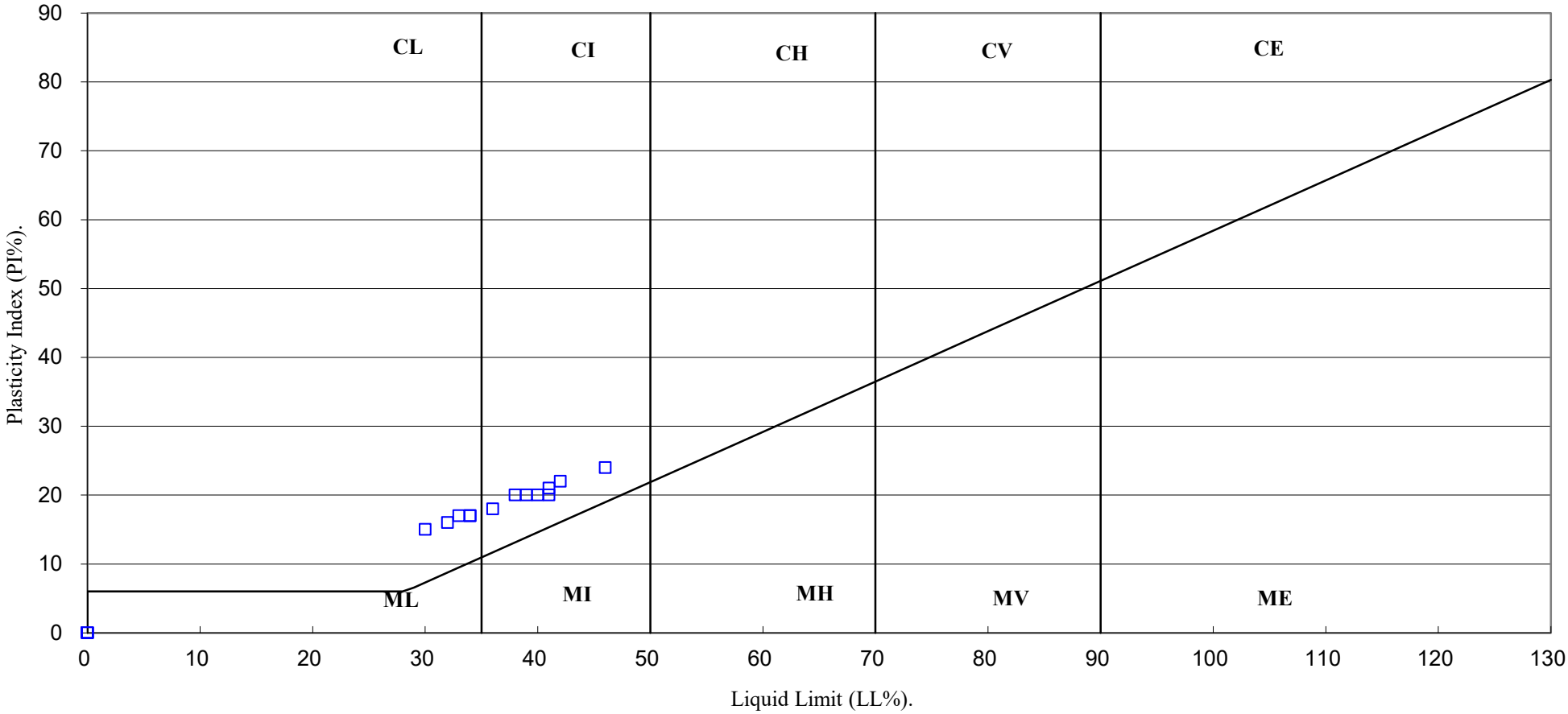
Contract No:

PSL21/3857

Client Ref:

784-B026948

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL Professional Soils Laboratory	A46 Newark	Contract No: PSL21/3857 Client Ref: 784-B026948

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
WS13	3	B	0.40	0.80	25			38	19	19	95	Intermediate Plasticity CI
WS15	5	B	0.70	1.20	28			43	21	22	88	Intermediate Plasticity CI
WS15	8	B	1.50	1.90	35			45	22	23	85	Intermediate Plasticity CI
WS15	10	B	2.10	2.50	8.9				NP			
WS17	5	B	0.80	1.20	35			49	24	25	88	Intermediate Plasticity CI
WS17	8	D	2.00		33			38	19	19	80	Intermediate Plasticity CI
WS28	4	B	0.80	1.20	28			47	23	24	94	Intermediate Plasticity CI
WS28	11	B	3.20	3.60	8.2				NP			

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

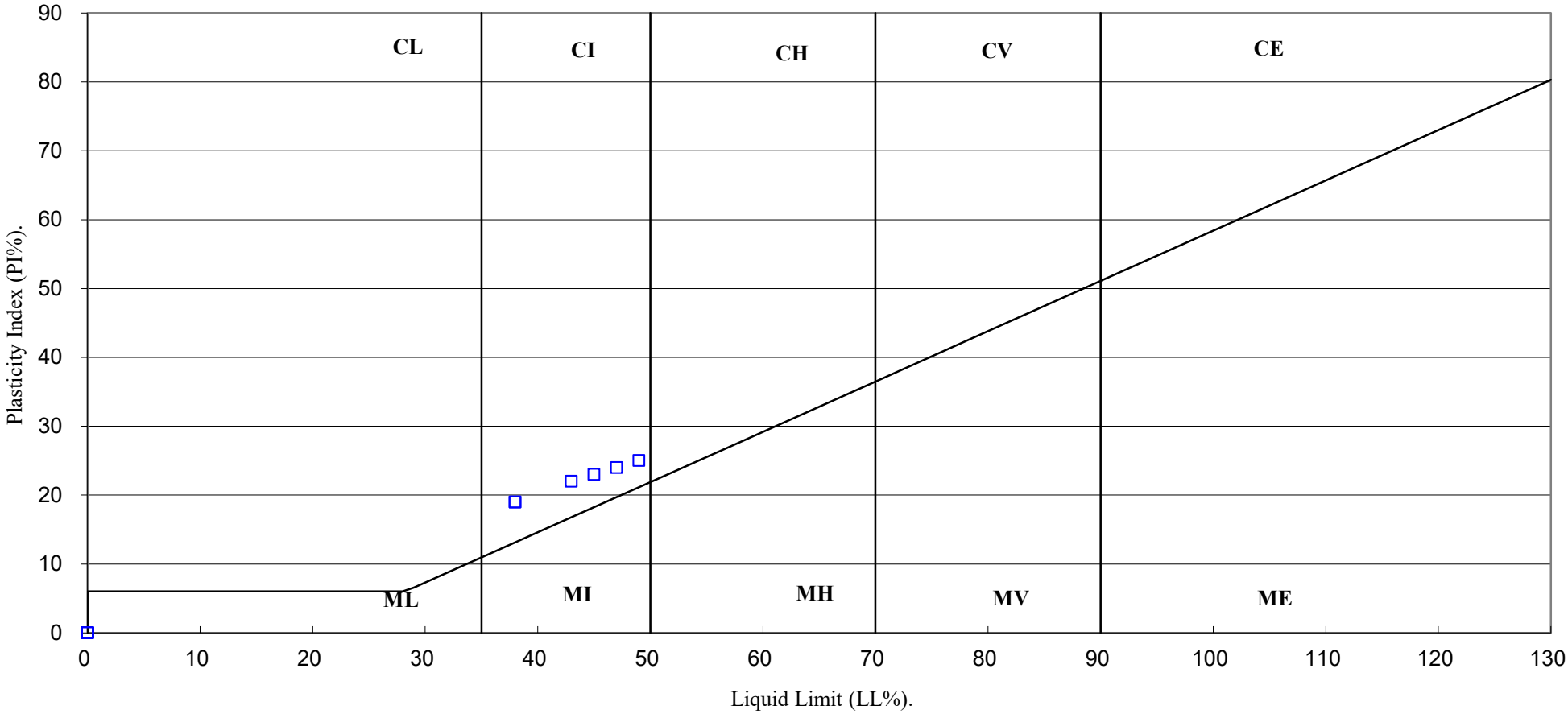
UKAS TESTING 4043

PSL Professional Soils Laboratory

A46 Newark

Contract No:
PSL21/3857
Client Ref:
784-B026948

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



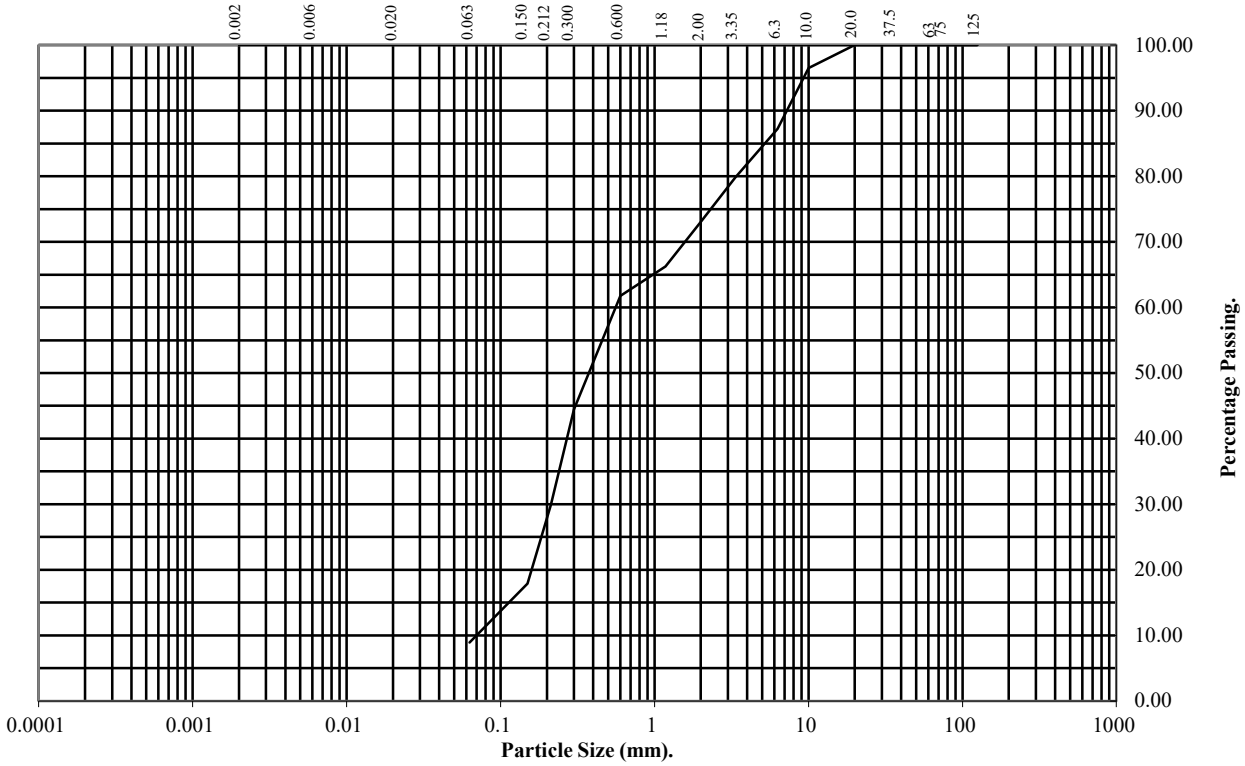
UKAS TESTING 4043	PSL Professional Soils Laboratory	A46 Newark	Contract No: PSL21/3857 Client Ref: 784-B026948

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH15**	**Top Depth (m):**	**0.80**
Sample Number:	**6**	**Base Depth(m):**	**1.20**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	97
6.3	87
3.35	80
2	73
1.18	66
0.6	62
0.3	44
0.212	30
0.15	18
0.063	9

Soil Fraction	Total Percentage
Cobbles	0
Gravel	27
Sand	64
Silt/Clay	9

Remarks:

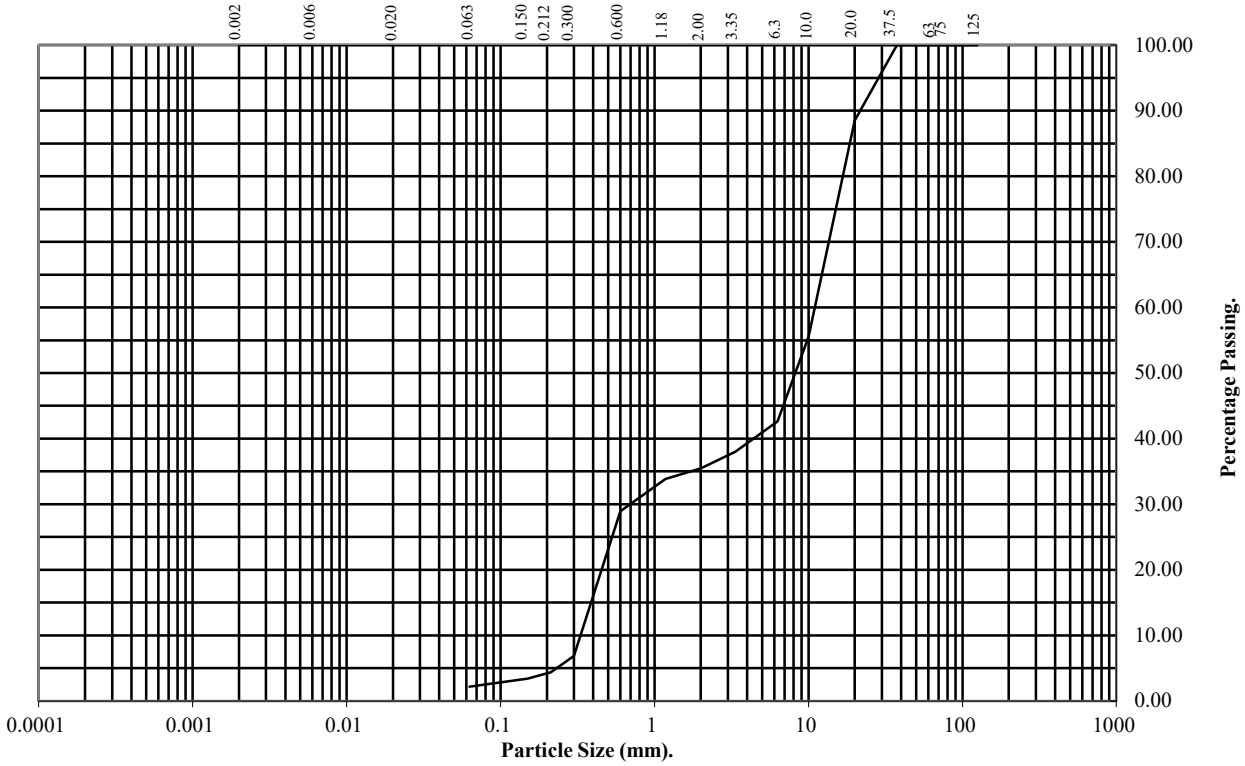
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH15**	**Top Depth (m):**	**2.30**
Sample Number:	**104**	**Base Depth(m):**	**3.70**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	88
10	56
6.3	43
3.35	38
2	35
1.18	34
0.6	29
0.3	7
0.212	4
0.15	3
0.063	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	65
Sand	33
Silt/Clay	2

Remarks:

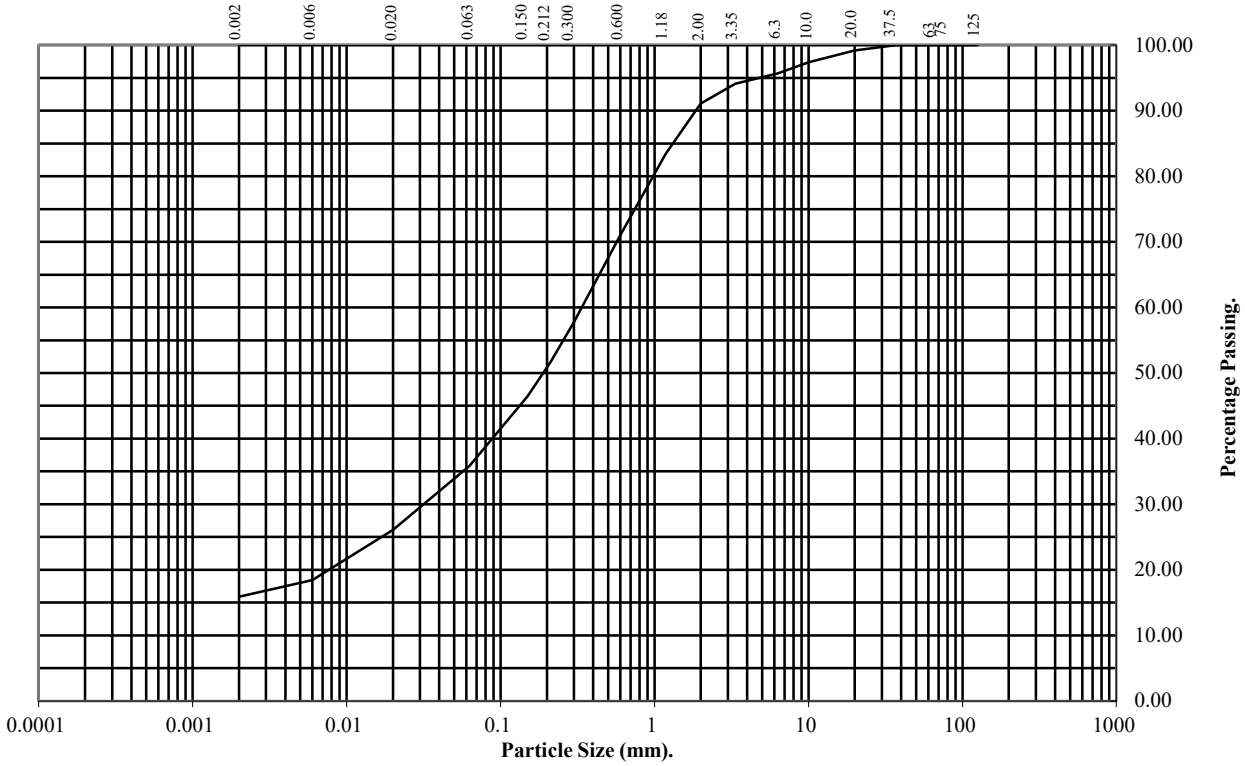
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH15**	**Top Depth (m):**	**3.80**
Sample Number:	**106**	**Base Depth(m):**	**5.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	99
10	97
6.3	96
3.35	94
2	91
1.18	83
0.6	71
0.3	58
0.212	52
0.15	46
0.063	36

Particle Diameter	Percentage Passing
0.02	26
0.006	18
0.002	16

Soil Fraction	Total Percentage
Cobbles	0
Gravel	9
Sand	55
Silt	20
Clay	16

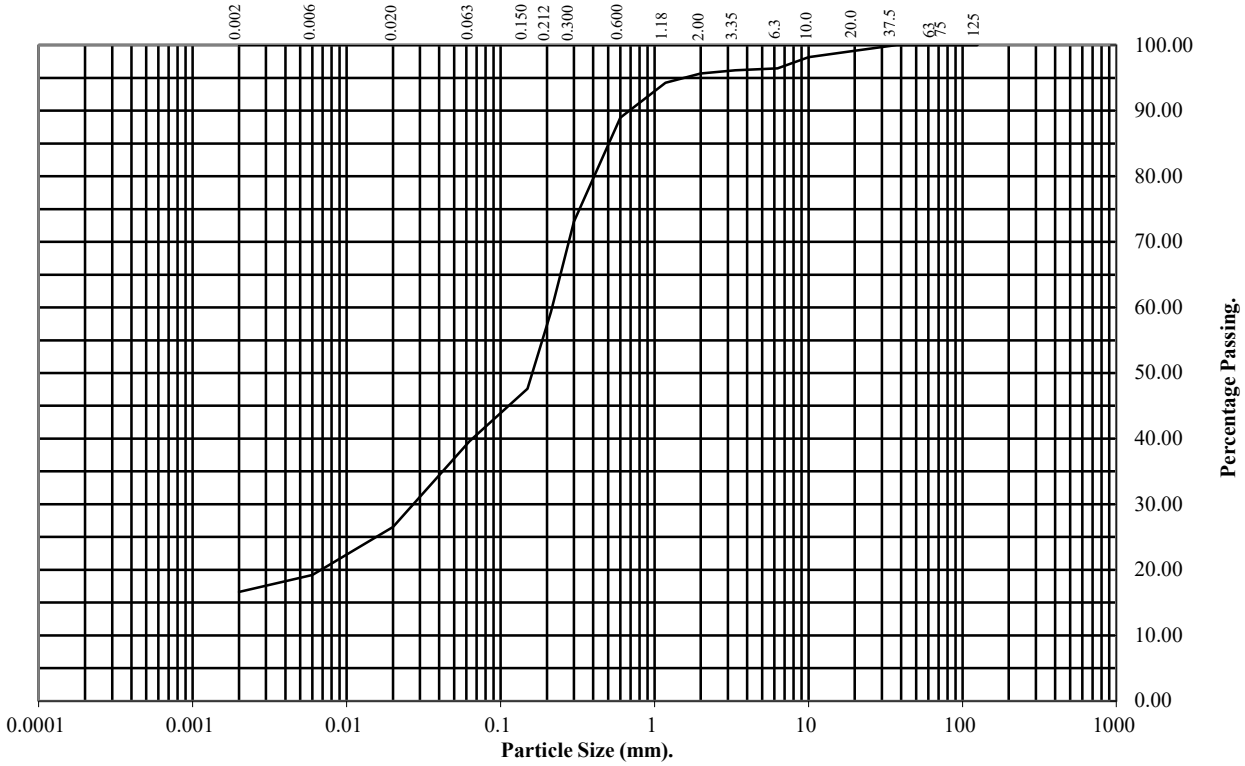
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH17**	**Top Depth (m):**	**1.20**
Sample Number:	**101**	**Base Depth(m):**	**2.20**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	99
10	98
6.3	96
3.35	96
2	96
1.18	94
0.6	89
0.3	73
0.212	59
0.15	48
0.063	40

Particle Diameter	Percentage Passing
0.02	27
0.006	19
0.002	17

Soil Fraction	Total Percentage
Cobbles	0
Gravel	4
Sand	56
Silt	23
Clay	17

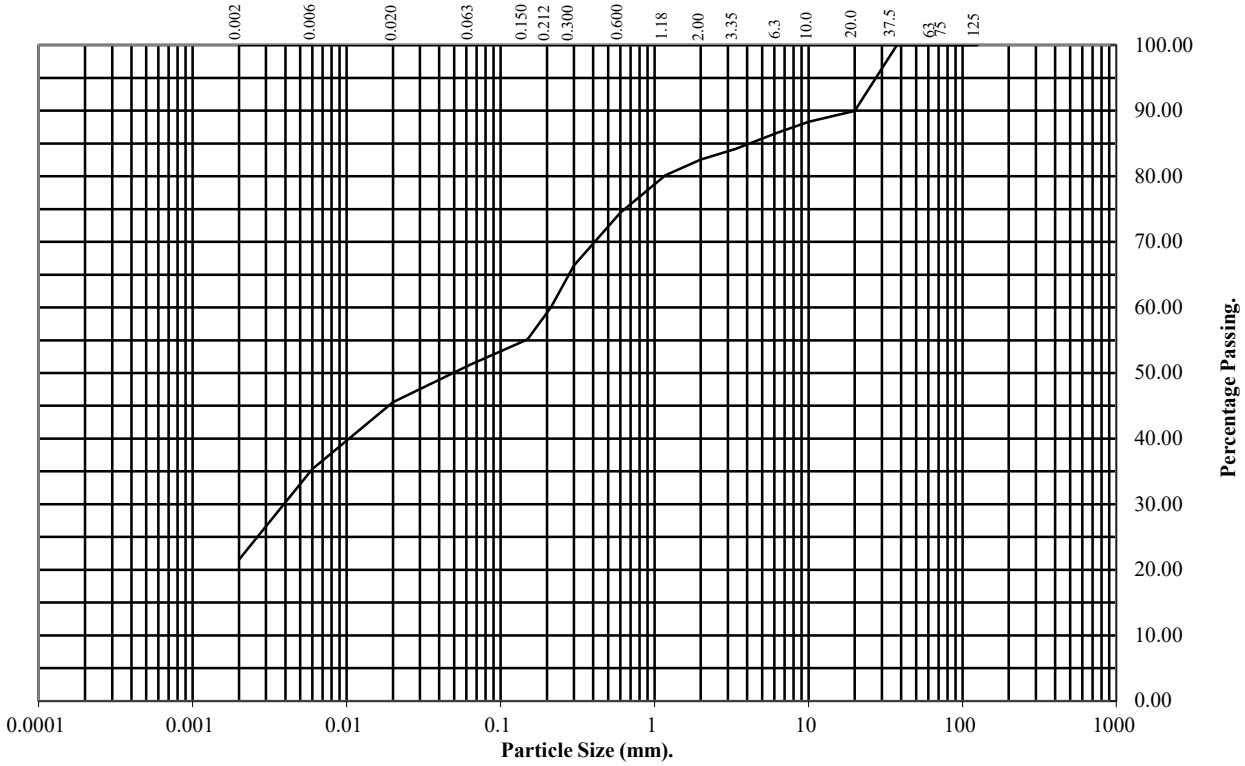
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH17**	**Top Depth (m):**	**2.60**
Sample Number:	**105**	**Base Depth(m):**	**3.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	90
10	88
6.3	87
3.35	84
2	83
1.18	80
0.6	74
0.3	66
0.212	60
0.15	55
0.063	51

Particle Diameter	Percentage Passing
0.02	46
0.006	35
0.002	22

Soil Fraction	Total Percentage
Cobbles	0
Gravel	17
Sand	32
Silt	29
Clay	22

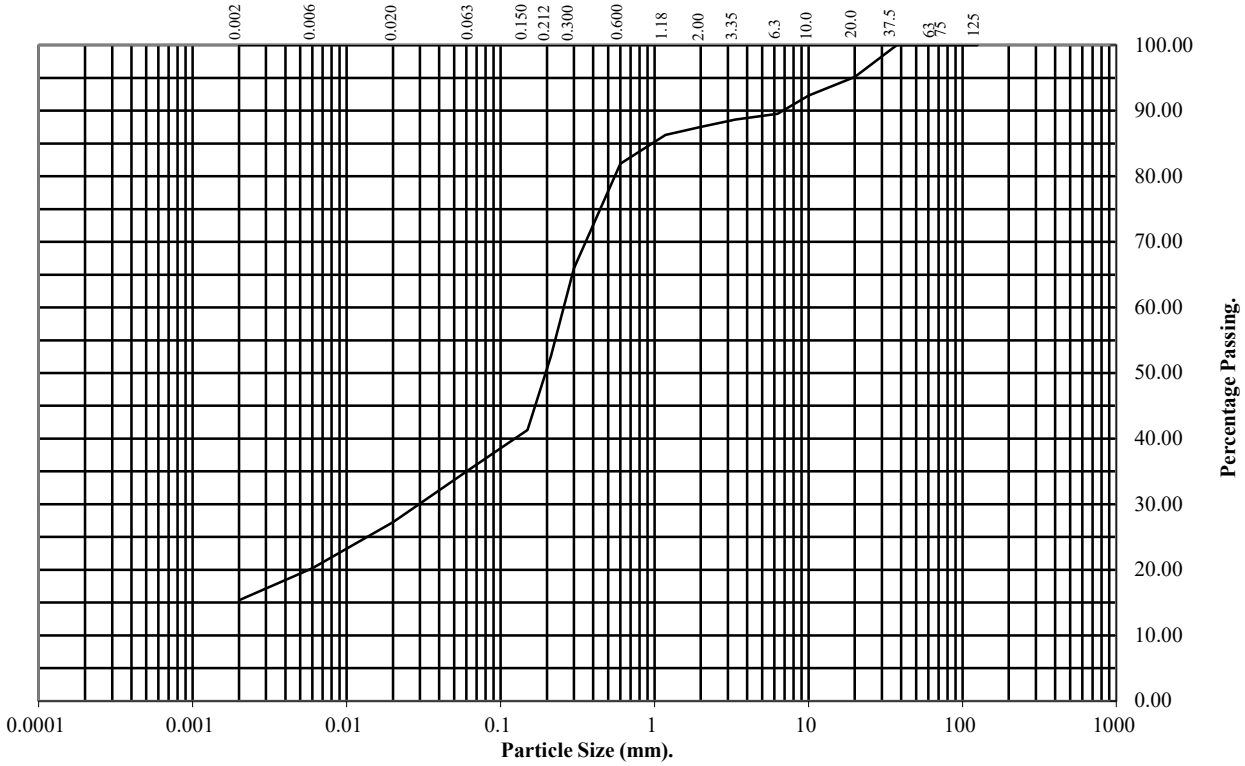
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH17**	**Top Depth (m):**	**3.00**
Sample Number:	**107**	**Base Depth(m):**	**3.60**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	95
10	92
6.3	90
3.35	89
2	88
1.18	86
0.6	82
0.3	66
0.212	53
0.15	41
0.063	35

Particle Diameter	Percentage Passing
0.02	27
0.006	20
0.002	15

Soil Fraction	Total Percentage
Cobbles	0
Gravel	12
Sand	53
Silt	20
Clay	15

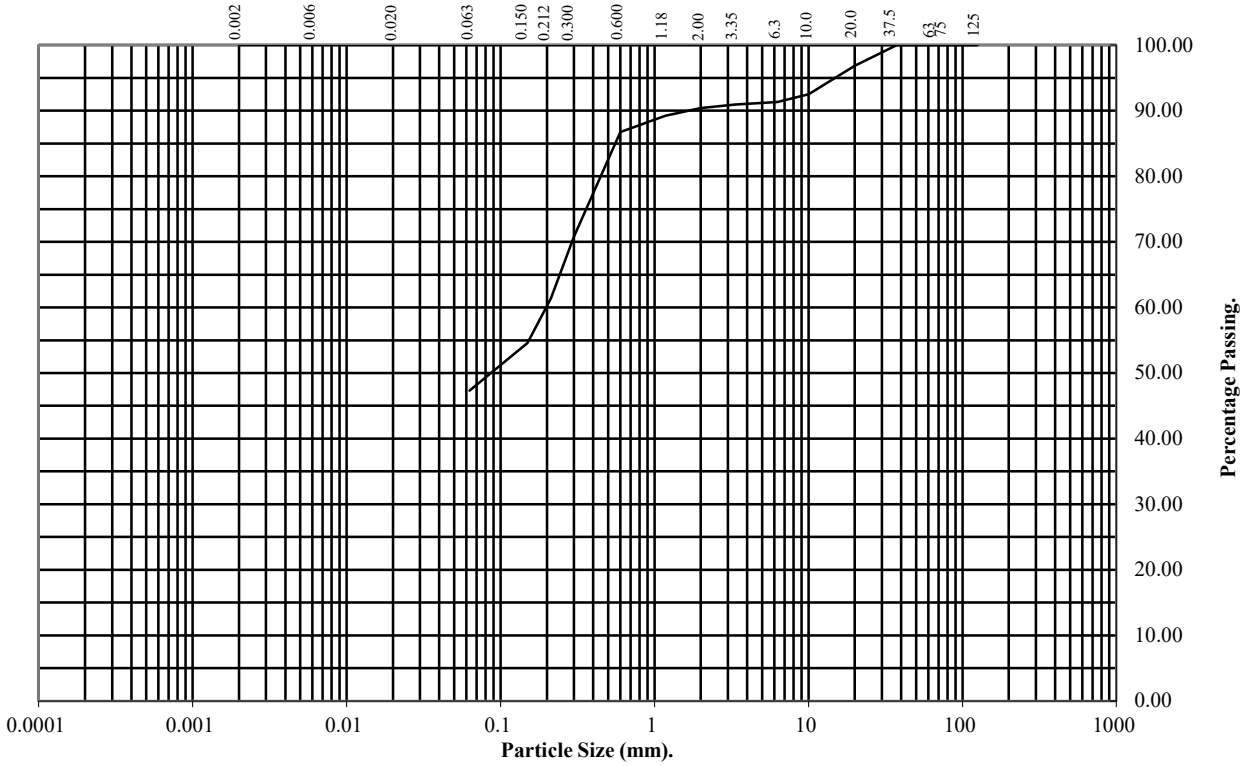
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH19**	**Top Depth (m):**	**0.60**
Sample Number:	**6**	**Base Depth(m):**	**1.10**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	97
10	93
6.3	91
3.35	91
2	90
1.18	89
0.6	87
0.3	71
0.212	61
0.15	55
0.063	47

Soil Fraction	Total Percentage
Cobbles	0
Gravel	10
Sand	43
Silt/Clay	47

Remarks:

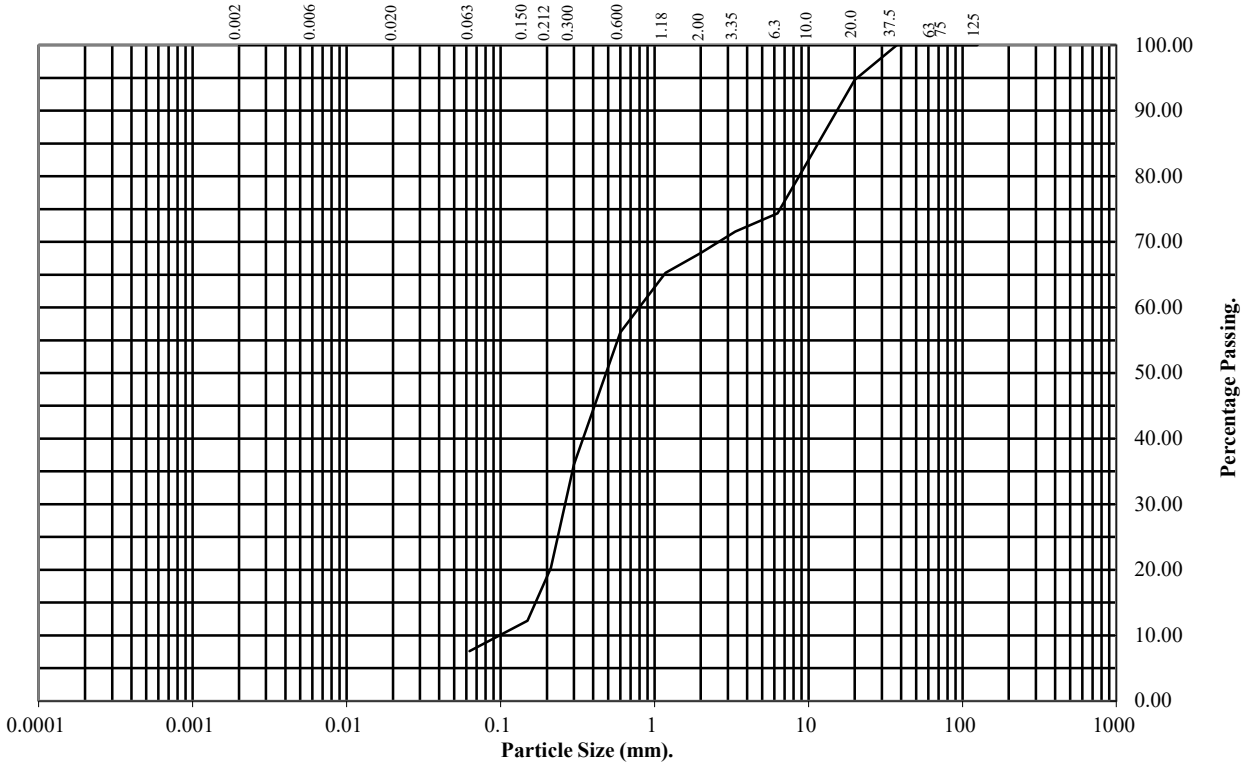
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH21**	**Top Depth (m):**	**2.90**
Sample Number:	**104**	**Base Depth(m):**	**4.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	95
10	82
6.3	74
3.35	72
2	68
1.18	65
0.6	56
0.3	36
0.212	20
0.15	12
0.063	8

Soil Fraction	Total Percentage
Cobbles	0
Gravel	32
Sand	60
Silt/Clay	8

Remarks:

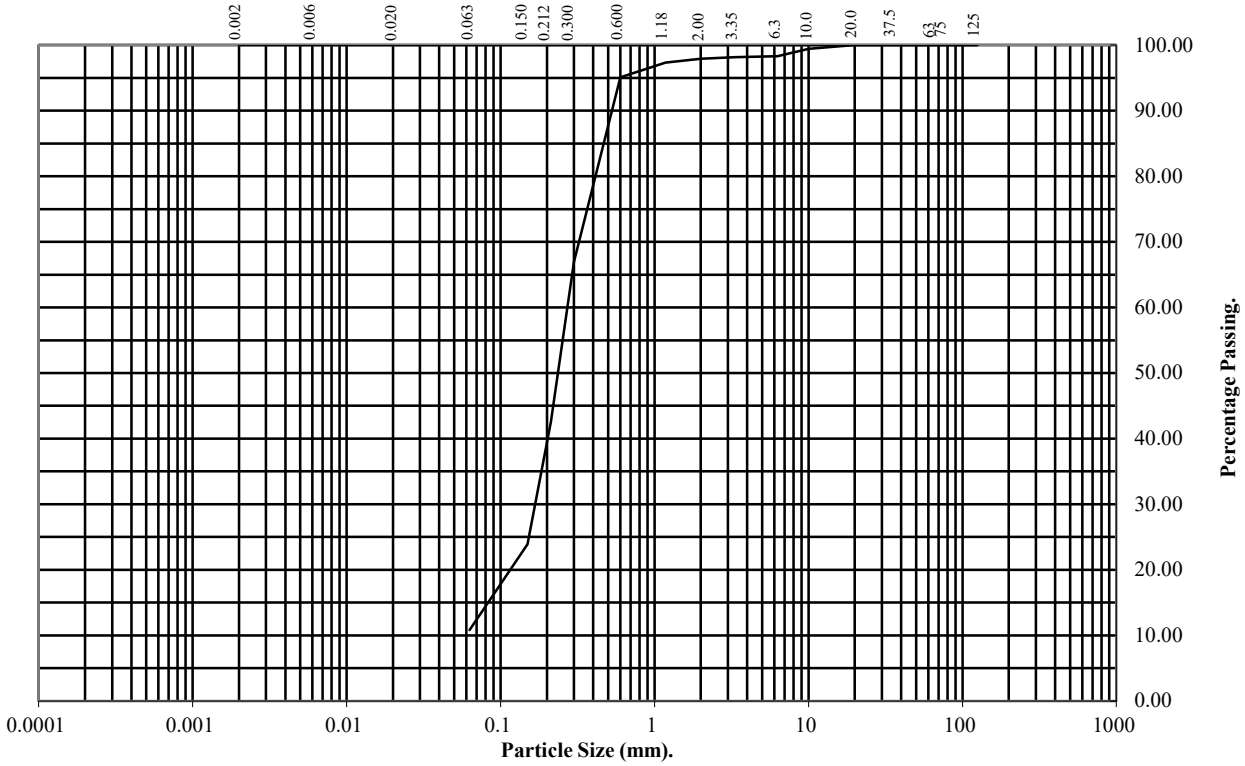
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH22**	**Top Depth (m):**	**0.60**
Sample Number:	**6**	**Base Depth(m):**	**1.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	99
6.3	98
3.35	98
2	98
1.18	97
0.6	95
0.3	67
0.212	43
0.15	24
0.063	11

Soil Fraction	Total Percentage
Cobbles	0
Gravel	2
Sand	87
Silt/Clay	11

Remarks:

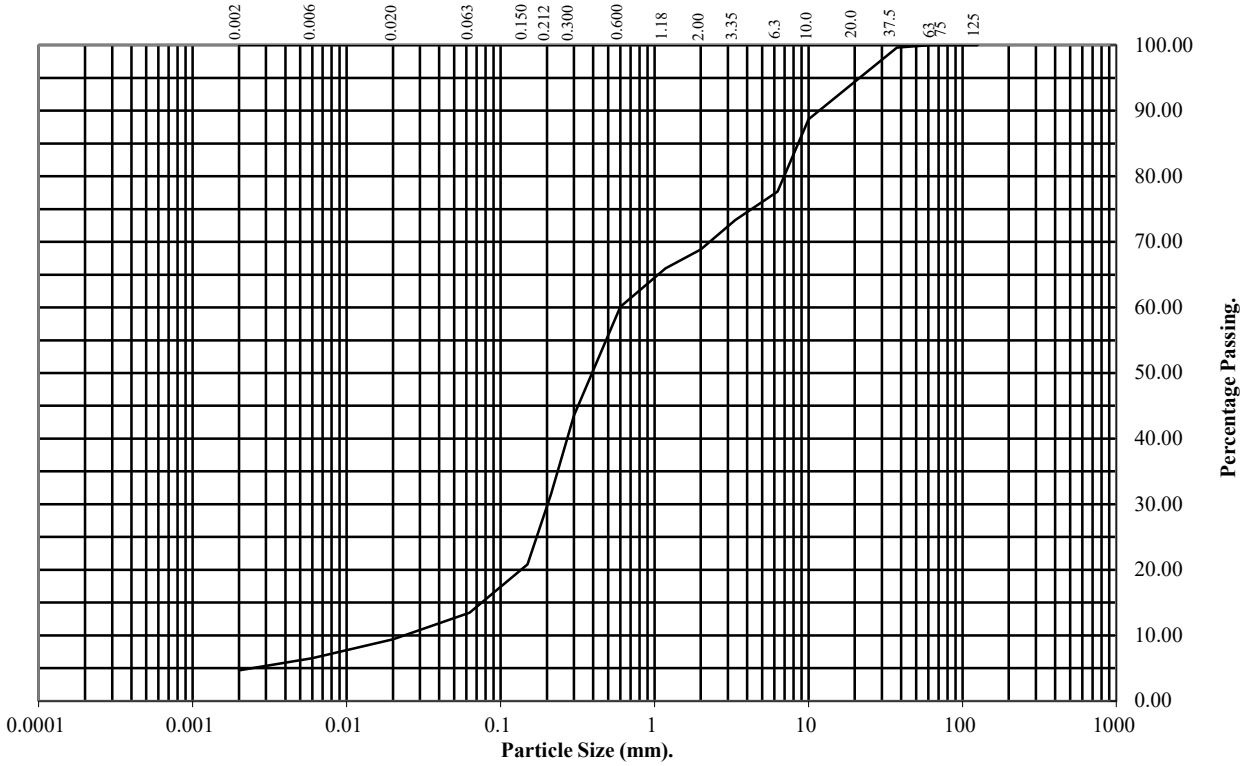
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**TP35**	**Top Depth (m):**	**0.80**
Sample Number:	**4**	**Base Depth(m):**	**1.20**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	94
10	89
6.3	78
3.35	73
2	69
1.18	66
0.6	60
0.3	44
0.212	31
0.15	21
0.063	13

Particle Diameter	Percentage Passing
0.02	9
0.006	7
0.002	5

Soil Fraction	Total Percentage
Cobbles	0
Gravel	31
Sand	56
Silt	8
Clay	5

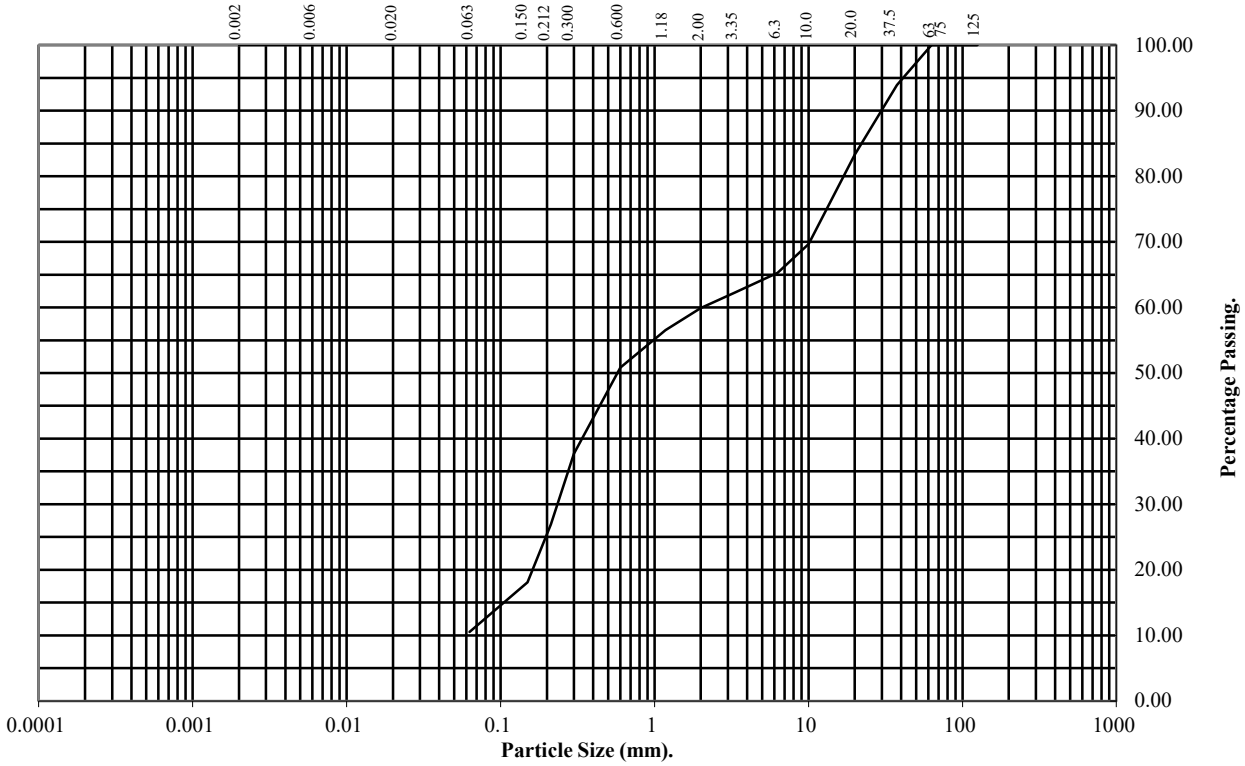
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**TP48**	**Top Depth (m):**	**0.80**
Sample Number:	**4**	**Base Depth(m):**	**1.20**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	94
20	83
10	70
6.3	65
3.35	62
2	60
1.18	57
0.6	51
0.3	38
0.212	27
0.15	18
0.063	11

Soil Fraction	Total Percentage
Cobbles	0
Gravel	40
Sand	49
Silt/Clay	11

Remarks:

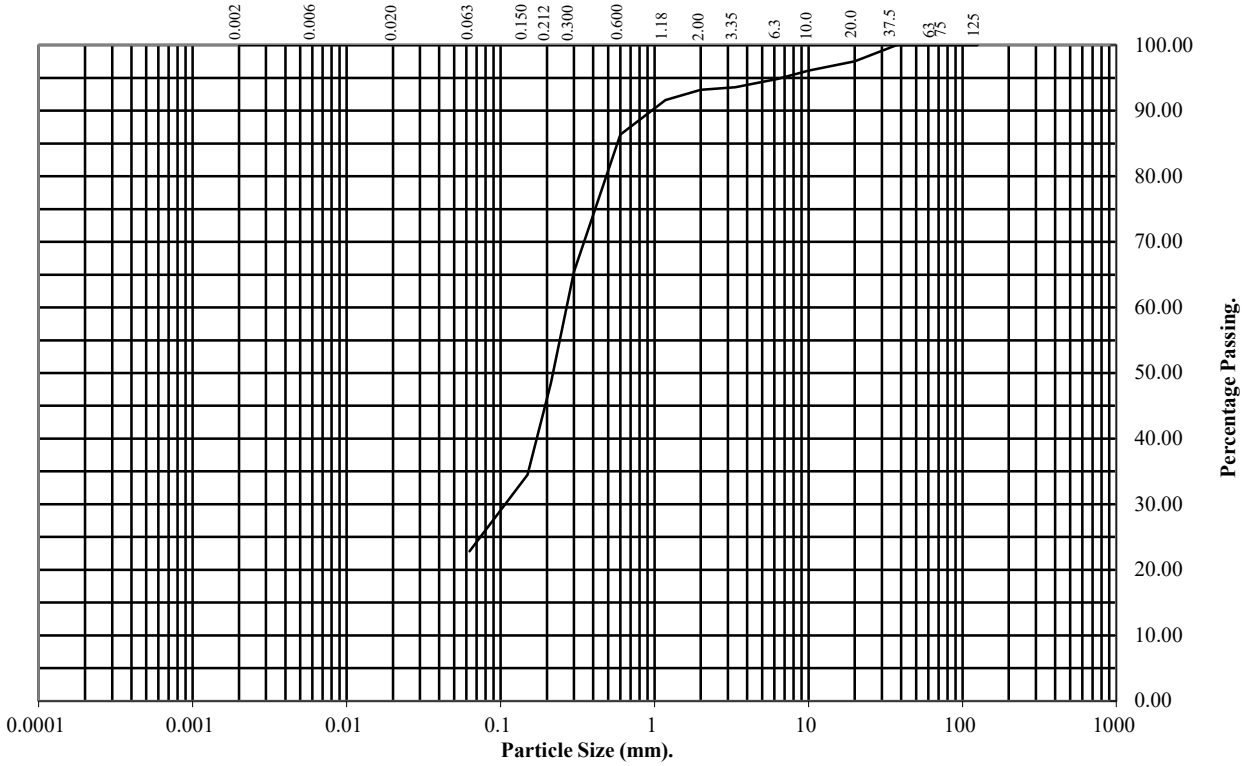
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**TP49**	**Top Depth (m):**	**0.80**
Sample Number:	**4**	**Base Depth(m):**	**1.20**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	98
10	96
6.3	95
3.35	94
2	93
1.18	92
0.6	86
0.3	65
0.212	48
0.15	34
0.063	23

Soil Fraction	Total Percentage
Cobbles	0
Gravel	7
Sand	70
Silt/Clay	23

Remarks:

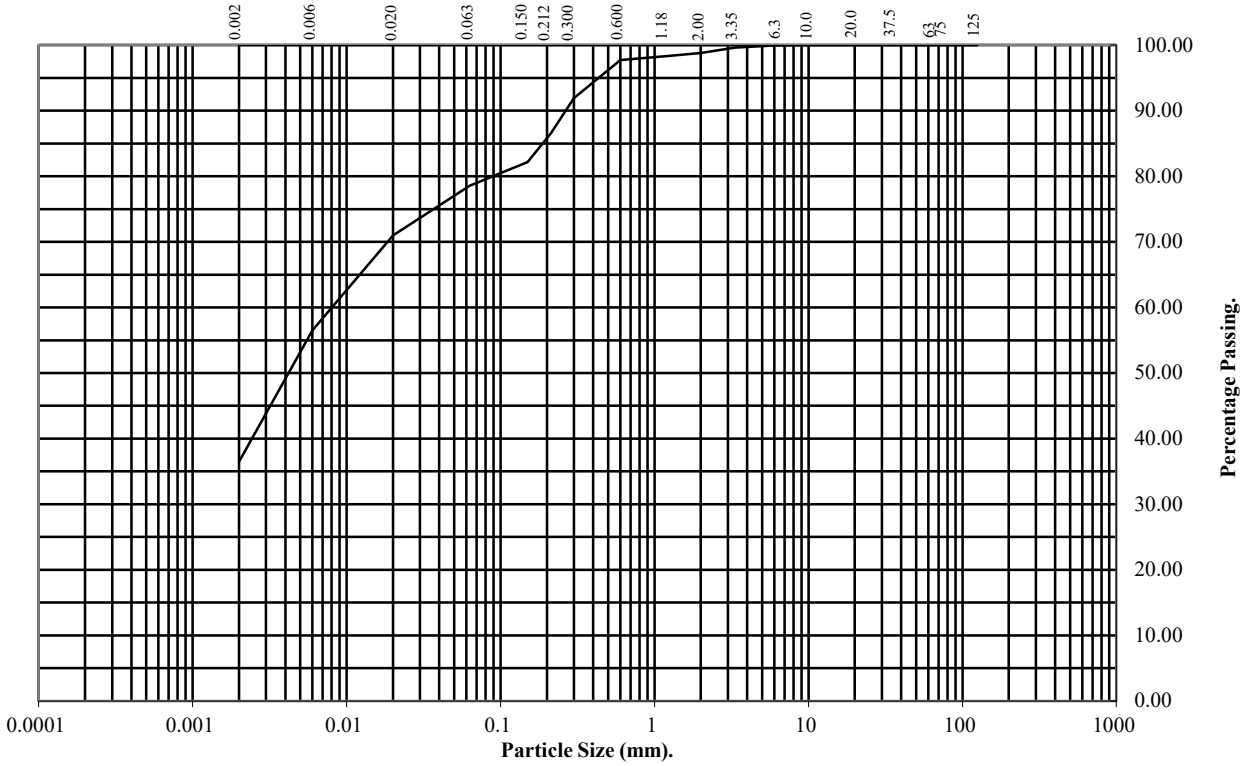
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**WS04**	**Top Depth (m):**	**0.60**
Sample Number:	**3**	**Base Depth(m):**	**0.80**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	99
1.18	98
0.6	98
0.3	92
0.212	87
0.15	82
0.063	79

Particle Diameter	Percentage Passing
0.02	71
0.006	57
0.002	36

Soil Fraction	Total Percentage
Cobbles	0
Gravel	1
Sand	20
Silt	43
Clay	36

Remarks:

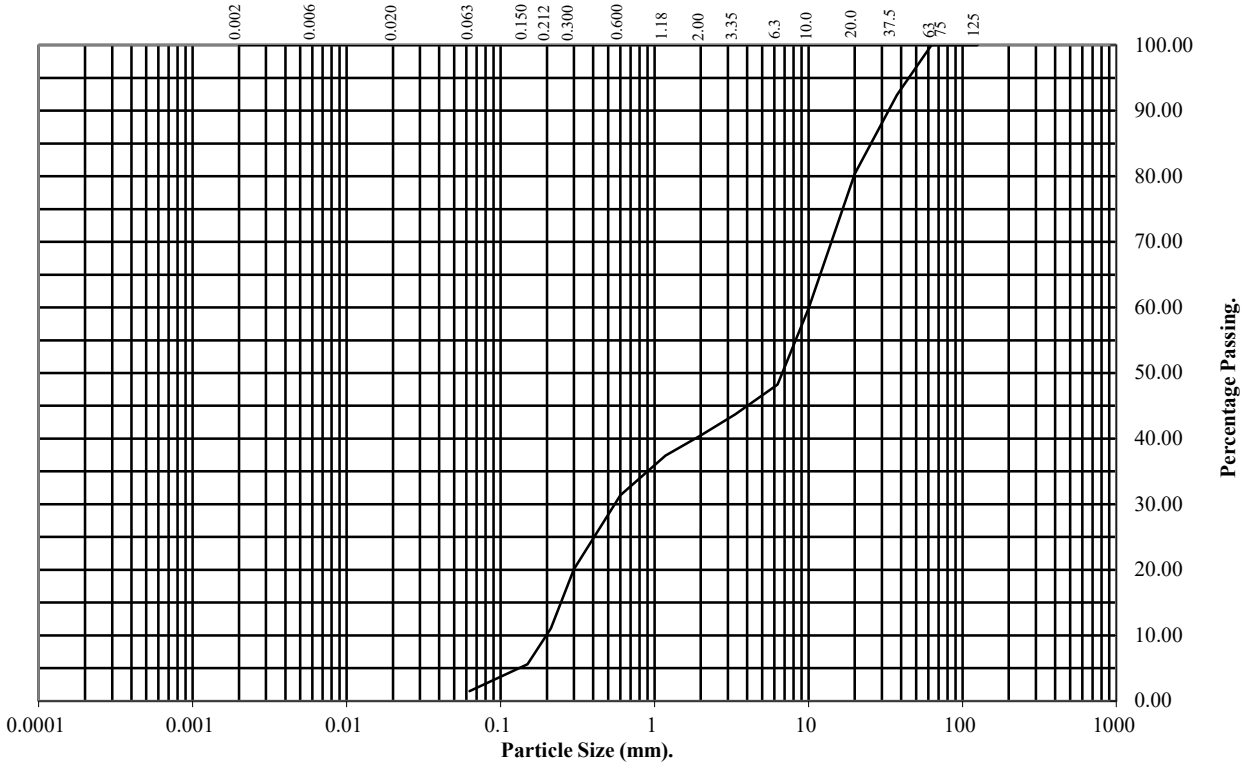
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS04**	**Top Depth (m):**	**3.60**
Sample Number:	**10**	**Base Depth(m):**	**3.90**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	92
20	80
10	60
6.3	48
3.35	44
2	41
1.18	37
0.6	31
0.3	20
0.212	11
0.15	6
0.063	1

Soil Fraction	Total Percentage
Cobbles	0
Gravel	59
Sand	40
Silt/Clay	1

Remarks:

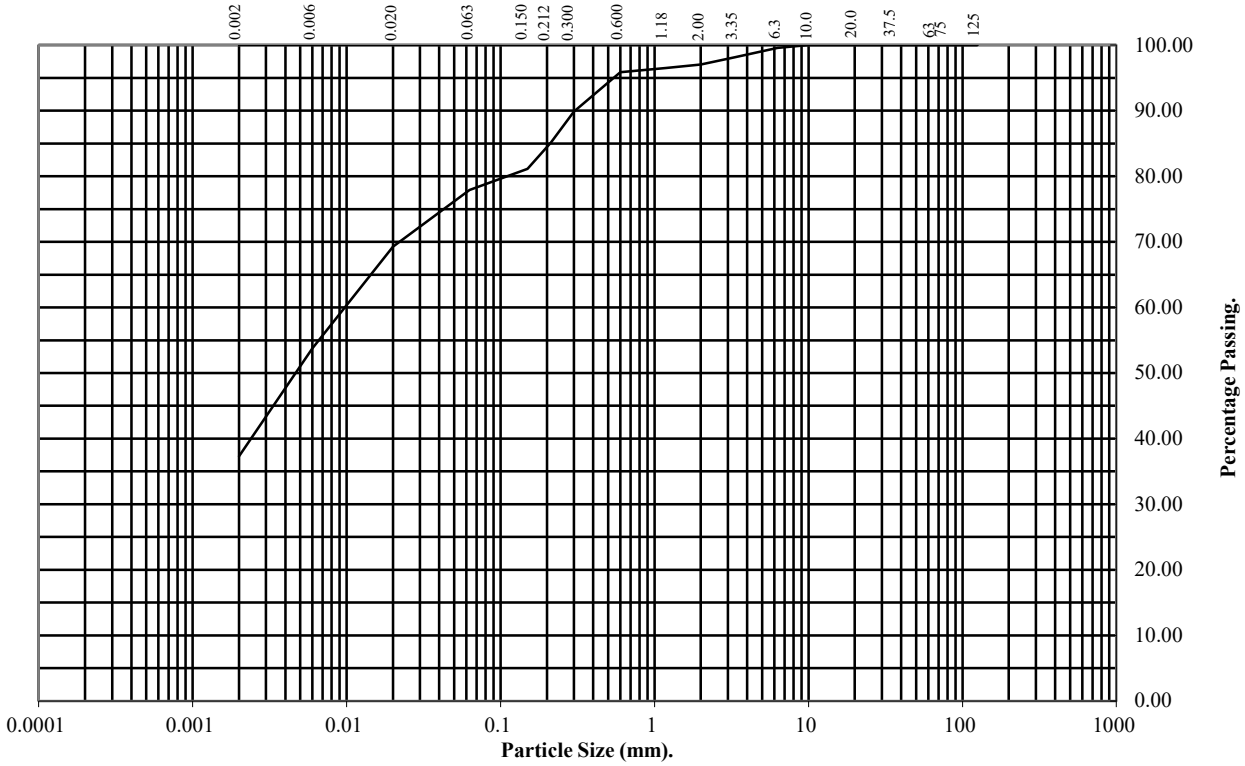
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**WS06**	**Top Depth (m):**	**0.50**
Sample Number:	**3**	**Base Depth(m):**	**0.70**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	98
2	97
1.18	97
0.6	96
0.3	90
0.212	85
0.15	81
0.063	78

Particle Diameter	Percentage Passing
0.02	69
0.006	54
0.002	37

Soil Fraction	Total Percentage
Cobbles	0
Gravel	3
Sand	19
Silt	41
Clay	37

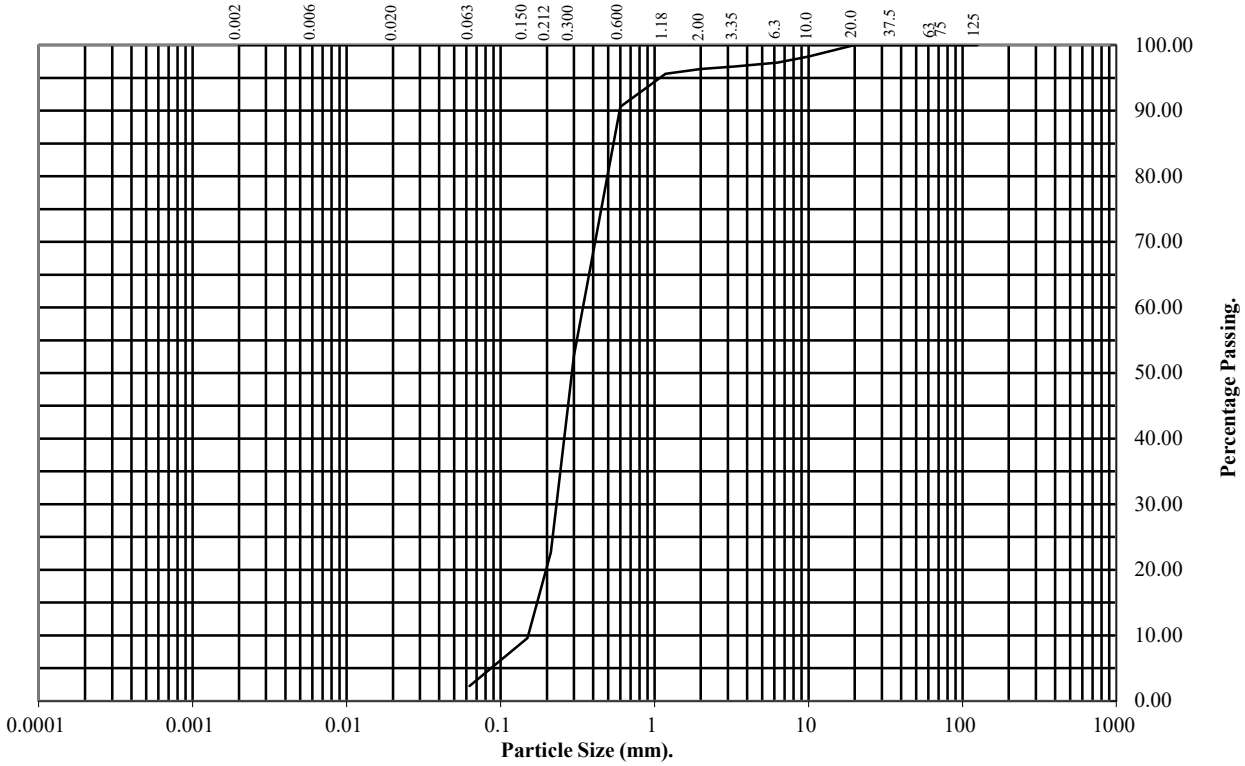
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS06**	**Top Depth (m):**	**2.20**
Sample Number:	**9**	**Base Depth(m):**	**2.60**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	98
6.3	97
3.35	97
2	96
1.18	96
0.6	91
0.3	53
0.212	23
0.15	10
0.063	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	4
Sand	94
Silt/Clay	2

Remarks:

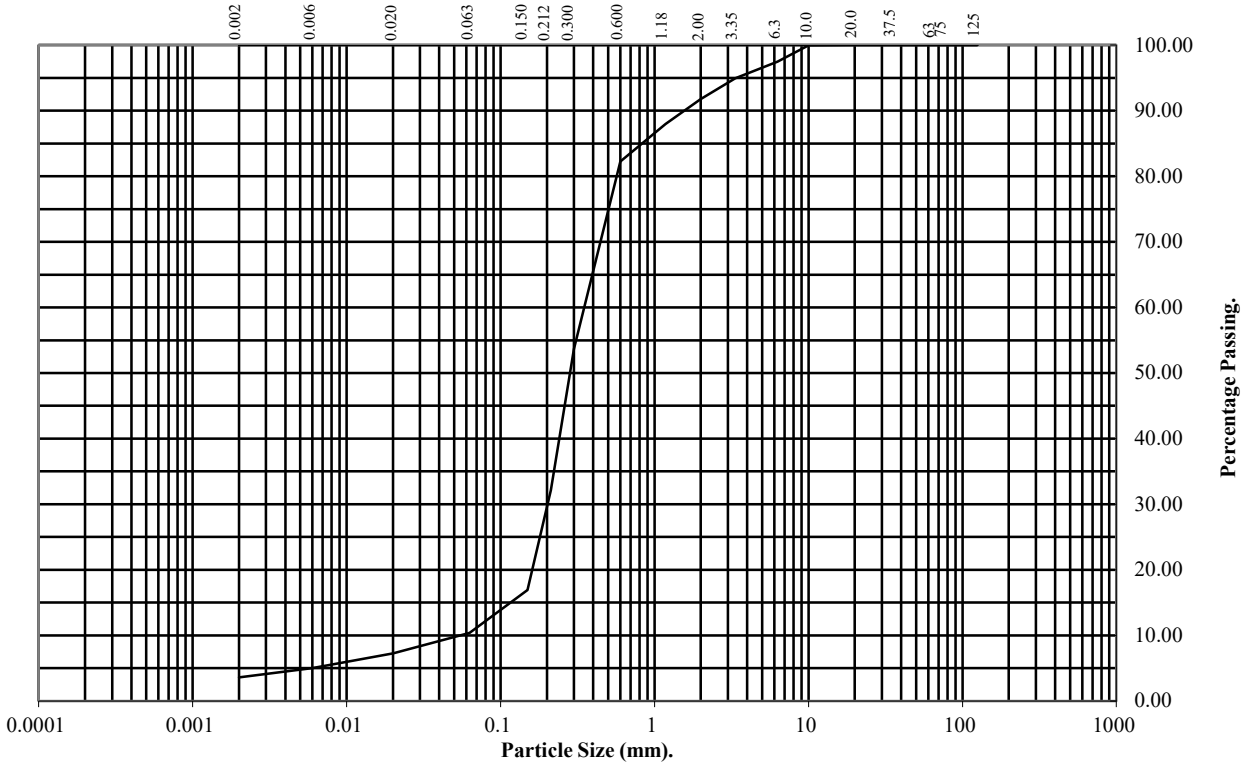
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**WS08**	**Top Depth (m):**	**0.80**
Sample Number:	**4**	**Base Depth(m):**	**1.20**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	97
3.35	95
2	92
1.18	88
0.6	82
0.3	54
0.212	32
0.15	17
0.063	10

Particle Diameter	Percentage Passing
0.02	7
0.006	5
0.002	4

Soil Fraction	Total Percentage
Cobbles	0
Gravel	8
Sand	82
Silt	6
Clay	4

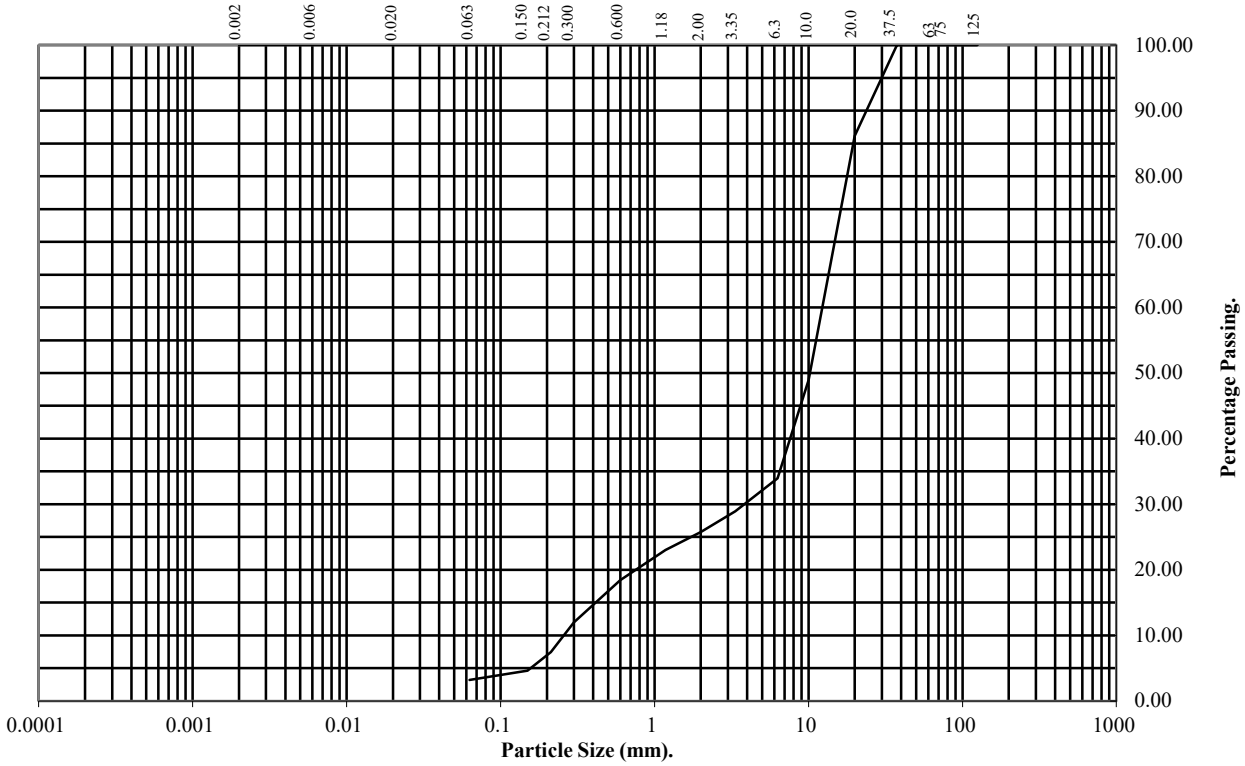
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS08**	**Top Depth (m):**	**2.60**
Sample Number:	**10**	**Base Depth(m):**	**3.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	86
10	49
6.3	34
3.35	29
2	26
1.18	23
0.6	18
0.3	12
0.212	7
0.15	5
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	74
Sand	23
Silt/Clay	3

Remarks:

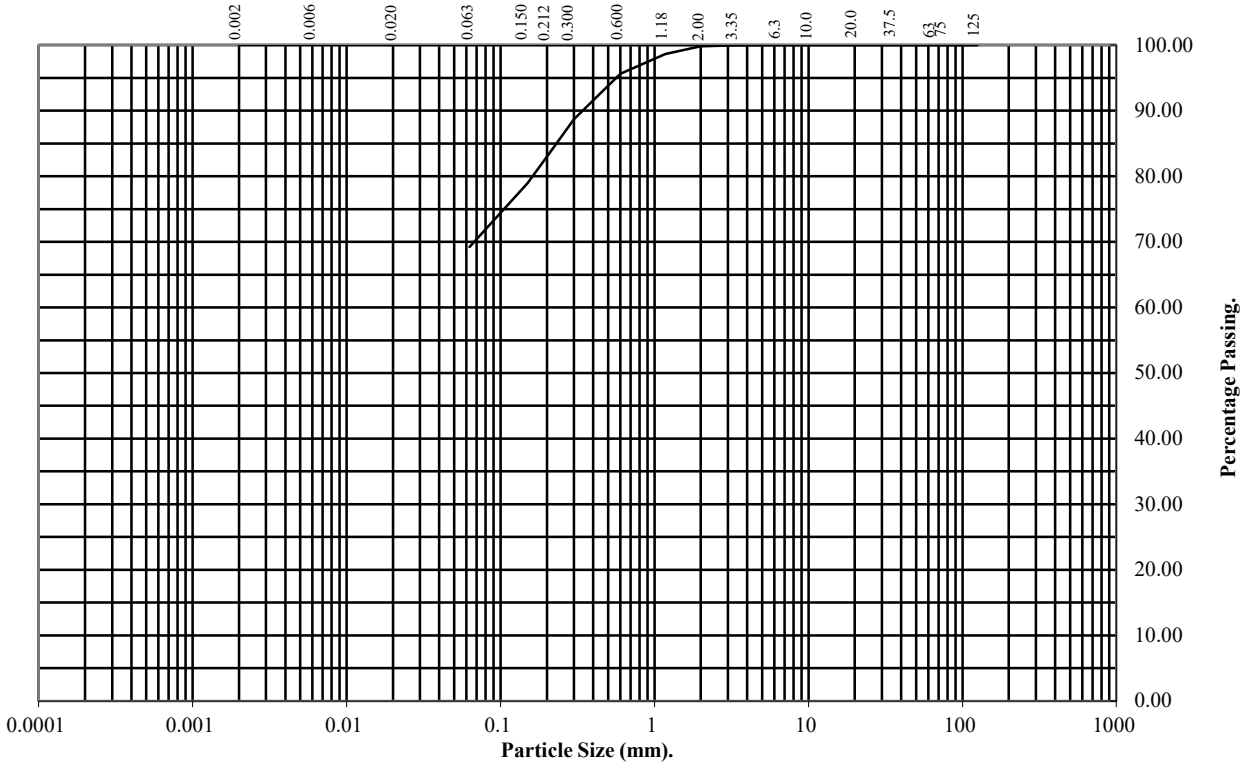
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS08**	**Top Depth (m):**	**5.50**
Sample Number:	**13**	**Base Depth(m):**	**5.90**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	99
0.6	96
0.3	89
0.212	84
0.15	79
0.063	69

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	31
Silt/Clay	69

Remarks:

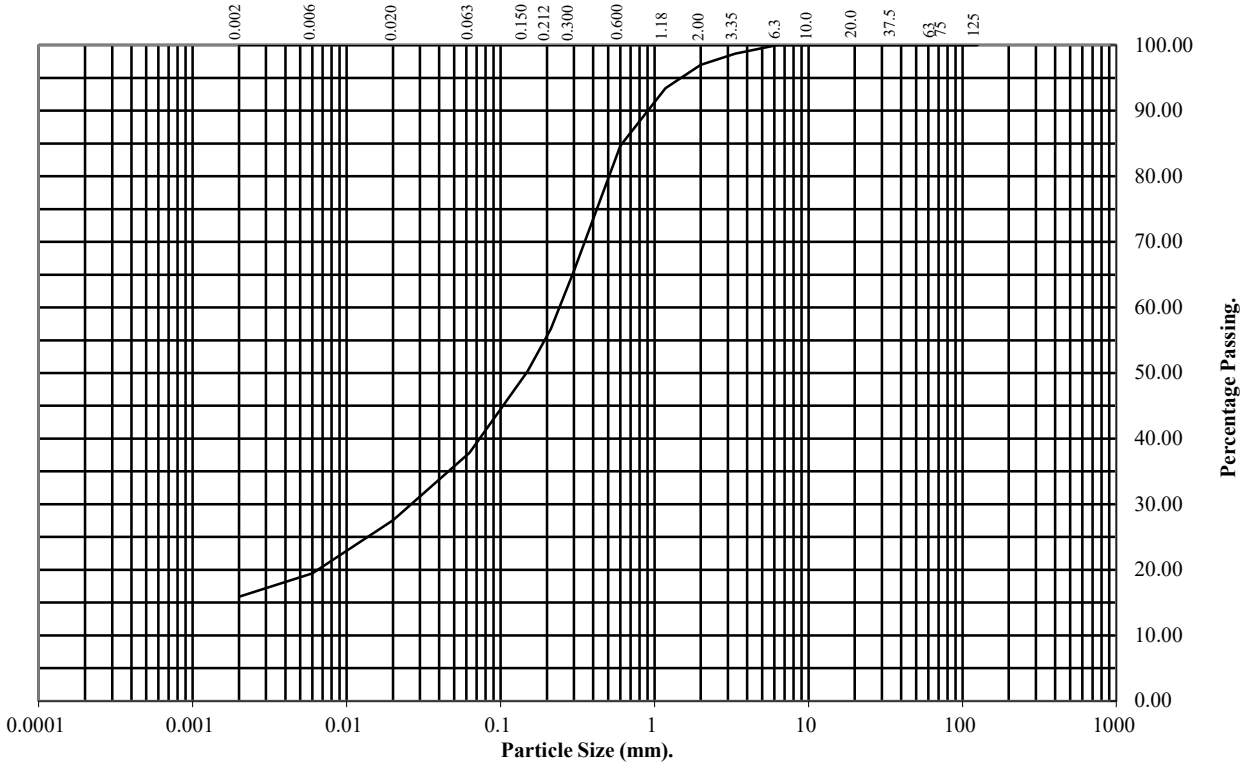
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**WS10**	**Top Depth (m):**	**0.60**
Sample Number:	**4**	**Base Depth(m):**	**1.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	99
2	97
1.18	93
0.6	85
0.3	66
0.212	57
0.15	50
0.063	38

Particle Diameter	Percentage Passing
0.02	28
0.006	19
0.002	16

Soil Fraction	Total Percentage
Cobbles	0
Gravel	3
Sand	59
Silt	22
Clay	16

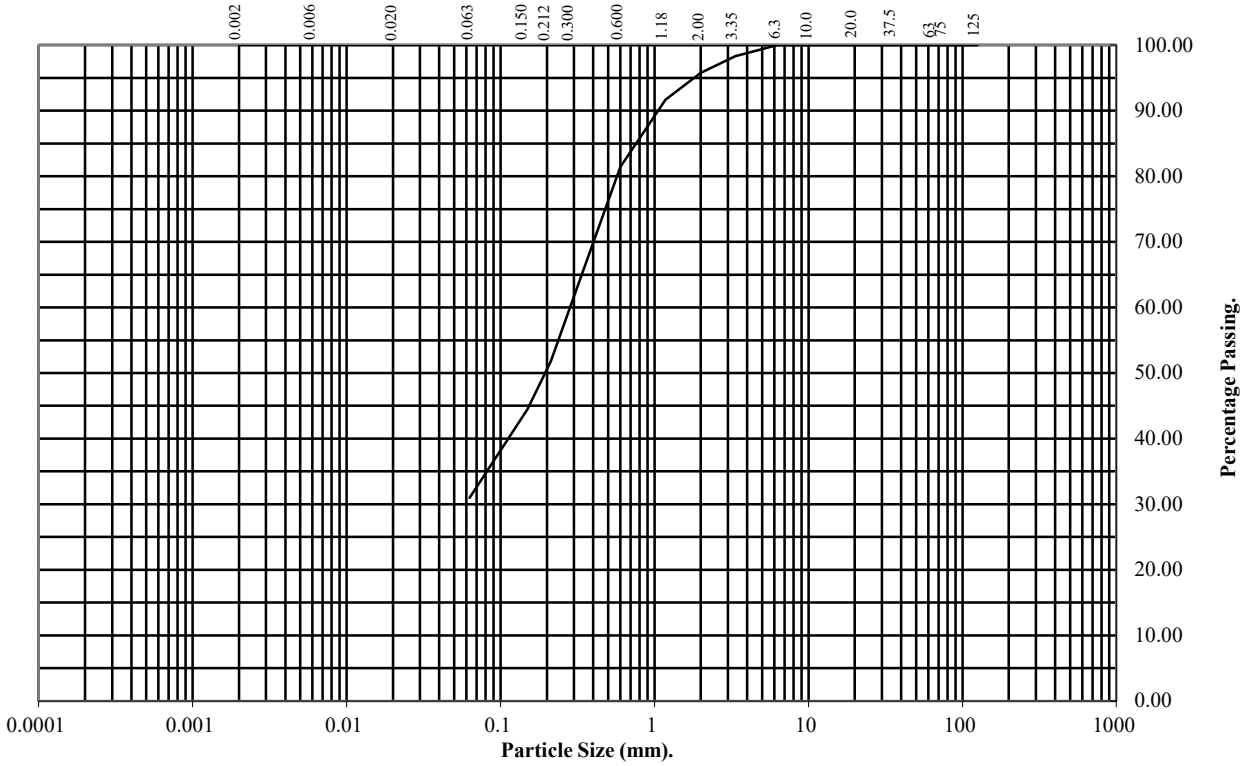
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS10**	**Top Depth (m):**	**2.00**
Sample Number:	**9**	**Base Depth(m):**	**3.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	98
2	96
1.18	92
0.6	81
0.3	62
0.212	52
0.15	45
0.063	31

Soil Fraction	Total Percentage
Cobbles	0
Gravel	4
Sand	65
Silt/Clay	31

Remarks:

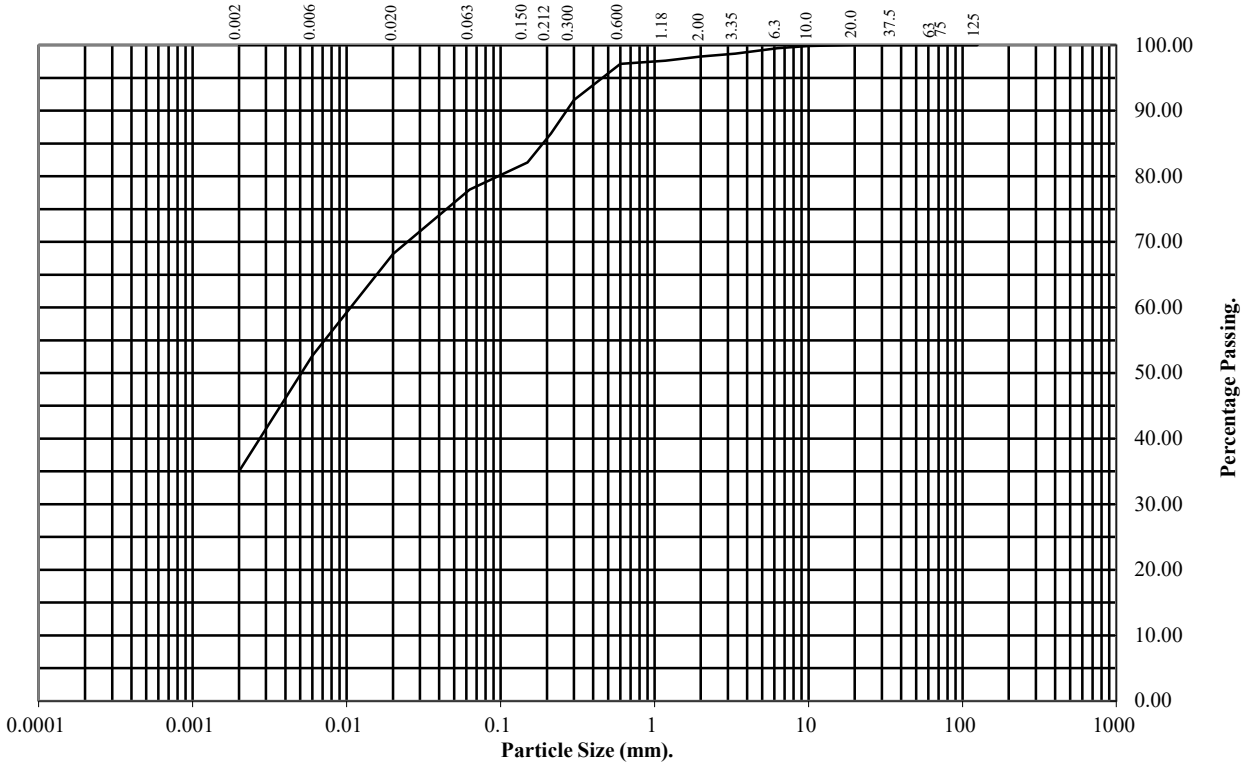
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**WS12**	**Top Depth (m):**	**0.50**
Sample Number:	**3**	**Base Depth(m):**	**0.80**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	99
2	98
1.18	98
0.6	97
0.3	92
0.212	87
0.15	82
0.063	78

Particle Diameter	Percentage Passing
0.02	68
0.006	53
0.002	35

Soil Fraction	Total Percentage
Cobbles	0
Gravel	2
Sand	20
Silt	43
Clay	35

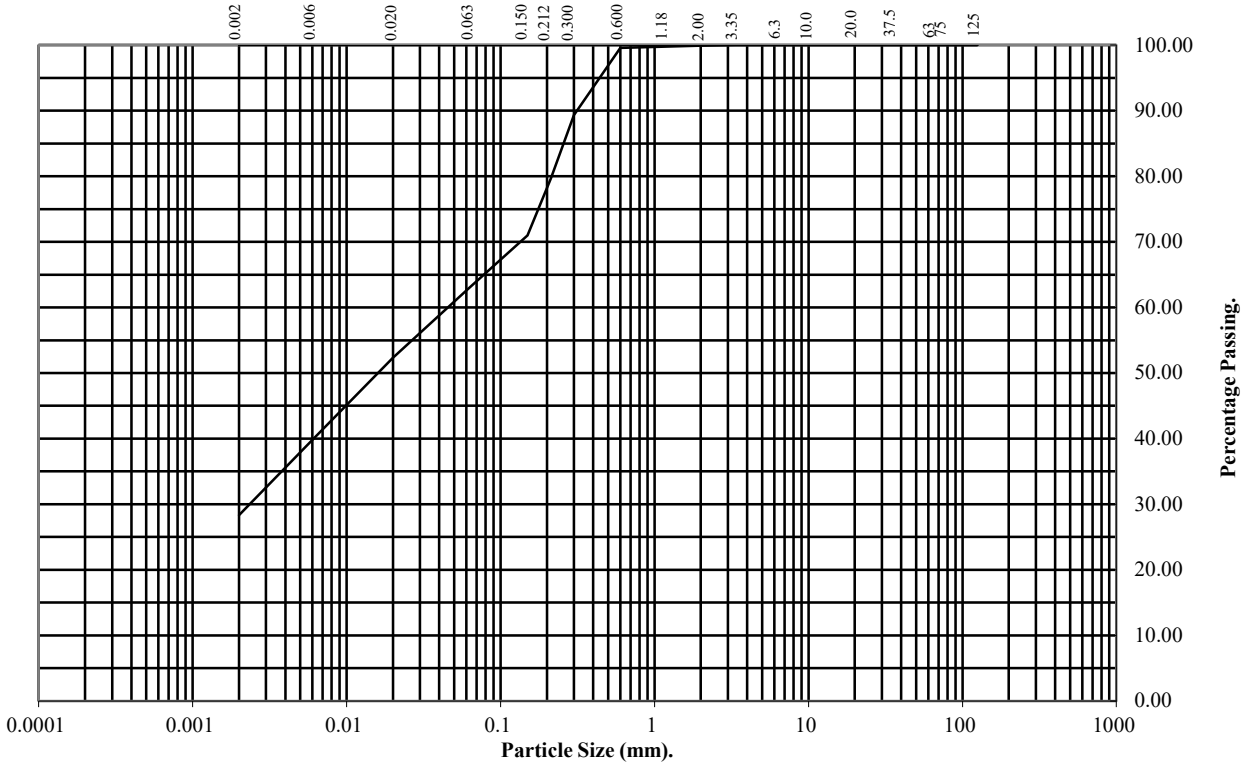
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**WS12**	**Top Depth (m):**	**1.60**
Sample Number:	**7**	**Base Depth(m):**	**1.90**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	100
0.3	89
0.212	80
0.15	71
0.063	63

Particle Diameter	Percentage Passing
0.02	52
0.006	40
0.002	28

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	37
Silt	35
Clay	28

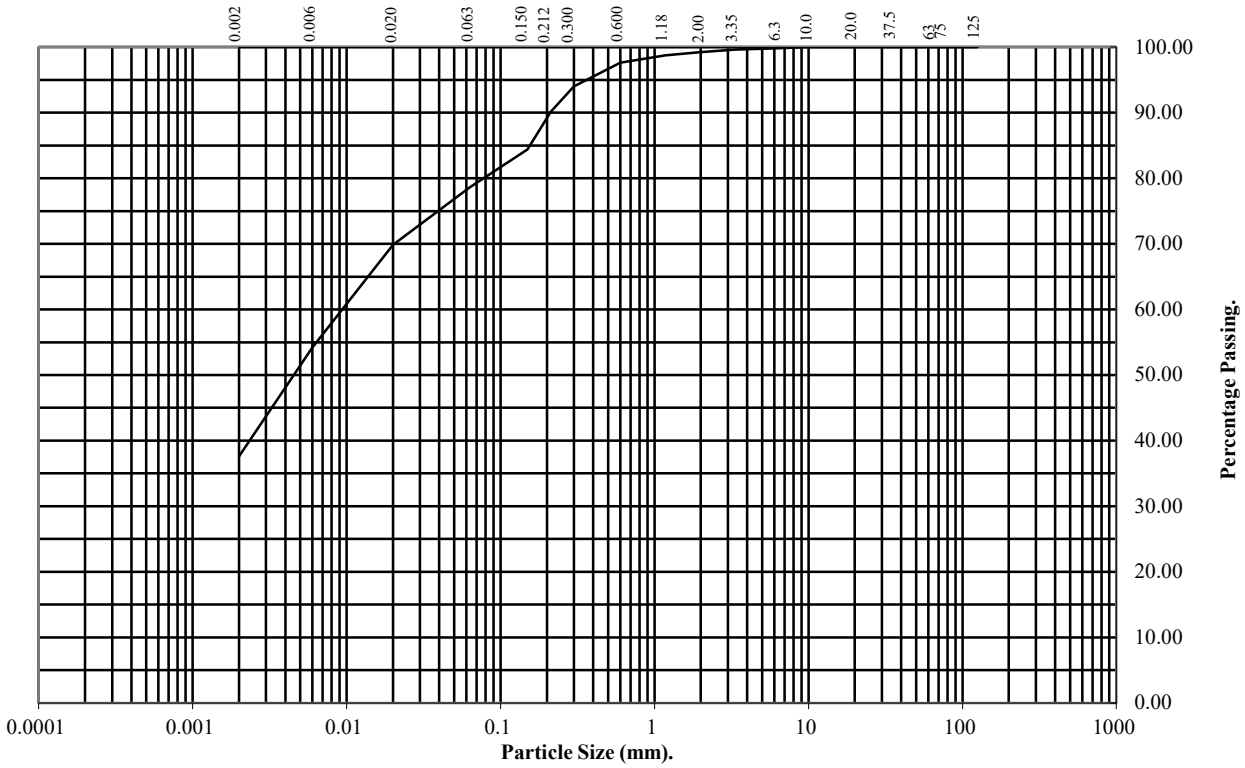
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**WS13**	**Top Depth (m):**	**0.40**
Sample Number:	**3**	**Base Depth(m):**	**0.80**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	99
1.18	99
0.6	98
0.3	94
0.212	90
0.15	84
0.063	79

Particle Diameter	Percentage Passing
0.02	70
0.006	54
0.002	38

Soil Fraction	Total Percentage
Cobbles	0
Gravel	1
Sand	20
Silt	41
Clay	38

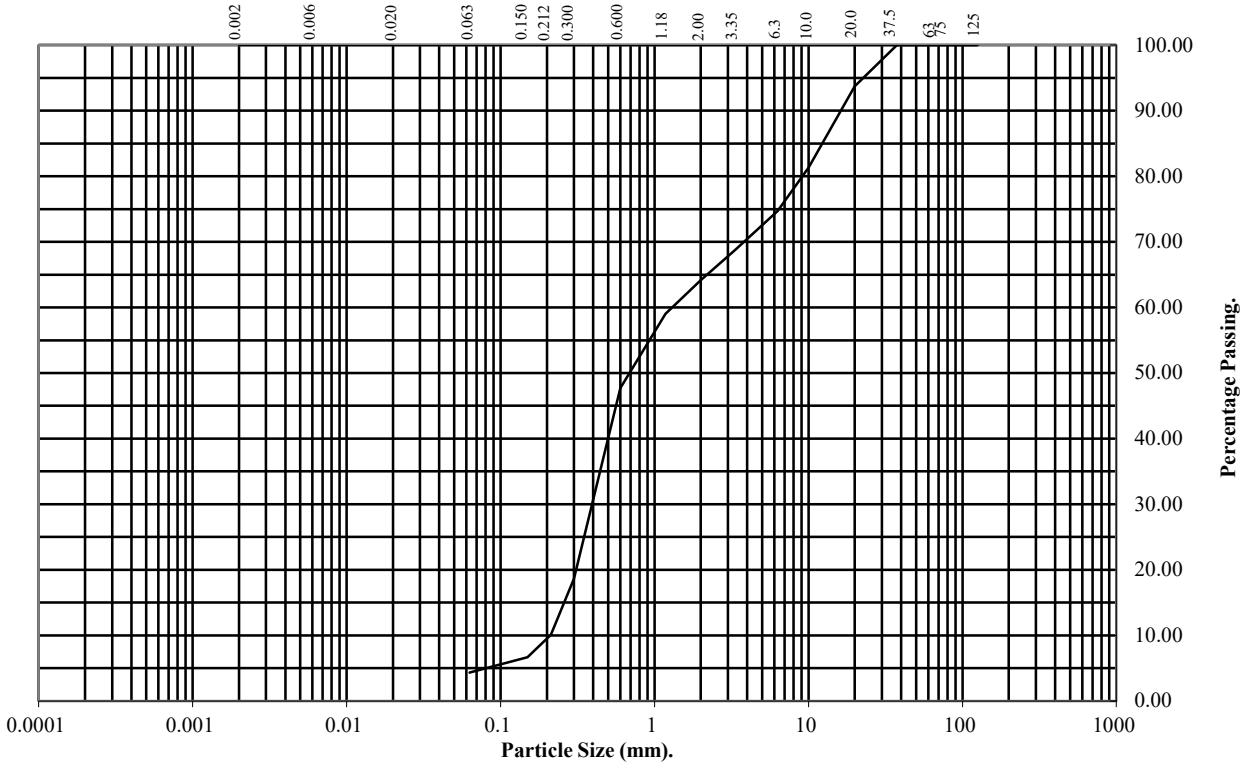
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS13**	**Top Depth (m):**	**2.00**
Sample Number:	**9**	**Base Depth(m):**	**3.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	94
10	81
6.3	75
3.35	69
2	64
1.18	59
0.6	48
0.3	19
0.212	10
0.15	7
0.063	4

Soil Fraction	Total Percentage
Cobbles	0
Gravel	36
Sand	60
Silt/Clay	4

Remarks:

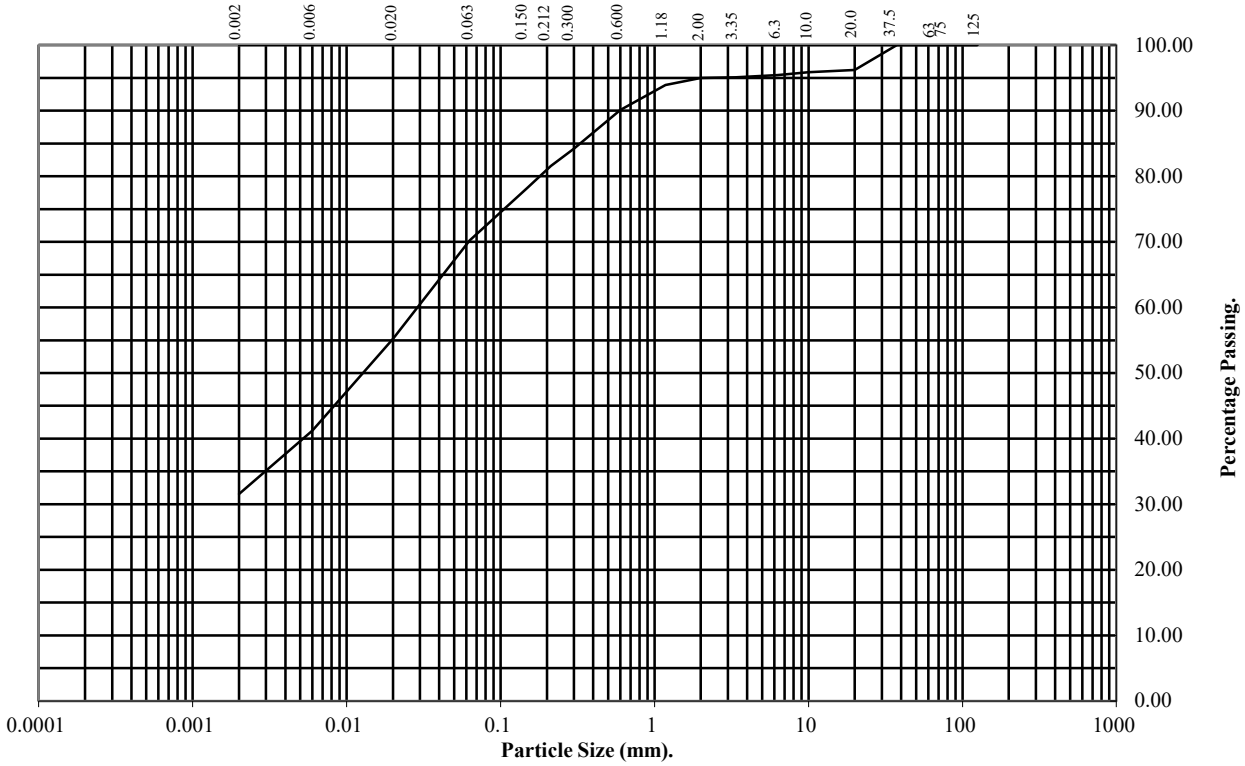
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**WS15**	**Top Depth (m):**	**0.70**
Sample Number:	**5**	**Base Depth(m):**	**1.20**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	96
10	96
6.3	95
3.35	95
2	95
1.18	94
0.6	90
0.3	84
0.212	82
0.15	78
0.063	70

Particle Diameter	Percentage Passing
0.02	55
0.006	41
0.002	32

Soil Fraction	Total Percentage
Cobbles	0
Gravel	5
Sand	25
Silt	38
Clay	32

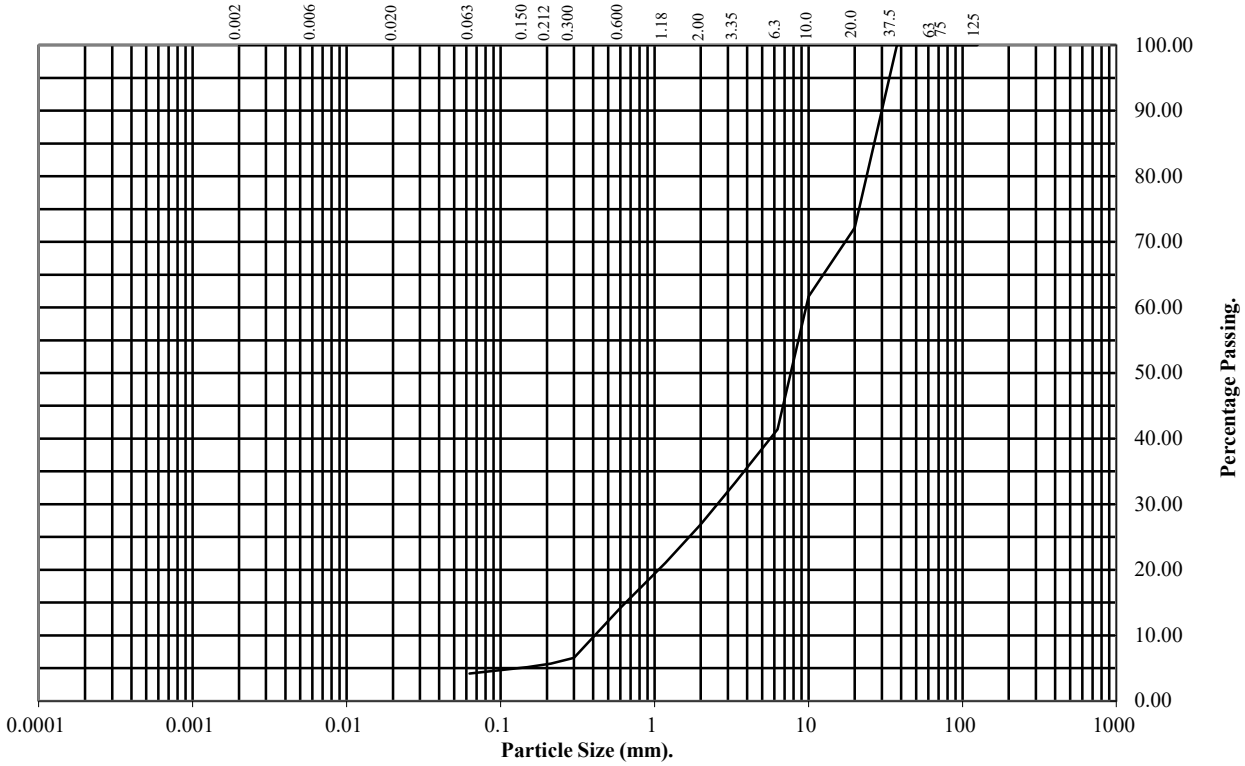
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS15**	**Top Depth (m):**	**2.10**
Sample Number:	**10**	**Base Depth(m):**	**2.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	72
10	62
6.3	41
3.35	33
2	27
1.18	21
0.6	14
0.3	7
0.212	6
0.15	5
0.063	4

Soil Fraction	Total Percentage
Cobbles	0
Gravel	73
Sand	23
Silt/Clay	4

Remarks:

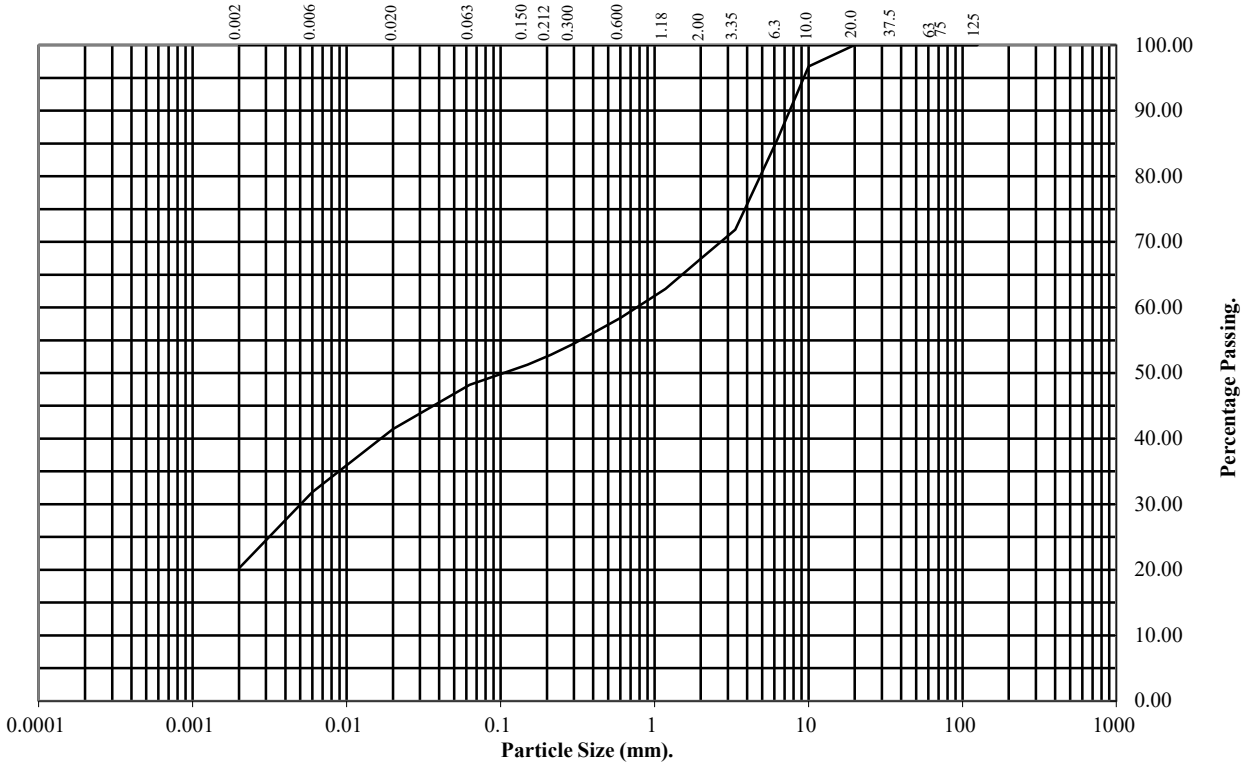
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**WS17**	**Top Depth (m):**	**0.80**
Sample Number:	**5**	**Base Depth(m):**	**1.20**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	97
6.3	86
3.35	72
2	67
1.18	63
0.6	58
0.3	54
0.212	53
0.15	51
0.063	48

Particle Diameter	Percentage Passing
0.02	41
0.006	32
0.002	20

Soil Fraction	Total Percentage
Cobbles	0
Gravel	33
Sand	19
Silt	28
Clay	20

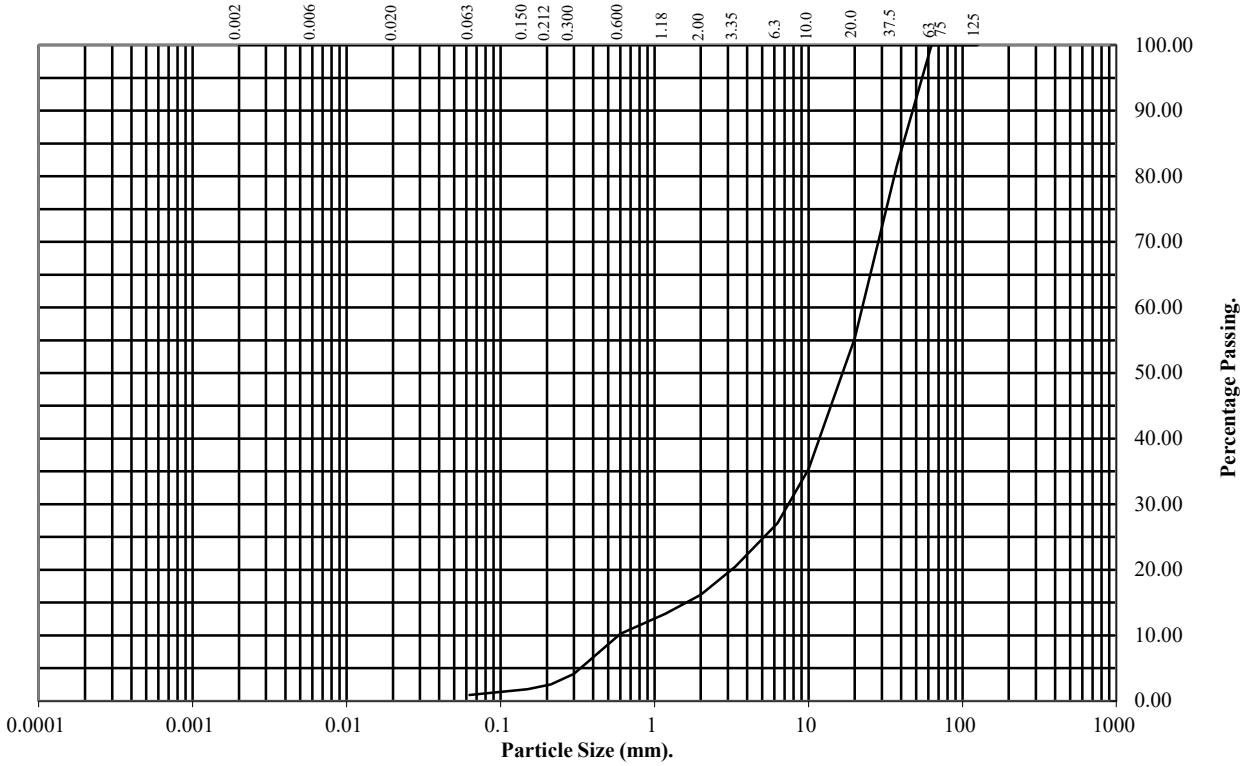
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS17**	**Top Depth (m):**	**3.00**
Sample Number:	**11**	**Base Depth(m):**	**4.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	82
20	55
10	35
6.3	27
3.35	20
2	16
1.18	13
0.6	10
0.3	4
0.212	3
0.15	2
0.063	1

Soil Fraction	Total Percentage
Cobbles	0
Gravel	84
Sand	15
Silt/Clay	1

Remarks:

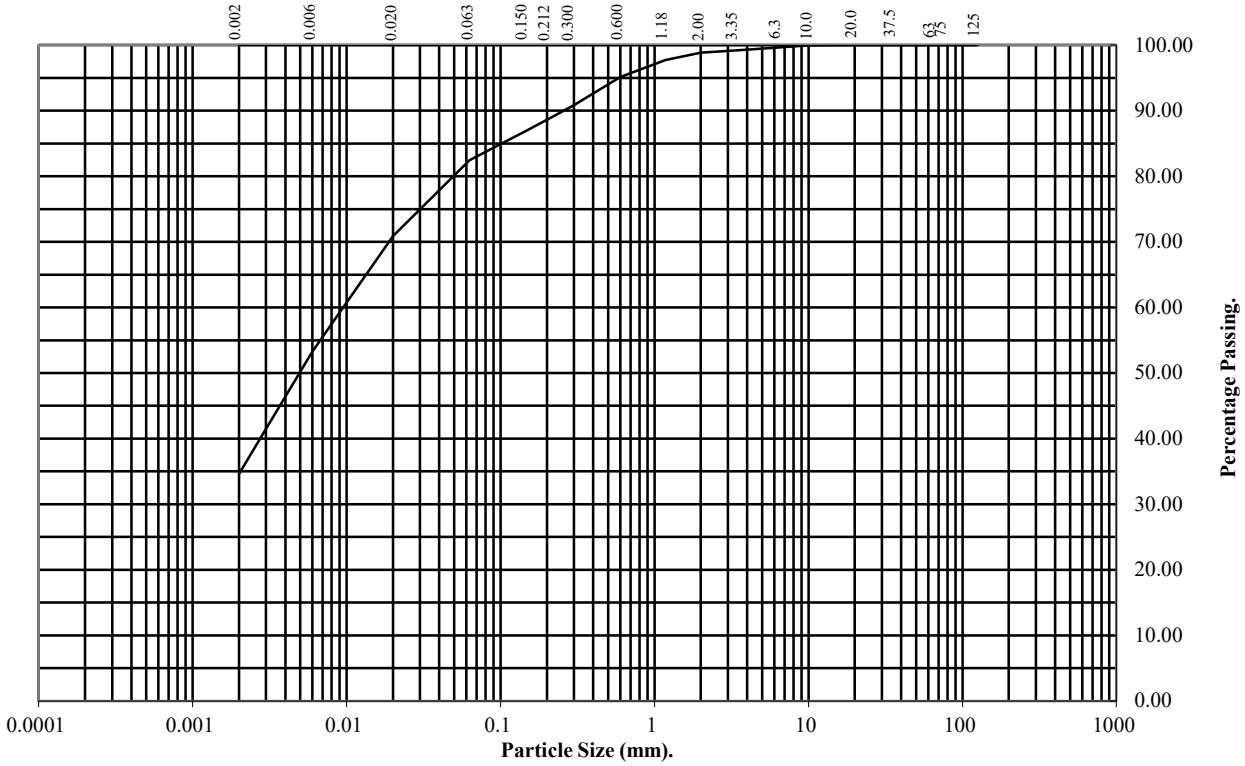
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**WS28**	**Top Depth (m):**	**0.80**
Sample Number:	**4**	**Base Depth(m):**	**1.20**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	99
2	99
1.18	98
0.6	95
0.3	91
0.212	89
0.15	87
0.063	82

Particle Diameter	Percentage Passing
0.02	71
0.006	53
0.002	35

Soil Fraction	Total Percentage
Cobbles	0
Gravel	1
Sand	17
Silt	47
Clay	35

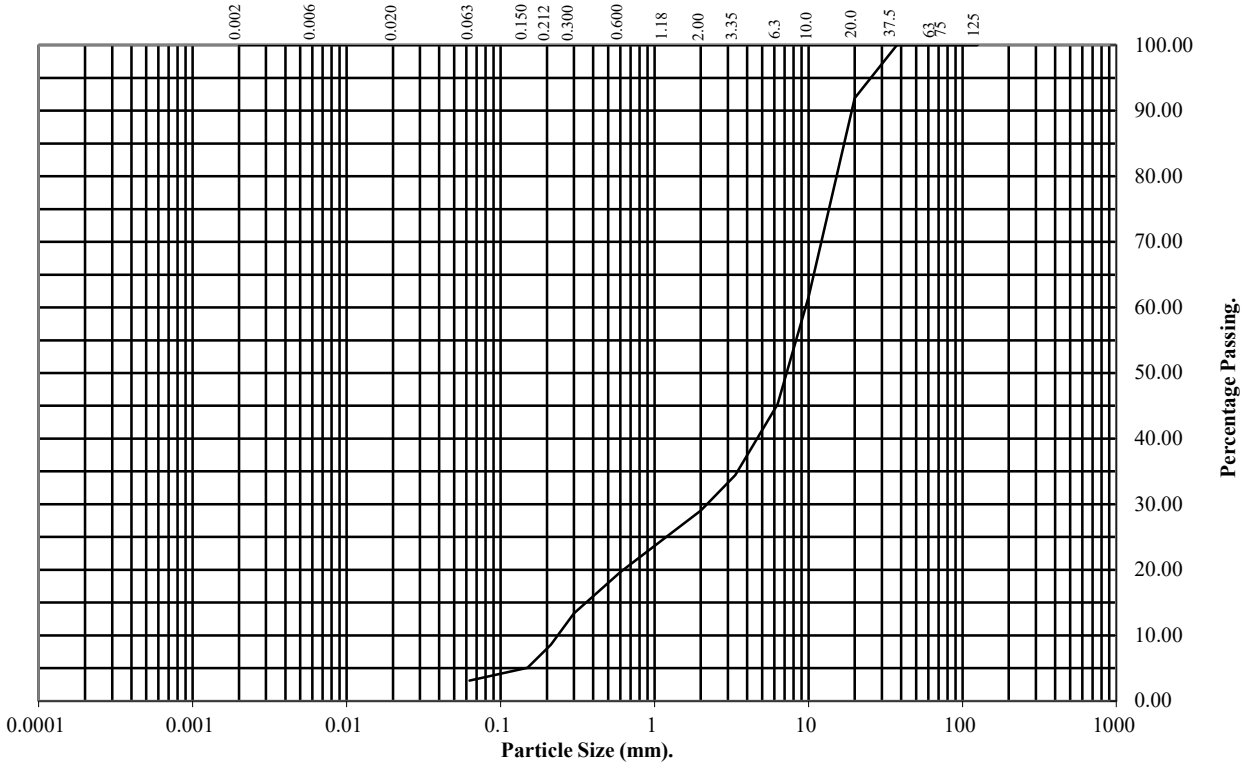
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS28**	**Top Depth (m):**	**3.20**
Sample Number:	**11**	**Base Depth(m):**	**3.60**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	92
10	62
6.3	45
3.35	34
2	29
1.18	25
0.6	20
0.3	13
0.212	9
0.15	5
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	71
Sand	26
Silt/Clay	3

Remarks:

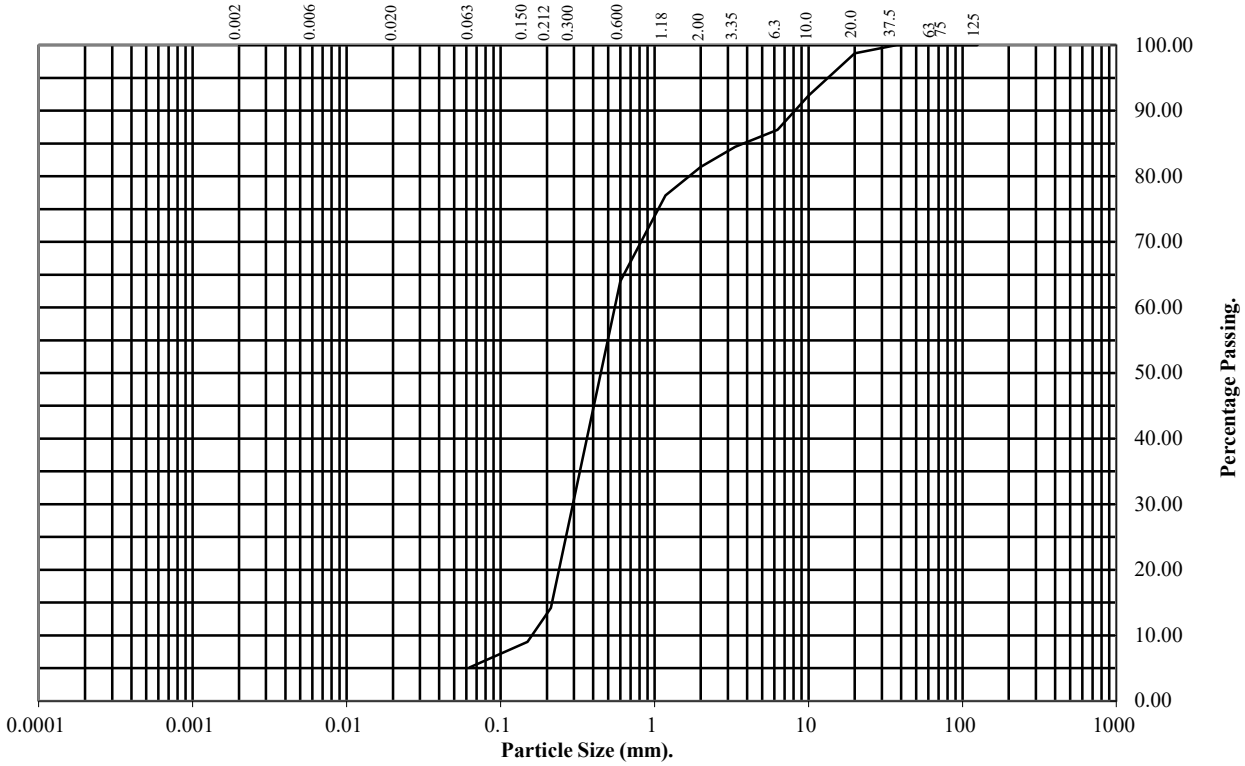
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS28**	**Top Depth (m):**	**4.20**
Sample Number:	**13**	**Base Depth(m):**	**4.80**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	99
10	92
6.3	87
3.35	85
2	81
1.18	77
0.6	64
0.3	31
0.212	14
0.15	9
0.063	5

Soil Fraction	Total Percentage
Cobbles	0
Gravel	19
Sand	76
Silt/Clay	5

Remarks:

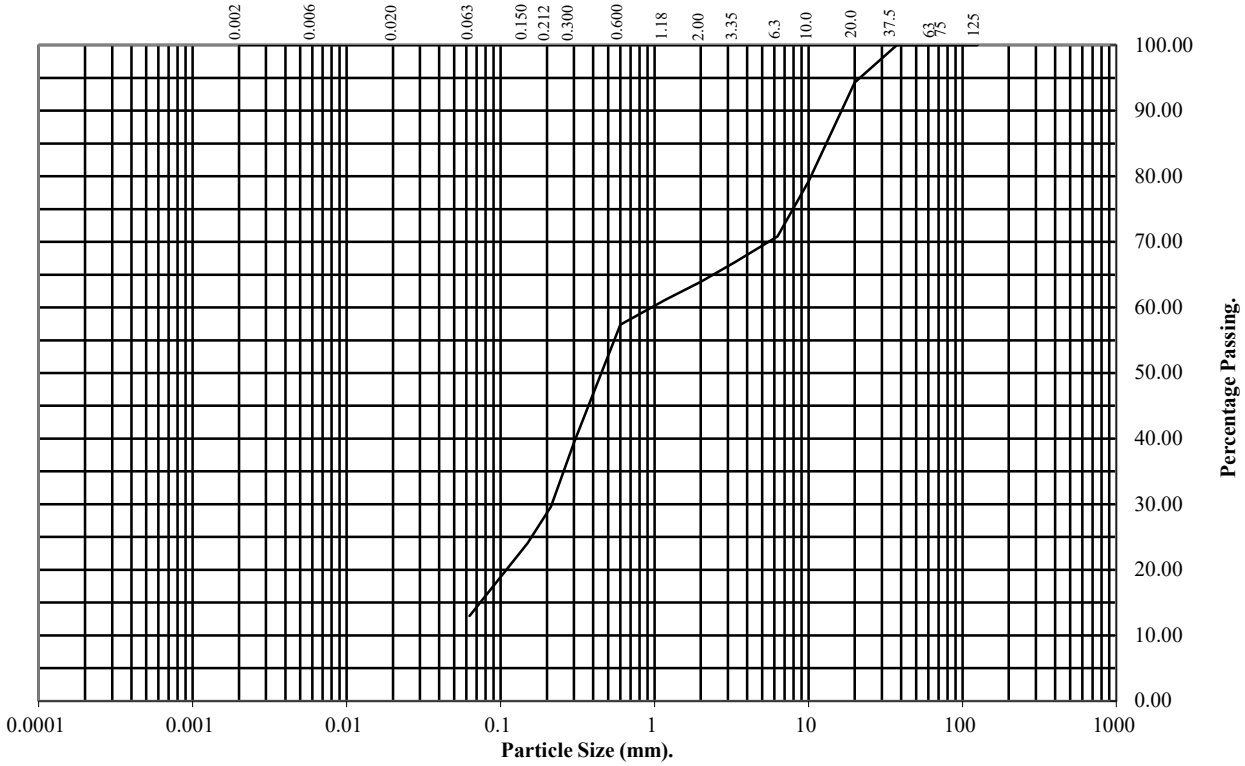
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS73**	**Top Depth (m):**	**0.40**
Sample Number:	**3**	**Base Depth(m):**	**0.70**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	94
10	79
6.3	71
3.35	67
2	64
1.18	61
0.6	57
0.3	39
0.212	30
0.15	24
0.063	13

Soil Fraction	Total Percentage
Cobbles	0
Gravel	36
Sand	51
Silt/Clay	13

Remarks:

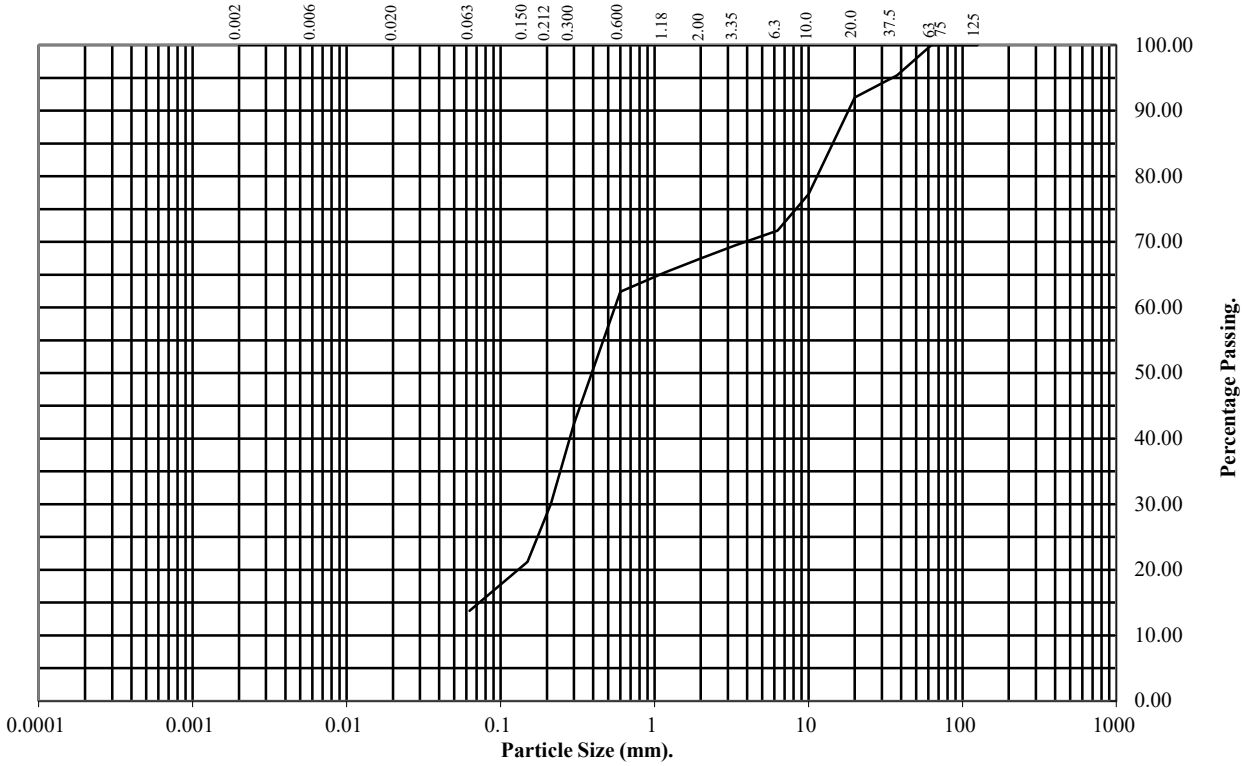
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS73**	**Top Depth (m):**	**1.60**
Sample Number:	**7**	**Base Depth(m):**	**1.90**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	95
20	92
10	77
6.3	72
3.35	69
2	67
1.18	65
0.6	62
0.3	42
0.212	30
0.15	21
0.063	14

Soil Fraction	Total Percentage
Cobbles	0
Gravel	33
Sand	53
Silt/Clay	14

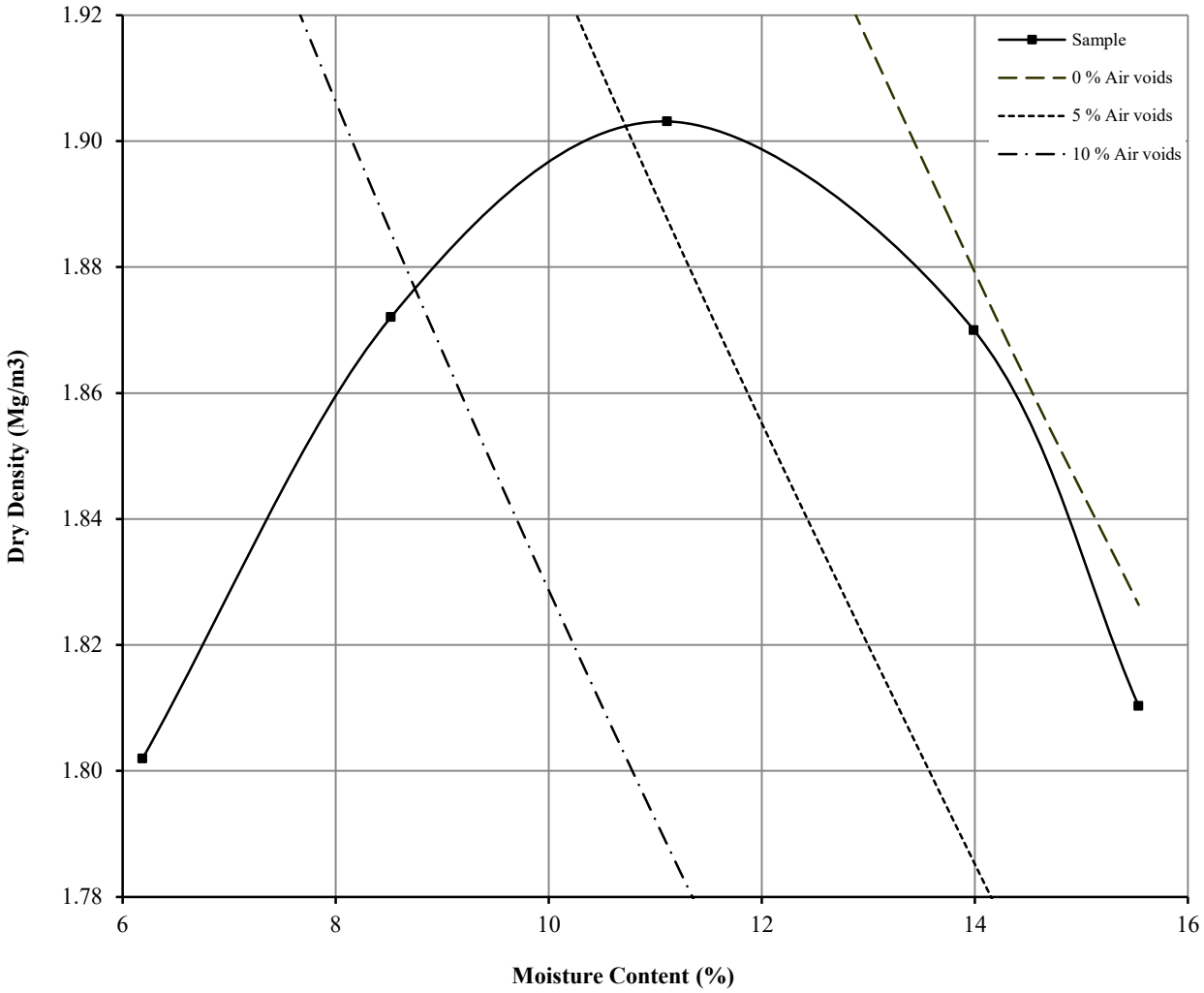
Remarks:

See Summary of Soil Descriptions

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**TP41**	**Top Depth (m) :**	**0.60**
Sample Number:	**3**	**Base Depth (m) :**	**0.90**
Sample Type:	**B**		

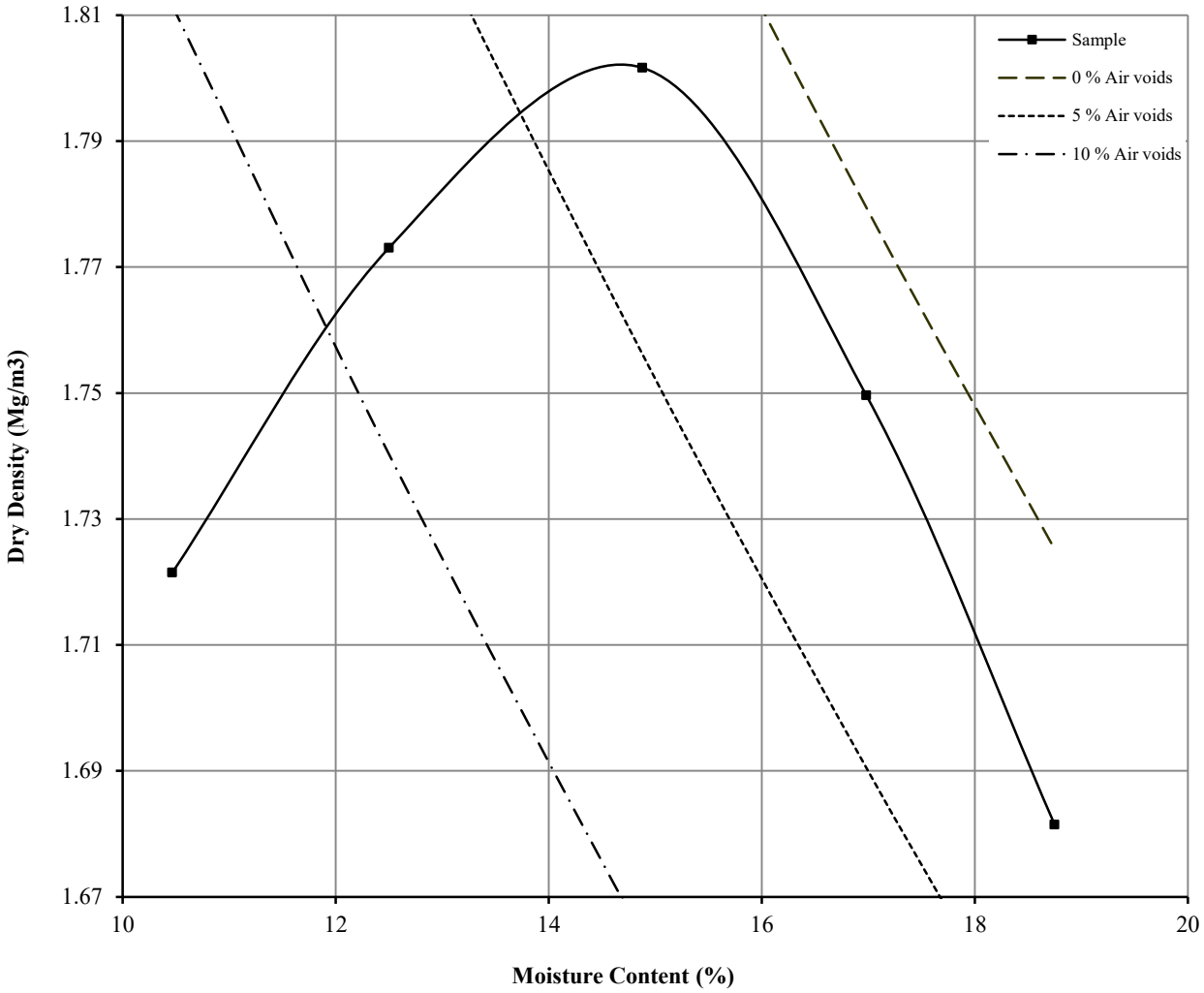


Initial Moisture Content:		6.2	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.55	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.90	Material Retained on 20.0 mm Test Sieve (%):		1
Optimum Moisture Content (%):		11			
Remarks See summary of soil descriptions					

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**WS06**	**Top Depth (m) :**	**1.50**
Sample Number:	**6**	**Base Depth (m) :**	**1.80**
Sample Type:	**B**		

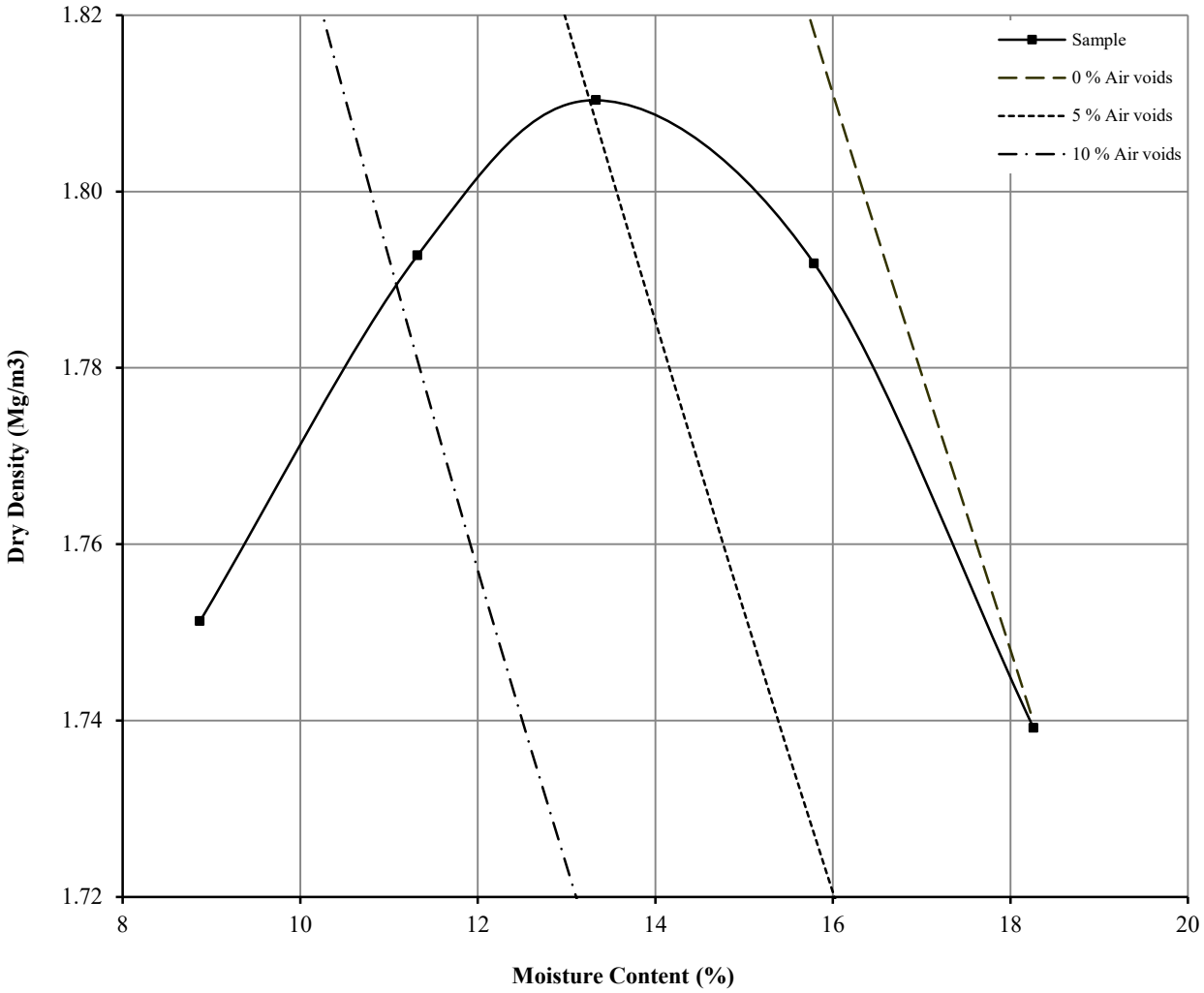


Initial Moisture Content:		21	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.55	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.80	Material Retained on 20.0 mm Test Sieve (%):		0
Optimum Moisture Content (%):		15			
Remarks See summary of soil descriptions					

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**WS10**	**Top Depth (m) :**	**2.00**
Sample Number:	**9**	**Base Depth (m) :**	**3.00**
Sample Type:	**B**		



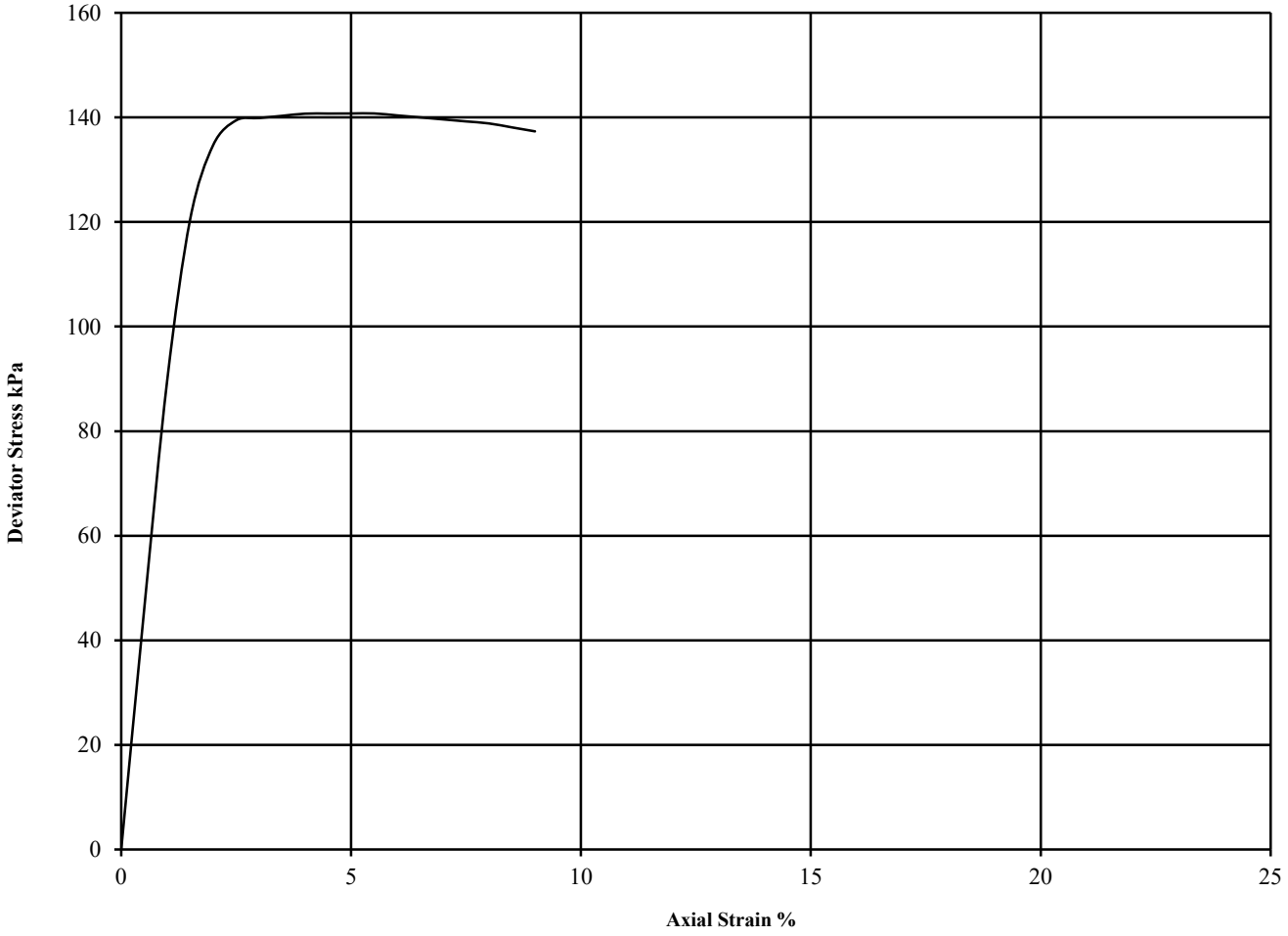
Initial Moisture Content:		18	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.55	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.81	Material Retained on 20.0 mm Test Sieve (%):		0
Optimum Moisture Content (%):		13			
Remarks See summary of soil descriptions					

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number:	**WS08**	**Top Depth (m):**	**5.00**
Sample Number:	**15**	**Base Depth (m):**	**5.45**
Sample Type	**U76**		



Diameter (mm):		38	Height (mm):		76	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.92
1	18	2.03	1.72	100	141	70	5.5	Intermediate	See summary of soil descriptions

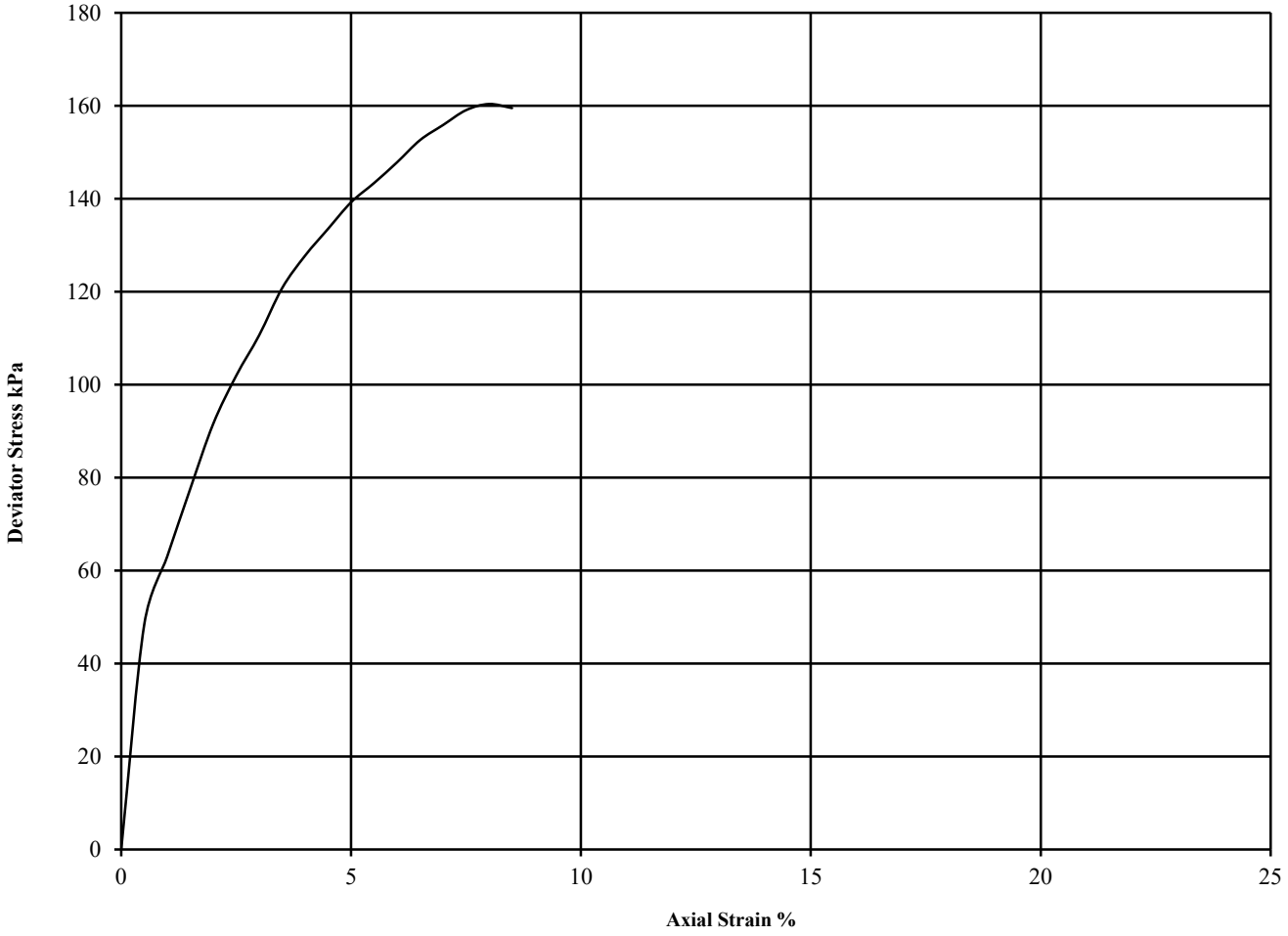
UKAS TESTING 4043	PSL Professional Soils Laboratory	**A46 Newark**	**Contract No:** PSL21/3857 **Client Ref:** 784-B026948

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number:	**WS28**	**Top Depth (m):**	**1.20**
Sample Number:	**5**	**Base Depth (m):**	**1.65**
Sample Type	**U76**		



Diameter (mm):		38	Height (mm):		76	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.89
1	16	2.13	1.84	100	160	80	8.0	Brittle	See summary of soil descriptions

UKAS TESTING 4043

PSL Professional Soils Laboratory

A46 Newark

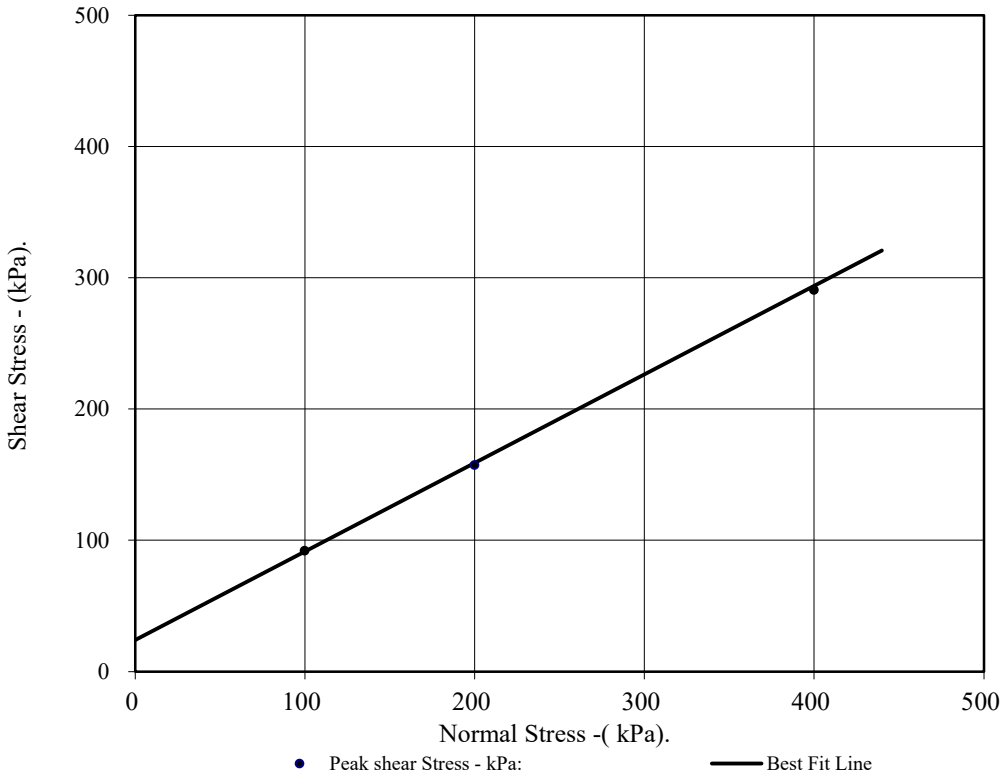
Contract No:
PSL21/3857
Client Ref:
784-B026948

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**WS04**		Top Depth:	**1.60**
Sample Number:	**7**		Base Depth:	**1.90**
Sample Conditions:	Dry		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 2mm sieve Remoulded using hand tamped effort			
Sample Description:	**See summary of soil descriptions.**			

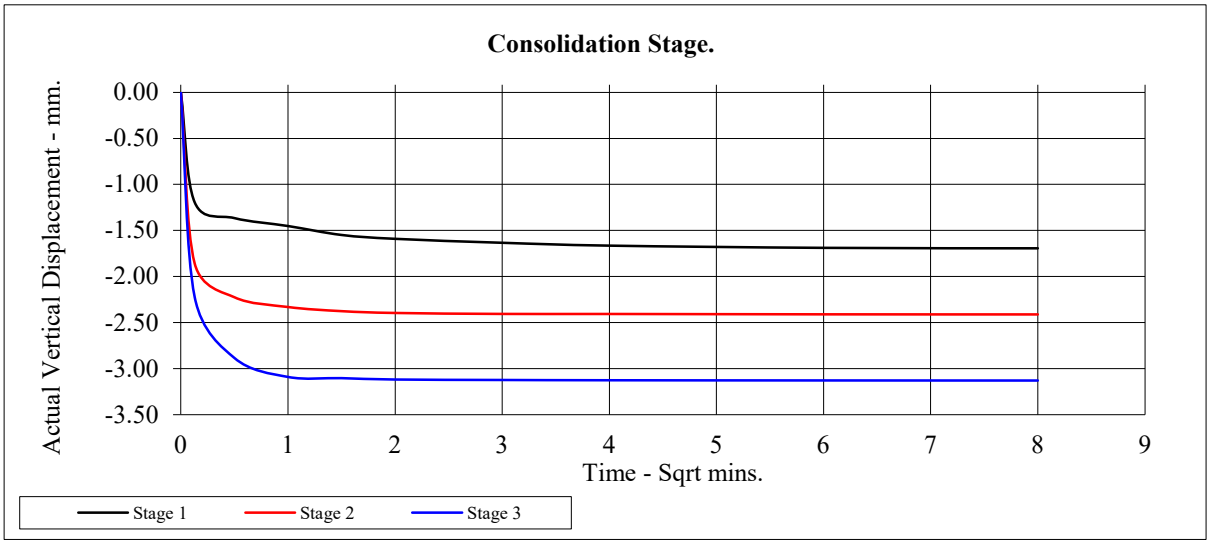
STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.00	24.00	24.00
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	23	23	23
Bulk Density - Mg/m3:	2.01	2.01	2.01
Dry Density - Mg/m3:	1.63	1.63	1.63
Voids Ratio:	0.623	0.624	0.625
Normal Pressure- kPa	100	200	400
Consolidation Stage			
Consolidated Height - mm:	22.30	21.58	20.87
Shearing Stage			
Rate of Strain - mm/min	0.600	0.600	0.600
Displacement at peak shear stress - mm	3.76	6.43	6.49
Peak shear Stress - kPa:	92	157	291
Final Consolidated Conditions			
Moisture Content - %:	21	21	20
Bulk Density - Mg/m3:	2.01	2.01	2.01
Dry Density - Mg/m3:	1.66	1.66	1.67
Peak			
Angle of Shearing Resistance:(~~θ~~)	**34**		
Effective Cohesion - kPa:	**24**		

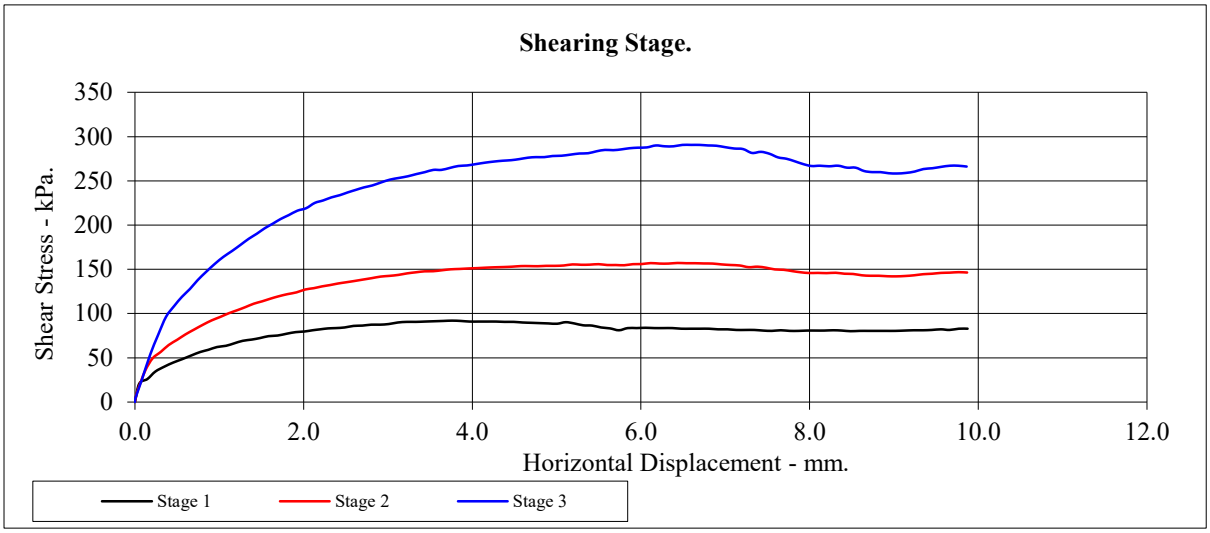


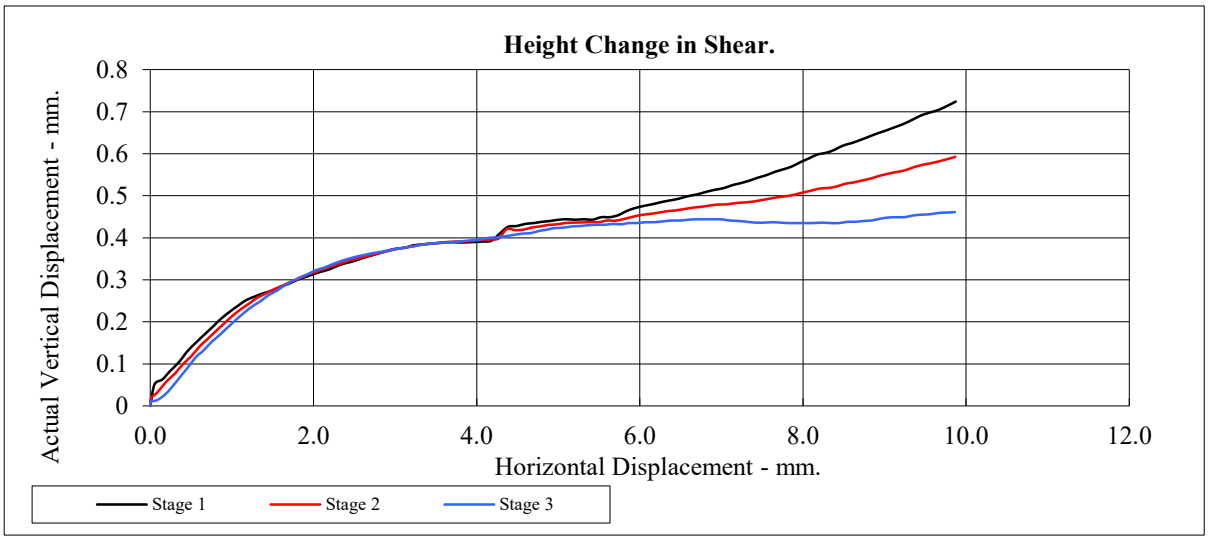
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**WS04**	Top Depth:	**1.60**
Sample Number:	**7**	Base Depth:	**1.90**





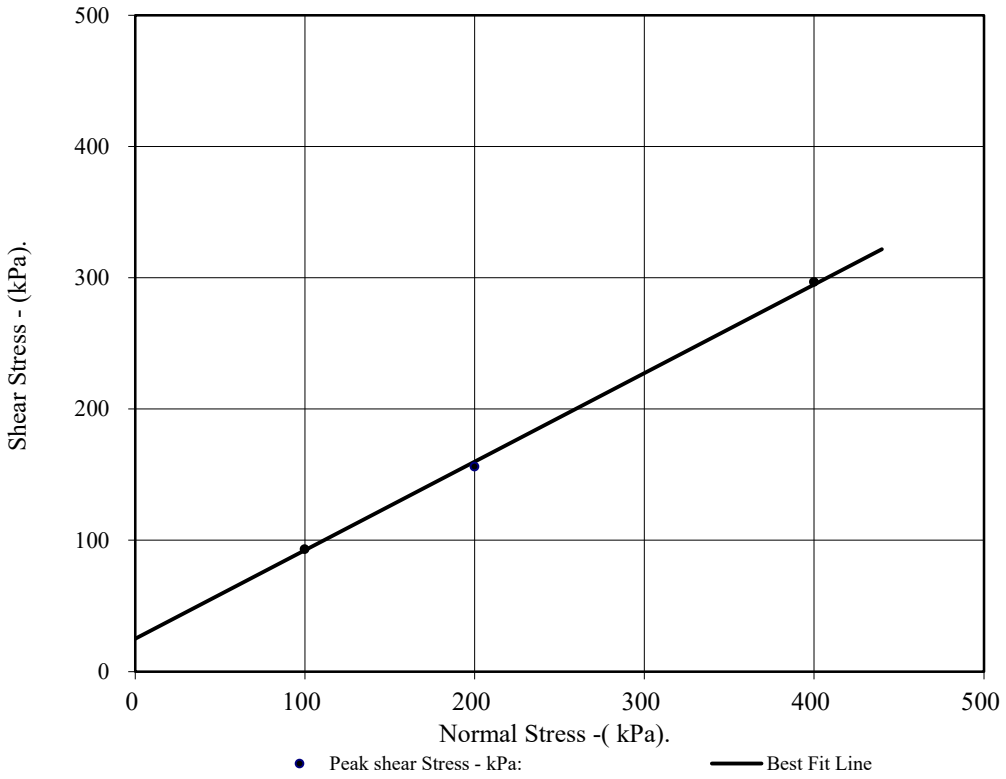


CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**WS08**		Top Depth:	**2.10**
Sample Number:	**9**		Base Depth:	**2.50**
Sample Conditions:	Dry		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 2mm sieve Remoulded using hand tamped effort			
Sample Description:	**See summary of soil descriptions.**			

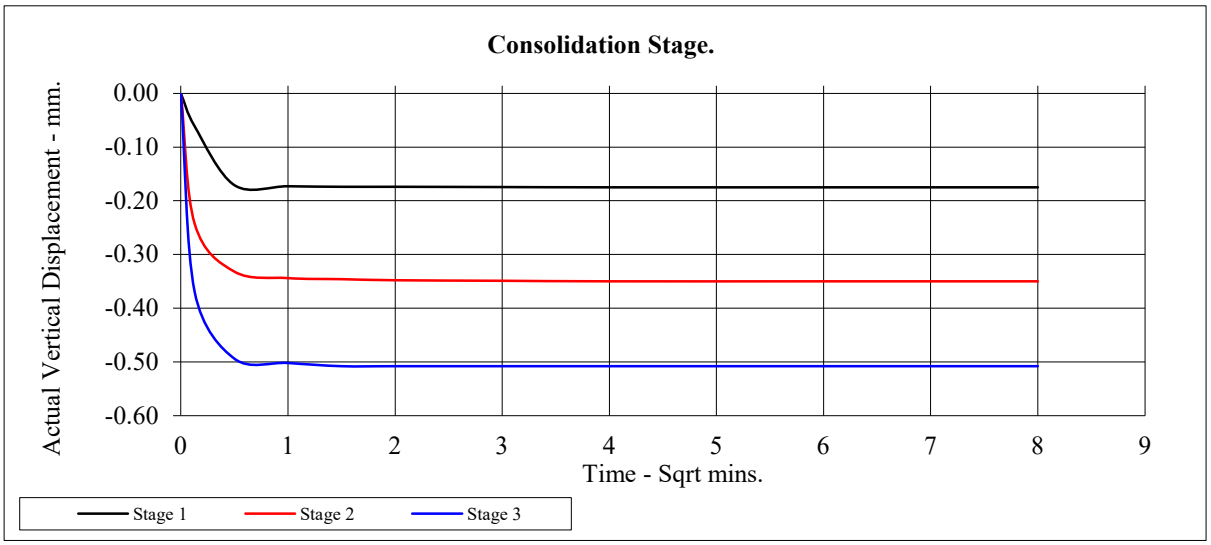
STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.00	24.00	24.00
Length - mm:	60.00	60.00	60.00
Moisture Content - %:	20	20	20
Bulk Density - Mg/m3:	1.96	1.96	1.96
Dry Density - Mg/m3:	1.64	1.64	1.64
Voids Ratio:	0.619	0.617	0.618
Normal Pressure- kPa	100	200	400
Consolidation Stage			
Consolidated Height - mm:	23.83	23.65	23.49
Shearing Stage			
Rate of Strain - mm/min	0.600	0.600	0.600
Displacement at peak shear stress - mm	2.50	3.82	4.31
Peak shear Stress - kPa:	93	156	297
Final Consolidated Conditions			
Moisture Content - %:	19	19	18
Bulk Density - Mg/m3:	1.96	1.96	1.96
Dry Density - Mg/m3:	1.65	1.66	1.66
Peak			
Angle of Shearing Resistance:(~~θ~~)	**34**		
Effective Cohesion - kPa:	**25**		

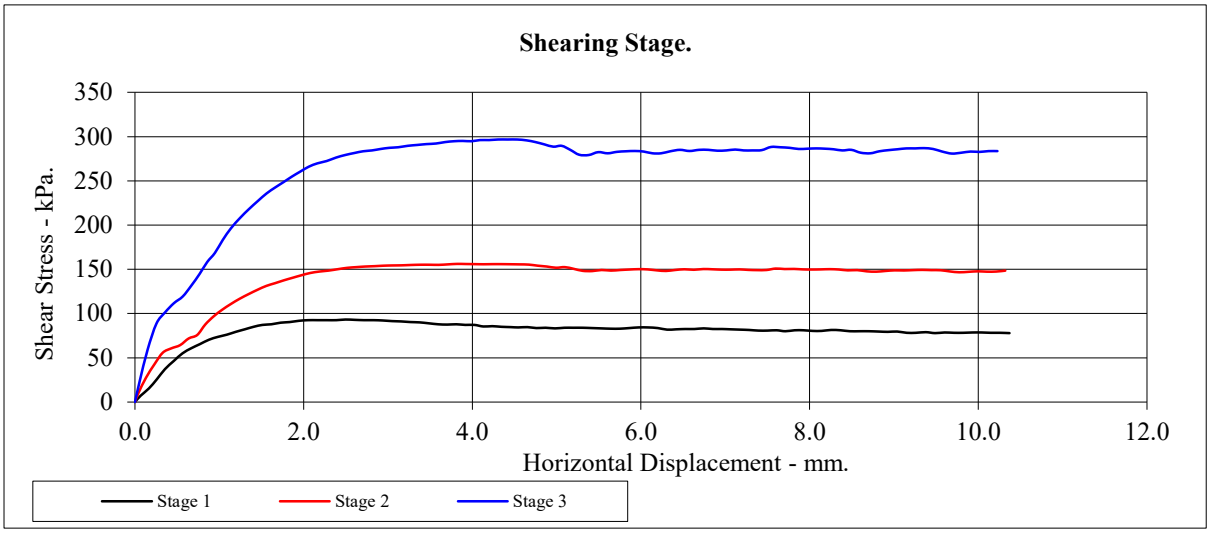


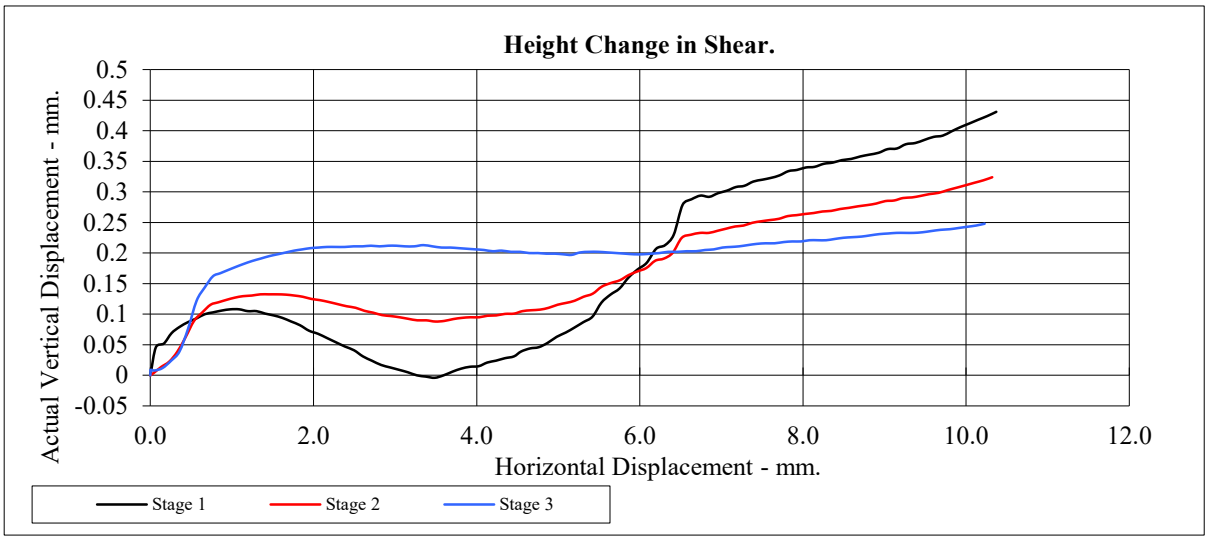
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**WS08**	Top Depth:	**2.10**
Sample Number:	**9**	Base Depth:	**2.50**





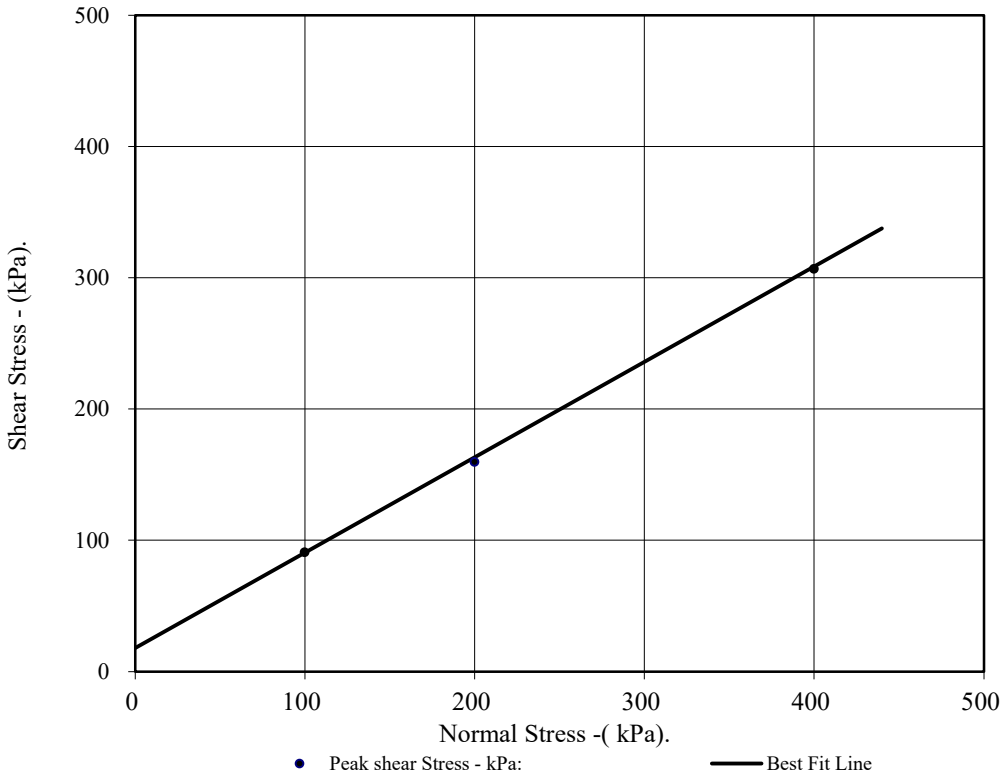


CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**WS12**		Top Depth:	**2.00**	
Sample Number:	**9**		Base Depth:	**3.00**	
Sample Conditions:	Dry		Sample Type	**B**	
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**		
Sample Preparation:	Material tested passing 2mm sieve Remoulded using hand tamped effort				
Sample Description:	**See summary of soil descriptions.**				

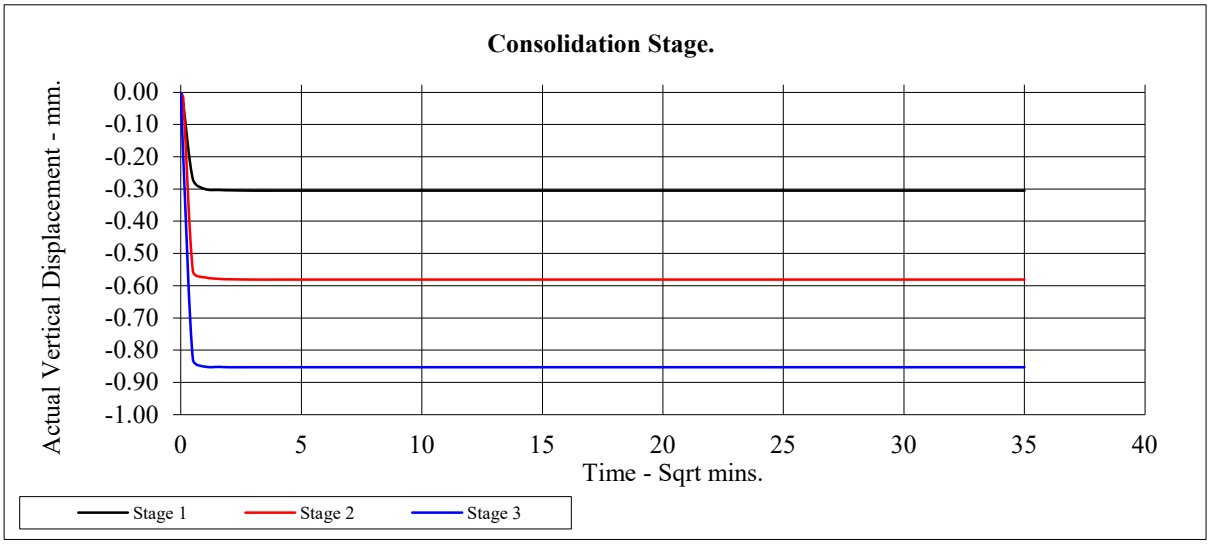
STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	24.00	24.00	24.00
Length - mm:	60.00	60.00	60.00
Moisture Content - %:	19	19	19
Bulk Density - Mg/m3:	1.79	1.79	1.79
Dry Density - Mg/m3:	1.50	1.50	1.50
Voids Ratio:	0.761	0.762	0.763
Normal Pressure- kPa	100	200	400
Consolidation Stage			
Consolidated Height - mm:	23.70	23.42	23.15
Shearing Stage			
Rate of Strain - mm/min	0.600	0.600	0.600
Displacement at peak shear stress - mm	2.88	4.82	6.44
Peak shear Stress - kPa:	91	160	307
Final Consolidated Conditions			
Moisture Content - %:	18	17	17
Bulk Density - Mg/m3:	1.79	1.79	1.79
Dry Density - Mg/m3:	1.52	1.53	1.53
Peak			
Angle of Shearing Resistance:(~~θ~~)	**36**		
Effective Cohesion - kPa:	**18**		

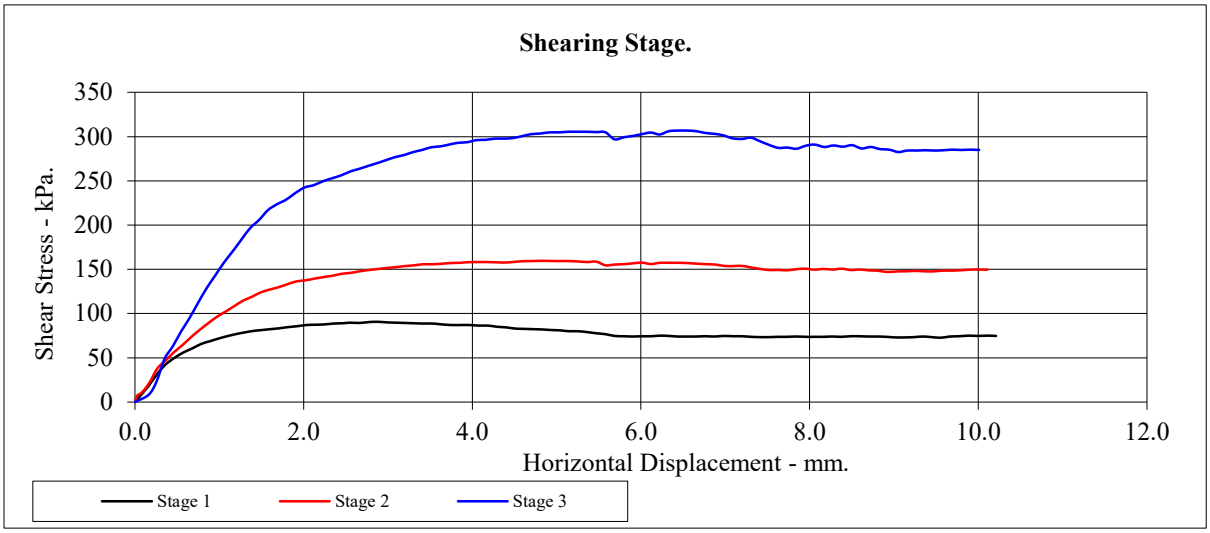


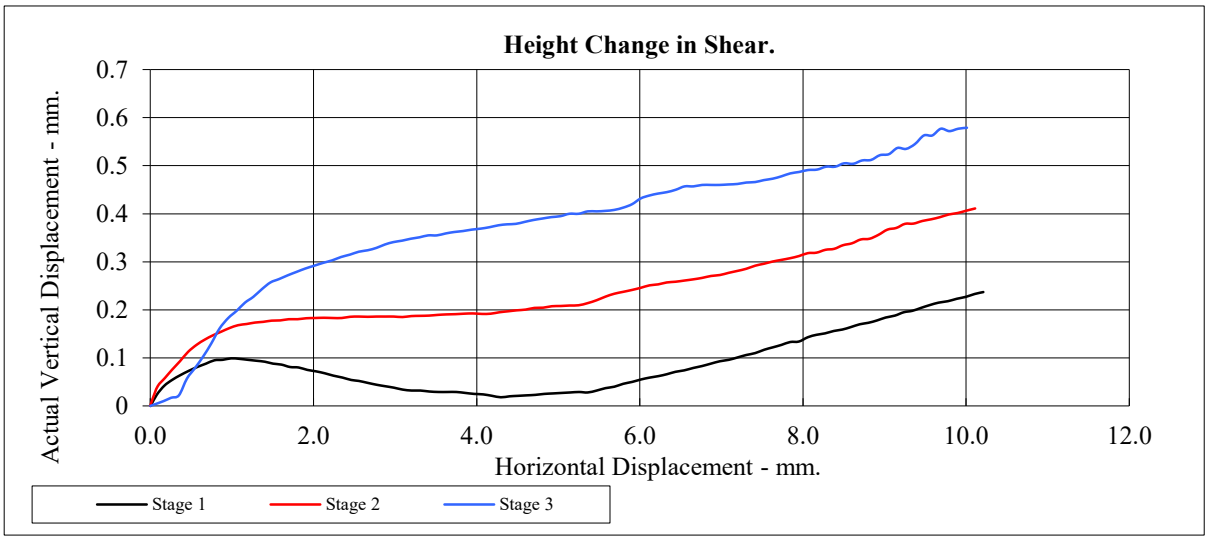
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**WS12**	Top Depth:	**2.00**
Sample Number:	**9**	Base Depth:	**3.00**







UKAS TESTING 4043	PSL Professional Soils Laboratory	**A46 Newark**	**Contract No: PSL21/3857** **Client Ref: 784-B026948**

ONE DIMENSIONAL CONSOLIDATION TEST

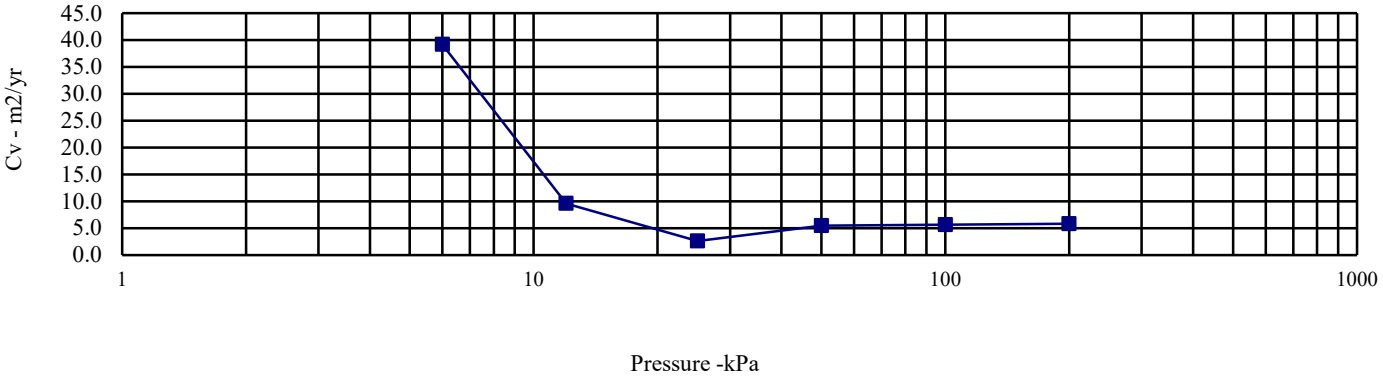
BS 1377: Part 5: 1990: Clause 3

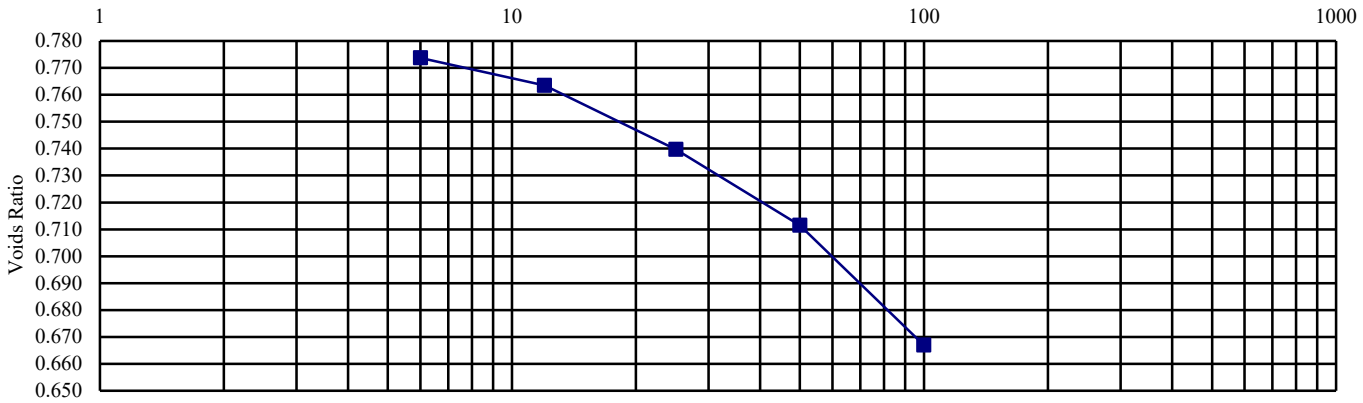
Hole Number: **WS17** **Top Depth (m):** **1.20**

Sample Number: **Base Depth (m) :** **1.65**

Sample Type: **U**

Initial Conditions		Pressure Range kPa		Mv m2/MN	Cv m2/yr	Specimen location within tube:	Top
Moisture Content (%):	30						
Bulk Density (Mg/m3):	1.91	0	6	2.251	39.165	Method used to	
Dry Density (Mg/m3):	1.47	6	12	0.964	9.579	determine CV:	T90
Voids Ratio:	0.798	12	25	1.039	2.600	Nominal temperature	
Degree of saturation:	98.7	25	50	0.647	5.468	during test ' C:	20
Height (mm):	19.1	50	100	0.521	5.631	Remarks:	
Diameter (mm)	76.27	100	200	0.324	5.835	See summary of soil descriptions	
Particle Density (Mg/m3): Assumed	2.65						





UKAS TESTING 4043	PSL Professional Soils Laboratory	**A46 Newark**	**Contract No:** PSL21/3857 **Client Ref:**

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		Area	D_e^2	D_e	Failure Load (P)		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH15	29.04	119	A	Perp	87	71	6177	7864.80	88.68	-	0.43	0.05	1.294	0.07	Valid	
BH17	21.83	116	A	Perp	105	61	6405	8155.10	90.31	-	1.44	0.18	1.305	0.23	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular

UKAS TESTING 4043

PSL Professional Soils Laboratory

A46 Newark

Contract No:

PSL21/3857

Client Ref:

784-B026948

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		D_e^2	D_e	Failure Load		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	L	D		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH15	25.00	117	D	Par	-	86	7396	86.00	-	0.07	0.009	1.276	0.01	Valid	
BH15	27.30	118	D	Par	-	87	7569	87.00	-	0.39	0.052	1.283	0.07	Valid	
BH17	19.80	115	D	Par	-	105	11025	105.00	-	4.46	0.405	1.396	0.56	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

UKAS TESTING 4043

PSL Professional Soils Laboratory

A46 Newark

Contract No:

PSL21/3857

Client Ref:

784-B026948

2531

ANALYTICAL TEST REPORT

Contract no: 96750

Contract name: A46 Newark

Client reference: PSL21/3857

Clients name: Professional Soils Laboratory

Clients address: 5/7 Hexthorpe Road
Doncaster
DN4 0AR

Samples received: 28 May 2021

Analysis started: 28 May 2021

Analysis completed: 07 June 2021

Report issued: 07 June 2021

Notes:
Opinions and interpretations expressed herein are outside the UKAS accreditation scope.
Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.
All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.
Methods, procedures and performance data are available on request.
Results reported herein relate only to the material supplied to the laboratory.
This report shall not be reproduced except in full, without prior written approval.
Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

Key:
U UKAS accredited test
M MCERTS & UKAS accredited test
$ Test carried out by an approved subcontractor
I/S Insufficient sample to carry out test
N/S Sample not suitable for testing

Approved by: [redacted]
Rachael Burton
Customer Support Squad Leader

Chemtech Environmental Limited

SOILS

Lab number			96750-1	96750-2	96750-3	96750-4	96750-5	96750-6
Sample id			BH15	BH15	BH17	BH17	BH17	WS13
Depth (m)			15.50	27.30-27.50	1.20-2.20	9.00-10.50	19.80-19.99	1.40-1.80
Date sampled			-	-	-	-	-	-
Test	**Method**	**Units**						
pH	CE004 [U]	units	8.5	8.4	8.1	8.3	8.4	7.4
Magnesium (2:1 water soluble)	CE061	mg/l Mg	29	60	10	5.0	8.0	9.9
Chloride (2:1 water soluble)	CE049 [U]	mg/l Cl	3.7	5.3	16	9.6	32	10
Nitrate (2:1 water soluble)	CE049 [U]	mg/l NO_3	1.4	<1	<1	<1	<1	<1
Sulphate (2:1 water soluble)	CE061	mg/l SO_4	685	2375	199	39	17	112
Sulphate (total)	CE062	mg/kg SO_4	3004	60704	4339	212	835	487
Sulphur (total)	CE119	mg/kg S	989	24144	1458	<100	250	341
Sulphur (total)	CE119	% w/w S	0.10	2.41	0.15	<0.01	0.03	0.03
Total Organic Carbon (TOC)	CE197	% w/w C	-	-	-	-	-	-
Estimate of OMC (calculated from TOC)	CE197	% w/w	-	-	-	-	-	-

Chemtech Environmental Limited

SOILS

Lab number			96750-7	96750-8
Sample id			WS13	WS28
Depth (m)			2.00	3.00
Date sampled			-	-
Test	**Method**	**Units**		
pH	CE004 [U]	units	-	-
Magnesium (2:1 water soluble)	CE061	mg/l Mg	-	-
Chloride (2:1 water soluble)	CE049 [U]	mg/l Cl	-	-
Nitrate (2:1 water soluble)	CE049 [U]	mg/l NO_3	-	-
Sulphate (2:1 water soluble)	CE061	mg/l SO_4	-	-
Sulphate (total)	CE062	mg/kg SO_4	-	-
Sulphur (total)	CE119	mg/kg S	-	-
Sulphur (total)	CE119	% w/w S	-	-
Total Organic Carbon (TOC)	CE197	% w/w C	1.2	0.1
Estimate of OMC (calculated from TOC)	CE197	% w/w	2.1	0.2

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE004	pH	Based on BS 1377, pH Meter	As received	U	-	units
CE061	Magnesium (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry		1	mg/l Mg
CE049	Chloride (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l Cl
CE049	Nitrate (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l NO_3
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry		10	mg/l SO_4
CE062	Sulphate (total)	Acid extraction, ICP-OES	Dry		100	mg/kg SO_4
CE119	Sulphur (total)	Acid extraction, ICP-OES	Dry		100	mg/kg S
CE119	Sulphur (total)	Acid extraction, ICP-OES	Dry		0.01	% w/w S
CE197	Total Organic Carbon (TOC)	Carbon Analyser	Dry		0.1	% w/w C
CE197	Estimate of OMC (calculated from TOC)	Calculation from Total Organic Carbon	Dry		0.1	% w/w

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
96750-1	BH15	15.50	Y	All (NSD)
96750-2	BH15	27.30-27.50	Y	All (NSD)
96750-3	BH17	1.20-2.20	Y	All (NSD)
96750-4	BH17	9.00-10.50	Y	All (NSD)
96750-5	BH17	19.80-19.99	Y	All (NSD)
96750-6	WS13	1.40-1.80	Y	All (NSD)
96750-7	WS13	2.00	Y	All (NSD)
96750-8	WS28	3.00	Y	All (NSD)

LABORATORY REPORT

4043

Contract Number: PSL21/4194

Report Date: 15 July 2021

Client's Reference: 784-B026948

Client Name: Tetra Tech
54 Hagley Road
Birmingham
B16 8PE

For the attention of: Nicholas Bool

Contract Title: A46 Newark NNB

Date Received: 21/5/2021
Date Commenced: 21/5/2021
Date Completed: 9/7/2021

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins (Director)

R Berriman (Quality Manager)

S Royle (Laboratory Manager)

[redacted]

L Knight (Senior Technician)

S Eyre (Senior Technician)

T Watkins (Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AR
[redacted]

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH02	6	B	0.70	1.20	Brown very sandy CLAY.
BH03	6	B	0.60	1.00	Brown sandy CLAY.
BH16	6	B	0.80	1.10	Brown very gravelly silty SAND.
TP15	3	B	0.50	0.90	Brown slightly gravelly sandy CLAY.
TP25	3	B	0.30	0.80	Brown slightly gravelly very sandy CLAY.
WS23	3	B	0.30	0.80	Brown slightly gravelly slightly sandy CLAY.
WS23	7	B	1.60	1.90	Brown slightly gravelly sandy CLAY.
WS23	8	U76	2.00	2.45	Firm brown organic CLAY.
WS23	9	B	2.70	3.00	Brown sandy slightly silty GRAVEL.
WS23	10	B	3.50	4.00	Brown very gravelly SAND
WS25	5	B	0.80	1.20	Brown slightly gravelly sandy CLAY.
WS25	8	B	1.65	2.00	Brown sandy CLAY.
WS25	9	B	2.00	2.80	Brown sandy CLAY.
WS25	10	B	3.00	4.00	Brown very sandy slightly silty GRAVEL.
WS26	3	B	0.30	0.70	Brown slightly gravelly very sandy CLAY.
WS26	6	B	1.20	1.70	Brown slightly gravelly sandy CLAY.
WS26	5	D	1.20		Brown slightly gravelly sandy CLAY.
WS26	9	B	2.20	2.60	Brownish grey slightly gravelly slightly sandy CLAY.
WS29	3	B	0.40	0.80	Brown slightly gravelly slightly sandy CLAY.

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
WS29	6	B	1.40	1.80	Brown slightly gravelly sandy CLAY.
WS29	9	B	2.00	3.00	Brown sandy GRAVEL.
WS31	3	B	0.40	0.80	Brown slightly gravelly sandy silty CLAY.
WS31	5	D	1.20		Brown slightly gravelly slightly sandy CLAY.
WS31	6	B	1.50	1.80	Brown very gravelly SAND.
WS31	11	B	3.40	3.80	Brown sandy slightly silty GRAVEL.
WS31	13	B	4.20	4.80	Brown very sandy slightly silty GRAVEL.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH02	6	B	0.70	1.20	25			34	18	16	93	Low Plasticity CL
BH03	6	B	0.60	1.00	27			40	20	20	93	Intermediate Plasticity CI
BH16	6	B	0.80	1.10	7.3				NP			
TP15	3	B	0.50	0.90	24			54	25	29	89	High Plasticity CH
WS23	3	B	0.30	0.80	24			54	24	30	97	High Plasticity CH
WS23	7	B	1.60	1.90	44			52	24	28	90	High Plasticity CH
WS25	5	B	0.80	1.20	24			47	23	24	96	Intermediate Plasticity CI
WS25	8	B	1.65	2.00	35			45	22	23	94	Intermediate Plasticity CI
WS25	9	B	2.00	2.80	24			40	20	20	99	Intermediate Plasticity CI
WS26	3	B	0.30	0.70	24			39	19	20	66	Intermediate Plasticity CI
WS26	5	D	1.20		22			39	19	20	96	Intermediate Plasticity CI
WS26	9	B	2.20	2.60	54			68	29	39	95	High Plasticity CH
WS29	3	B	0.40	0.80	29			60	26	34	98	High Plasticity CH
WS29	6	B	1.40	1.80	34			51	24	27	93	High Plasticity CH
WS29	9	B	2.00	3.00	5.6				NP			
WS31	3	B	0.40	0.80	34			53	25	28	81	High Plasticity CH
WS31	5	D	1.20		33			59	26	33	98	High Plasticity CH

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

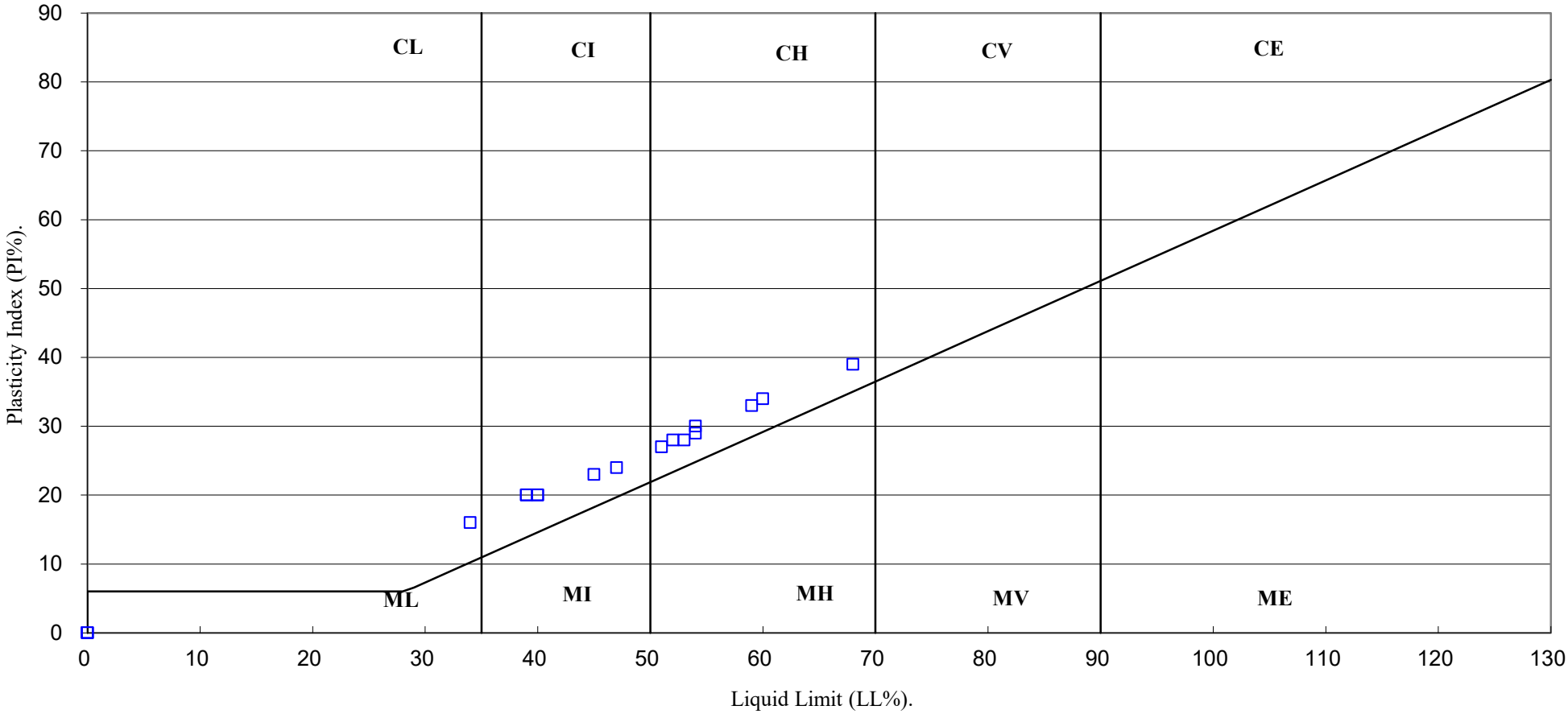
UKAS TESTING 4043

PSL Professional Soils Laboratory

A46 Newark NNB

Contract No:
PSL21/4194
Client Ref:
784-B026948

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



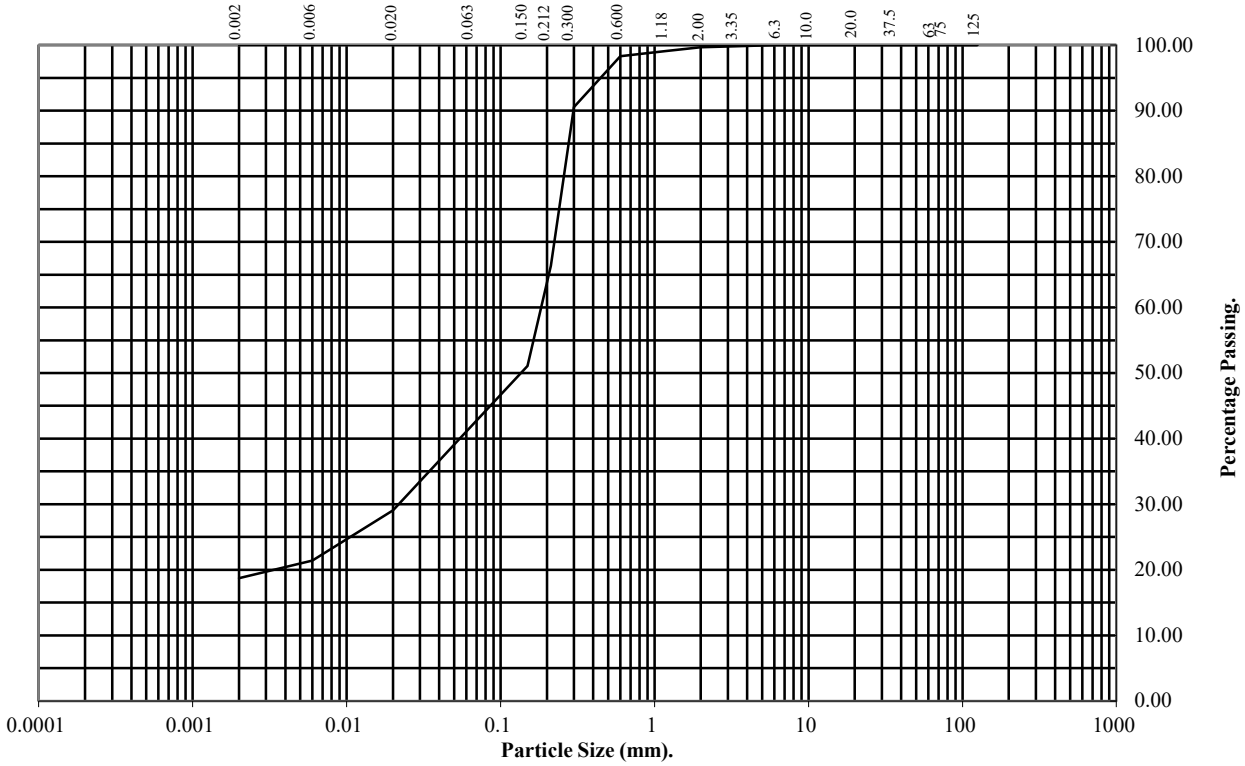
UKAS TESTING 4043	PSL Professional Soils Laboratory	A46 Newark NNB	Contract No: PSL21/4194 Client Ref: 784-B026948

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH02**	**Top Depth (m):**	**0.70**
Sample Number:	**6**	**Base Depth(m):**	**1.20**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	99
0.6	98
0.3	91
0.212	66
0.15	51
0.063	42

Particle Diameter	Percentage Passing
0.02	29
0.006	21
0.002	19

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	58
Silt	23
Clay	19

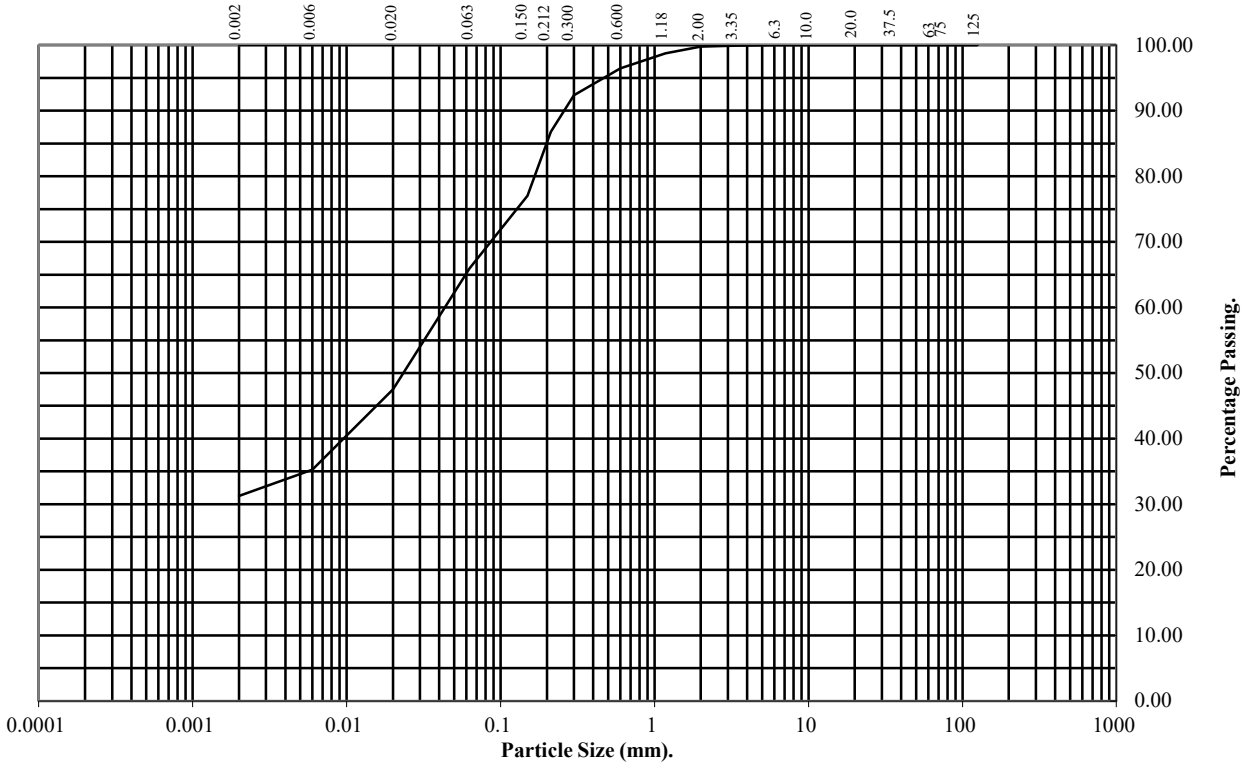
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH03**	**Top Depth (m):**	**0.60**
Sample Number:	**6**	**Base Depth(m):**	**1.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	99
0.6	96
0.3	92
0.212	87
0.15	77
0.063	66

Particle Diameter	Percentage Passing
0.02	48
0.006	35
0.002	31

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	34
Silt	35
Clay	31

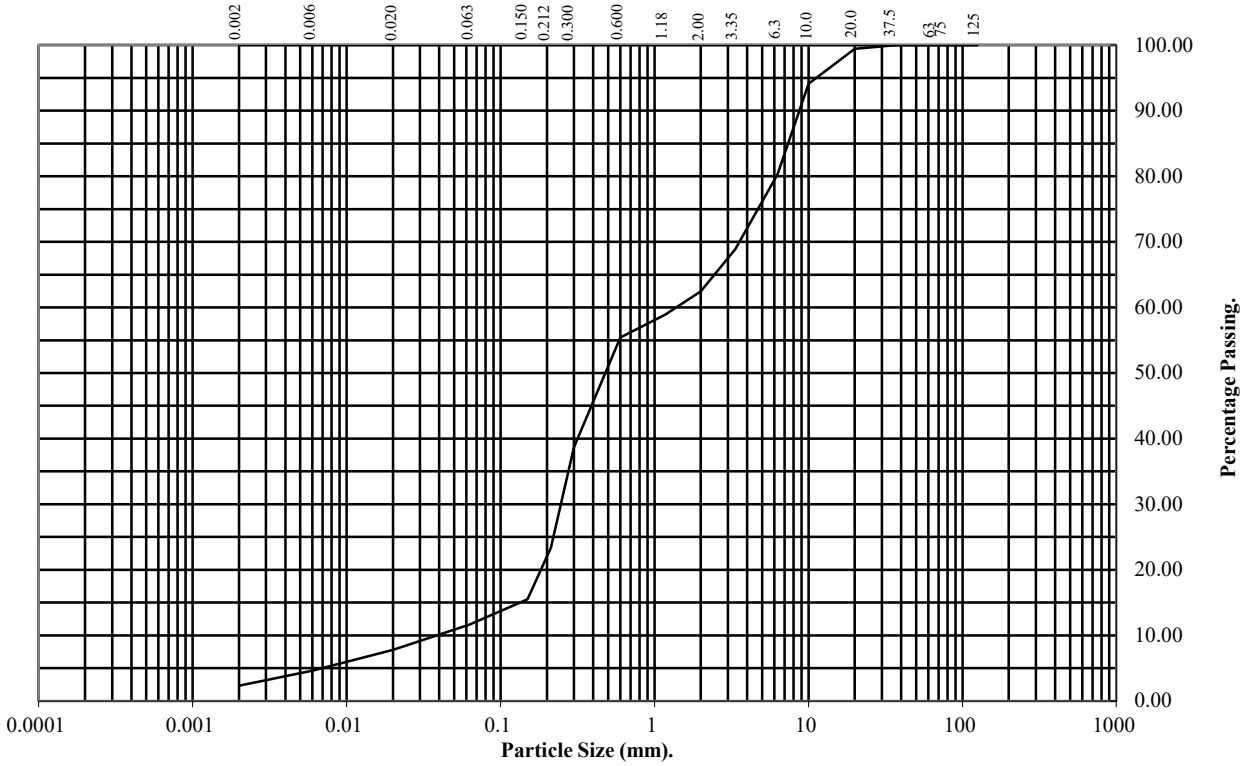
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH16**	**Top Depth (m):**	**0.80**
Sample Number:	**6**	**Base Depth(m):**	**1.10**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	99
10	94
6.3	80
3.35	69
2	62
1.18	59
0.6	55
0.3	39
0.212	23
0.15	15
0.063	12

Particle Diameter	Percentage Passing
0.02	8
0.006	5
0.002	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	38
Sand	50
Silt	10
Clay	2

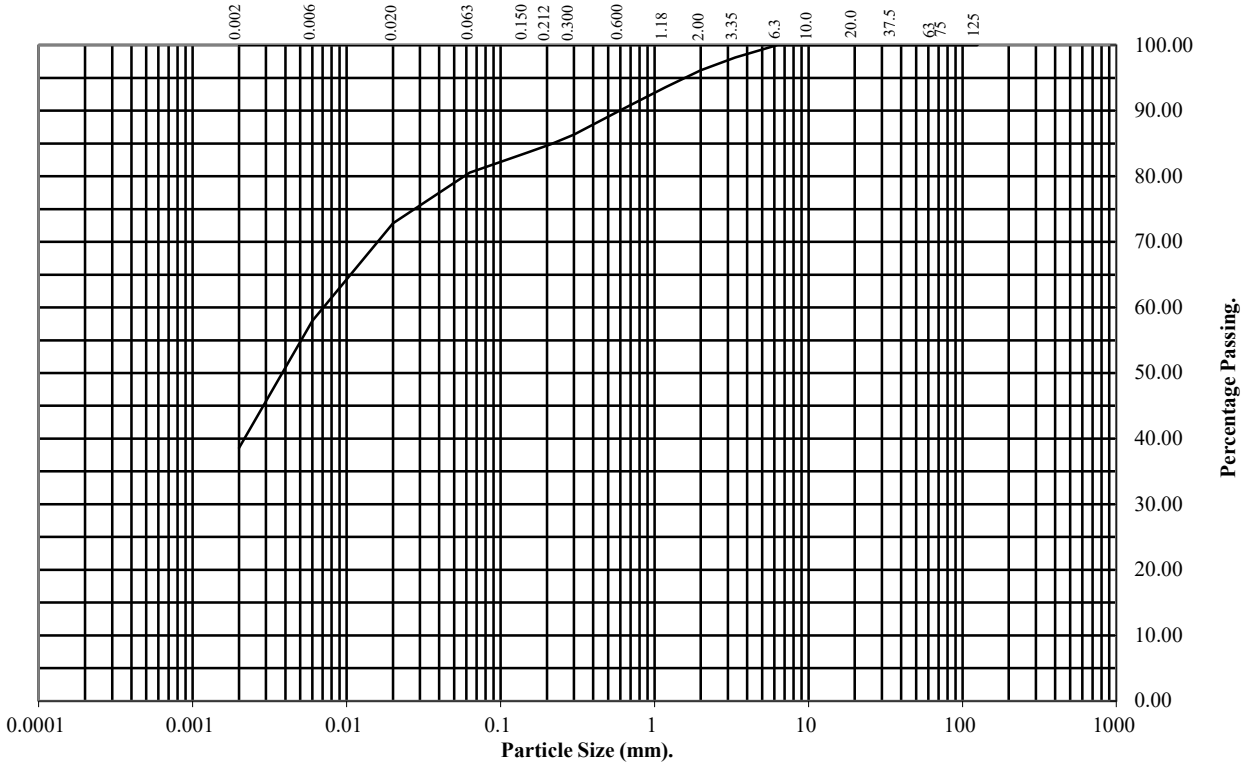
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**TP15**	**Top Depth (m):**	**0.50**
Sample Number:	**3**	**Base Depth(m):**	**0.90**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	98
2	96
1.18	94
0.6	90
0.3	86
0.212	85
0.15	84
0.063	81

Particle Diameter	Percentage Passing
0.02	73
0.006	58
0.002	39

Soil Fraction	Total Percentage
Cobbles	0
Gravel	4
Sand	15
Silt	42
Clay	39

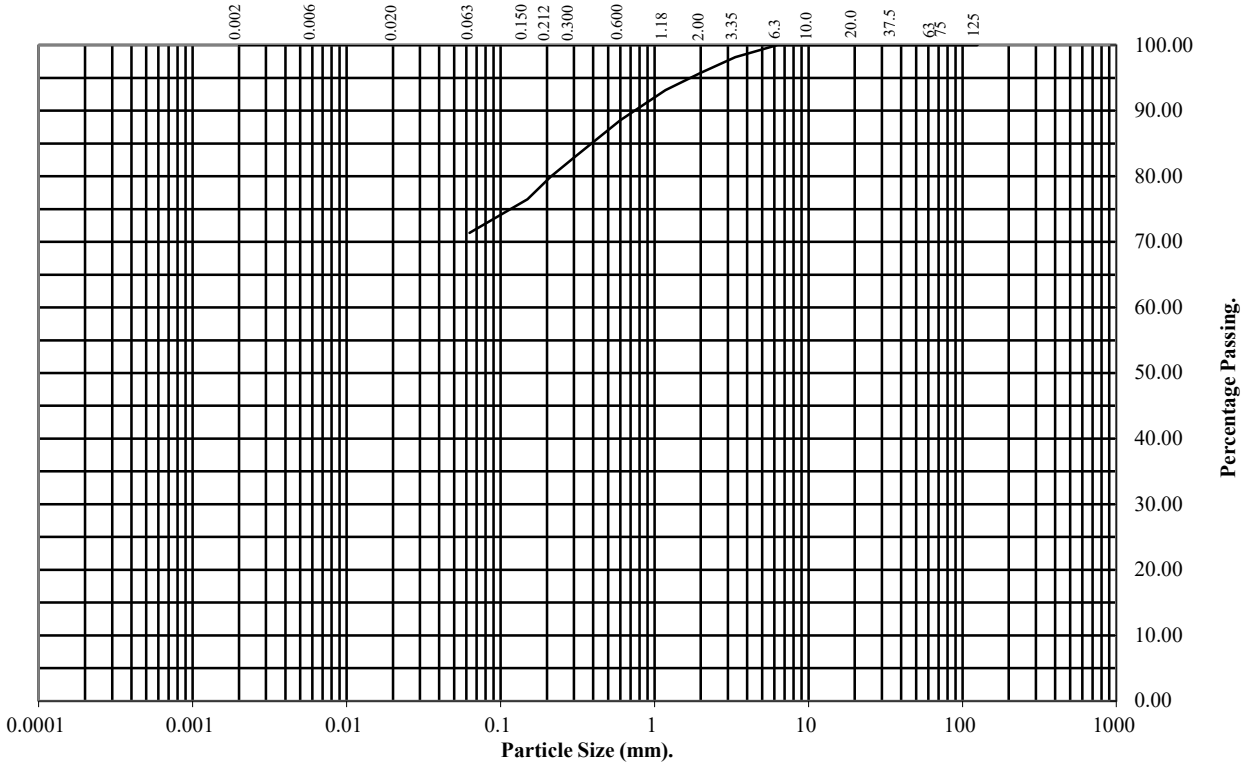
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**TP25**	**Top Depth (m):**	**0.30**
Sample Number:	**3**	**Base Depth(m):**	**0.80**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	98
2	96
1.18	93
0.6	89
0.3	83
0.212	80
0.15	76
0.063	71

Soil Fraction	Total Percentage
Cobbles	0
Gravel	4
Sand	25
Silt/Clay	71

Remarks:

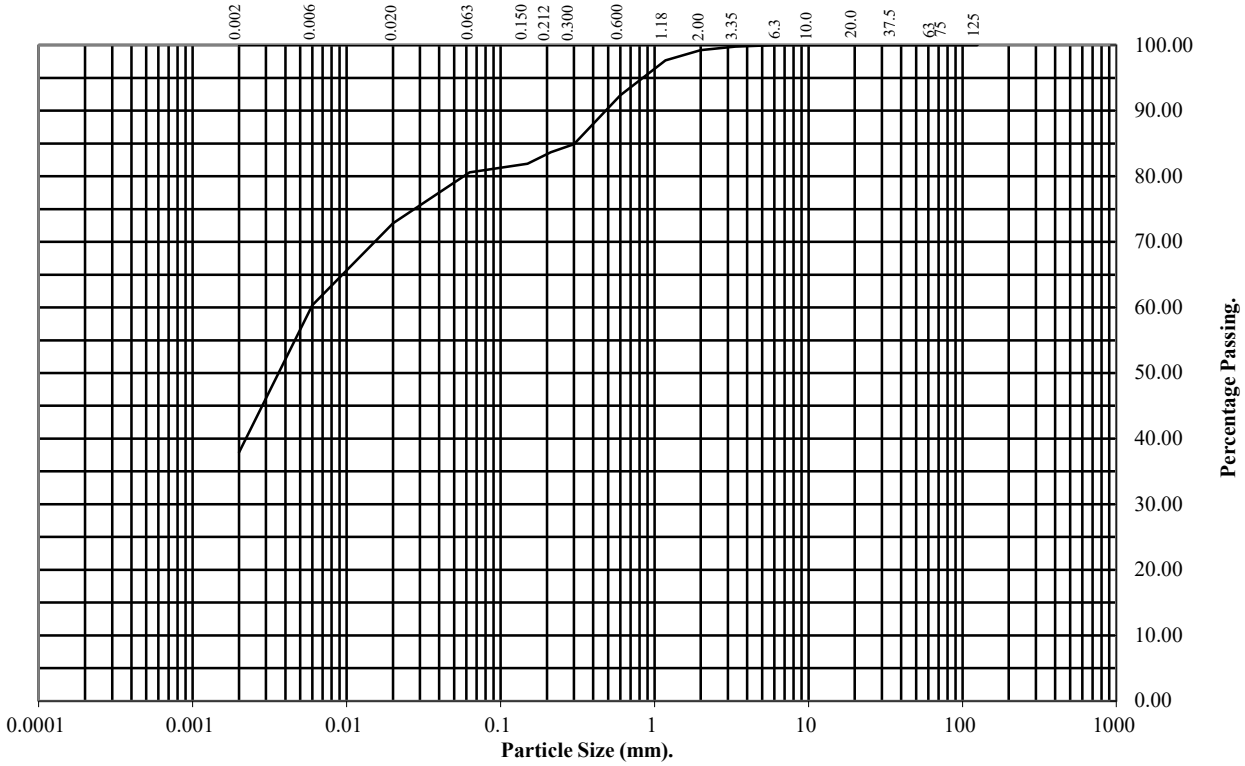
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**WS23**	**Top Depth (m):**	**1.60**
Sample Number:	**7**	**Base Depth(m):**	**1.90**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	99
1.18	98
0.6	92
0.3	85
0.212	84
0.15	82
0.063	81

Particle Diameter	Percentage Passing
0.02	73
0.006	60
0.002	38

Soil Fraction	Total Percentage
Cobbles	0
Gravel	1
Sand	18
Silt	43
Clay	38

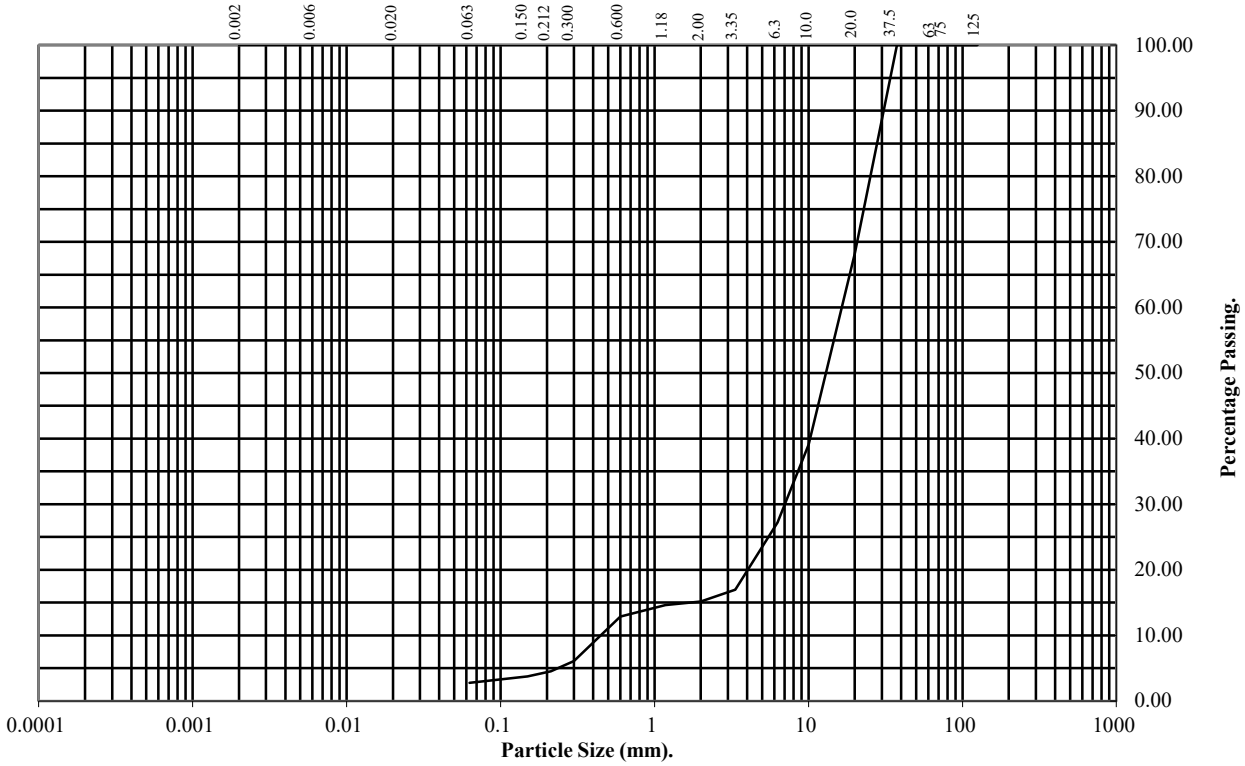
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS23**	**Top Depth (m):**	**2.70**
Sample Number:	**9**	**Base Depth(m):**	**3.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	68
10	39
6.3	27
3.35	17
2	15
1.18	15
0.6	13
0.3	6
0.212	5
0.15	4
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	85
Sand	12
Silt/Clay	3

Remarks:

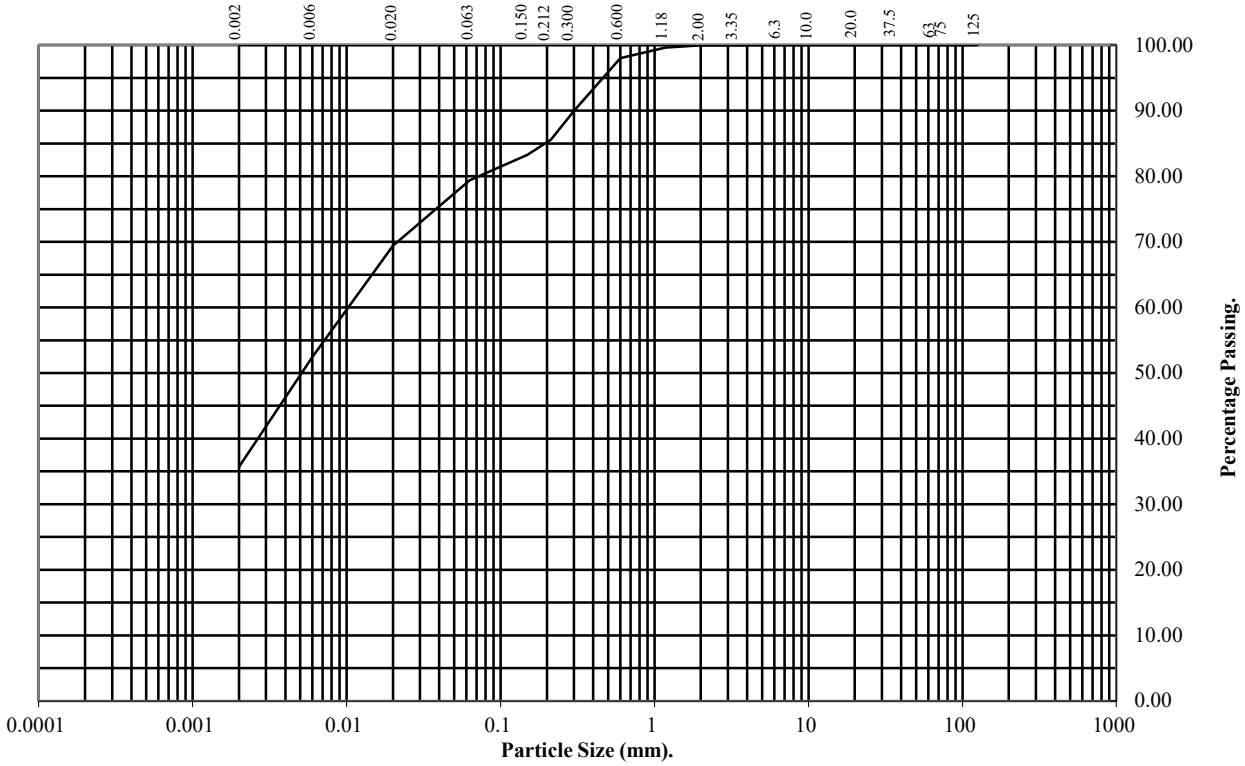
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**WS25**	**Top Depth (m):**	**1.65**
Sample Number:	**8**	**Base Depth(m):**	**2.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	98
0.3	90
0.212	86
0.15	83
0.063	79

Particle Diameter	Percentage Passing
0.02	69
0.006	52
0.002	36

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	21
Silt	43
Clay	36

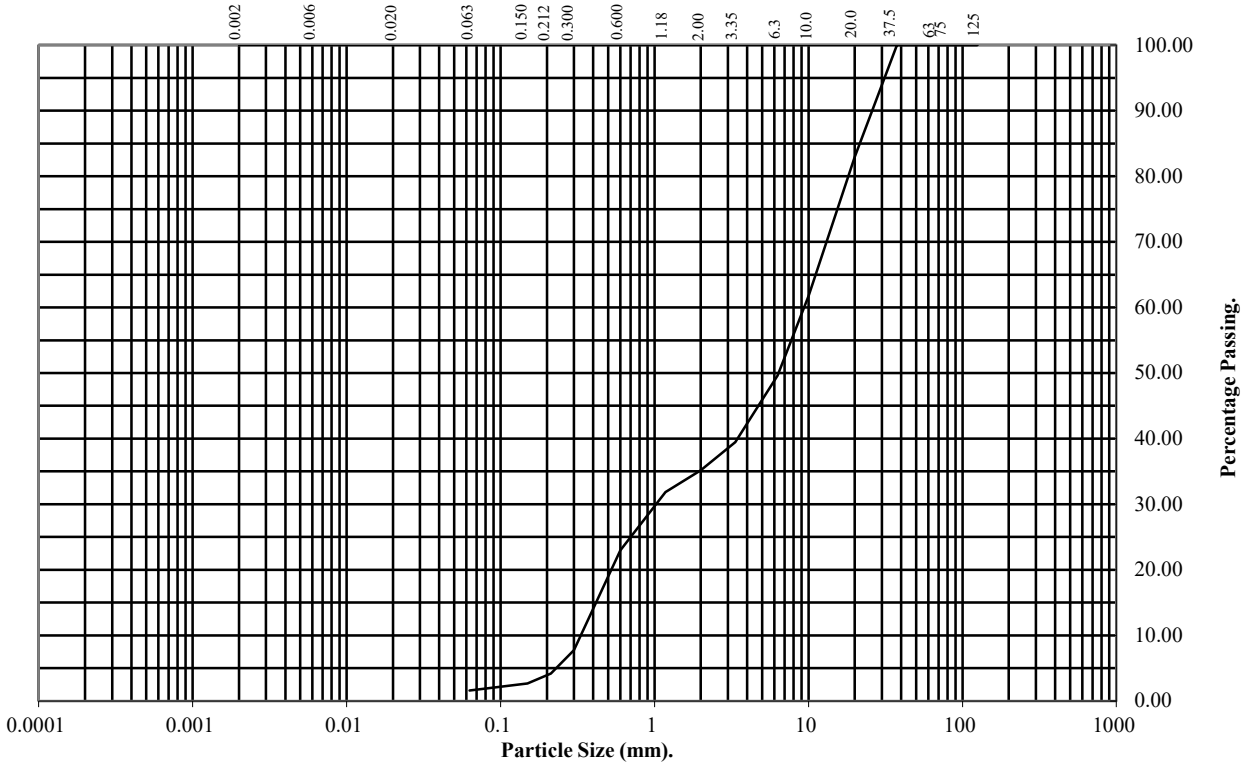
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS25**	**Top Depth (m):**	**3.00**
Sample Number:	**10**	**Base Depth(m):**	**4.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	83
10	62
6.3	50
3.35	39
2	35
1.18	32
0.6	23
0.3	8
0.212	4
0.15	3
0.063	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	65
Sand	33
Silt/Clay	2

Remarks:

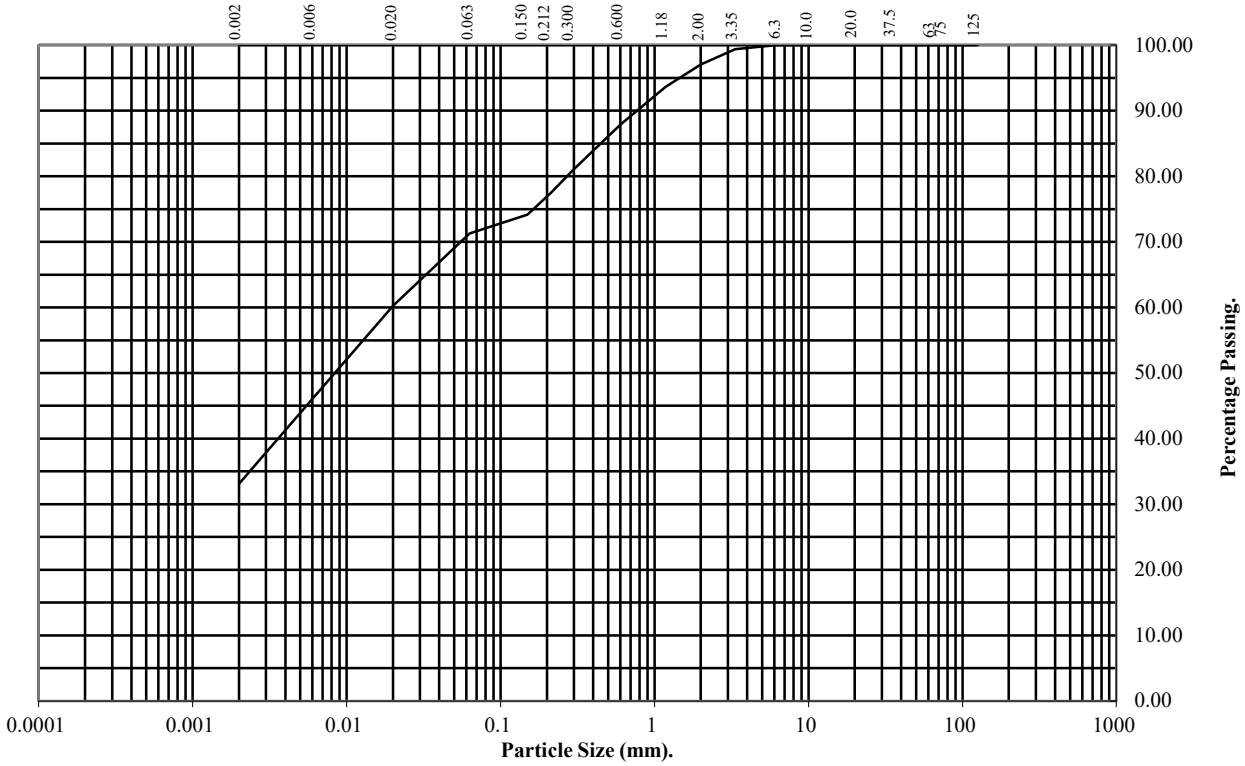
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**WS26**	**Top Depth (m):**	**0.30**
Sample Number:	**3**	**Base Depth(m):**	**0.70**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	99
2	97
1.18	94
0.6	88
0.3	81
0.212	77
0.15	74
0.063	71

Particle Diameter	Percentage Passing
0.02	60
0.006	46
0.002	33

Soil Fraction	Total Percentage
Cobbles	0
Gravel	3
Sand	26
Silt	38
Clay	33

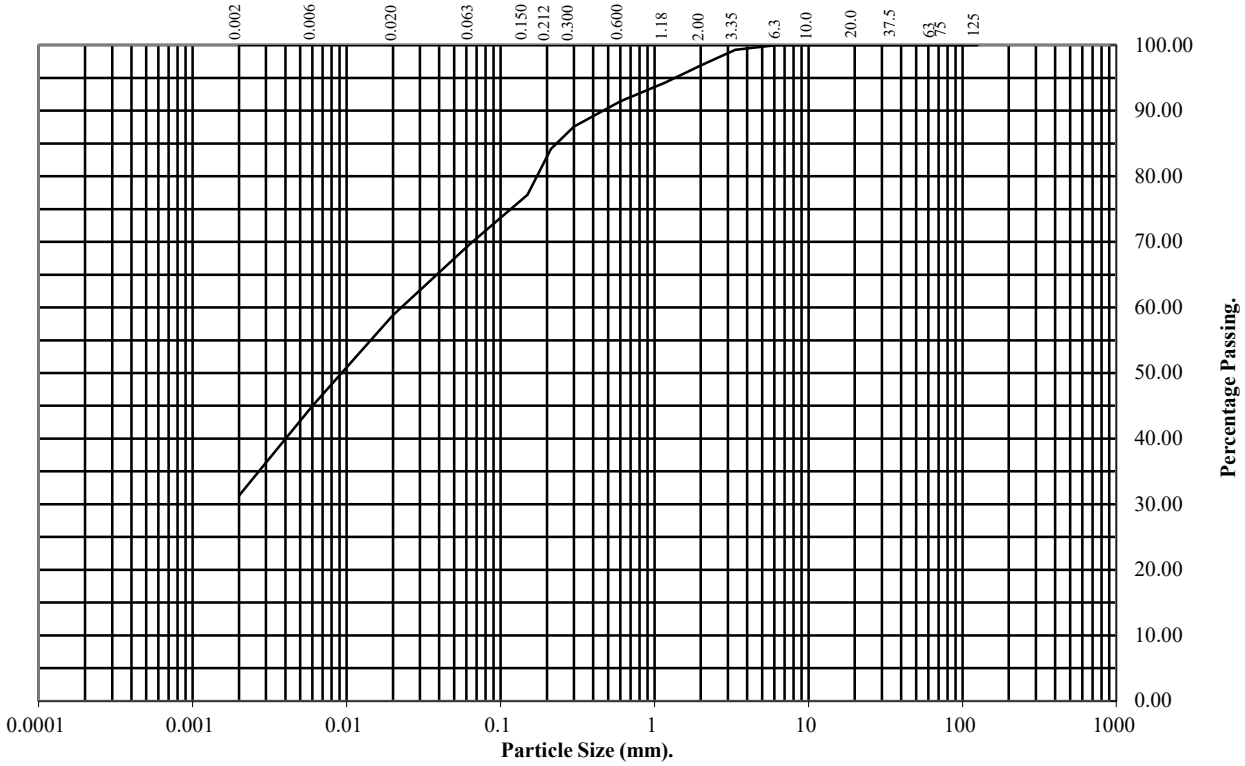
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**WS26**	**Top Depth (m):**	**1.20**
Sample Number:	**6**	**Base Depth(m):**	**1.70**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	99
2	97
1.18	94
0.6	91
0.3	88
0.212	84
0.15	77
0.063	70

Particle Diameter	Percentage Passing
0.02	59
0.006	45
0.002	31

Soil Fraction	Total Percentage
Cobbles	0
Gravel	3
Sand	27
Silt	39
Clay	31

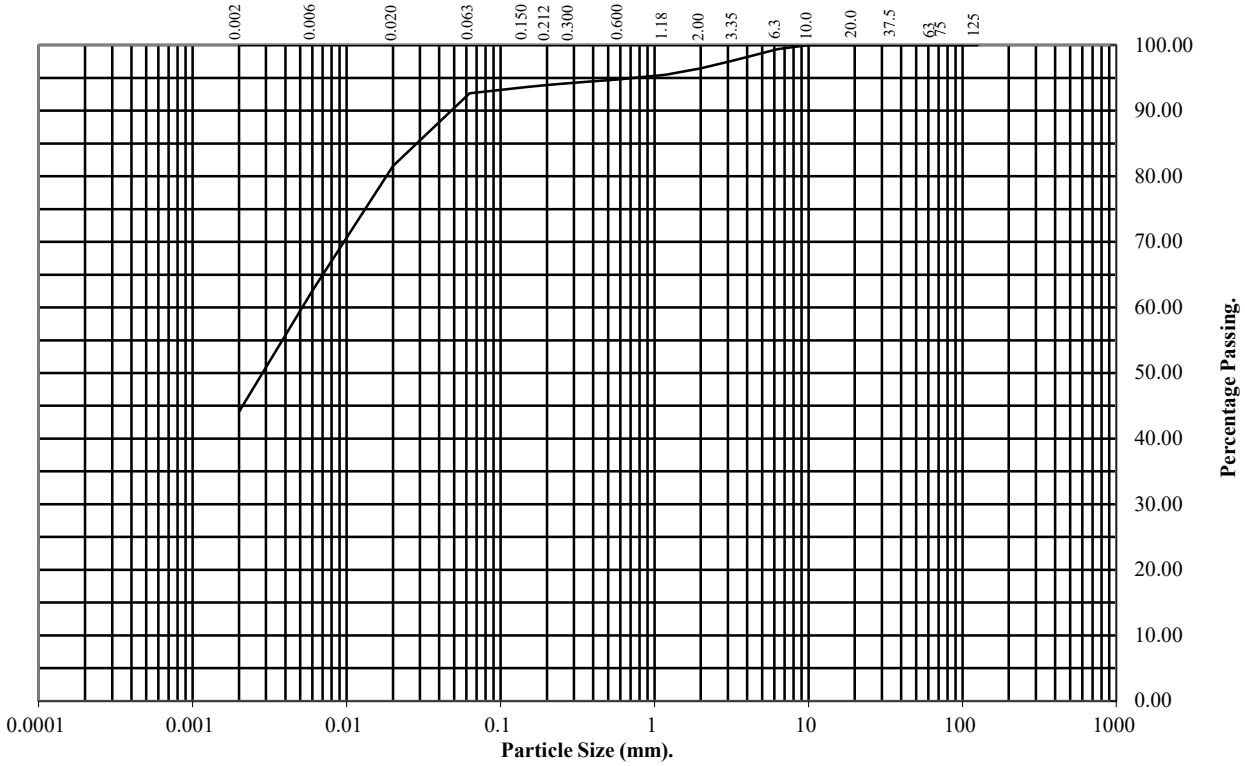
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**WS26**	**Top Depth (m):**	**2.20**
Sample Number:	**9**	**Base Depth(m):**	**2.60**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	99
3.35	98
2	96
1.18	95
0.6	95
0.3	94
0.212	94
0.15	94
0.063	93

Particle Diameter	Percentage Passing
0.02	82
0.006	63
0.002	44

Soil Fraction	Total Percentage
Cobbles	0
Gravel	4
Sand	3
Silt	49
Clay	44

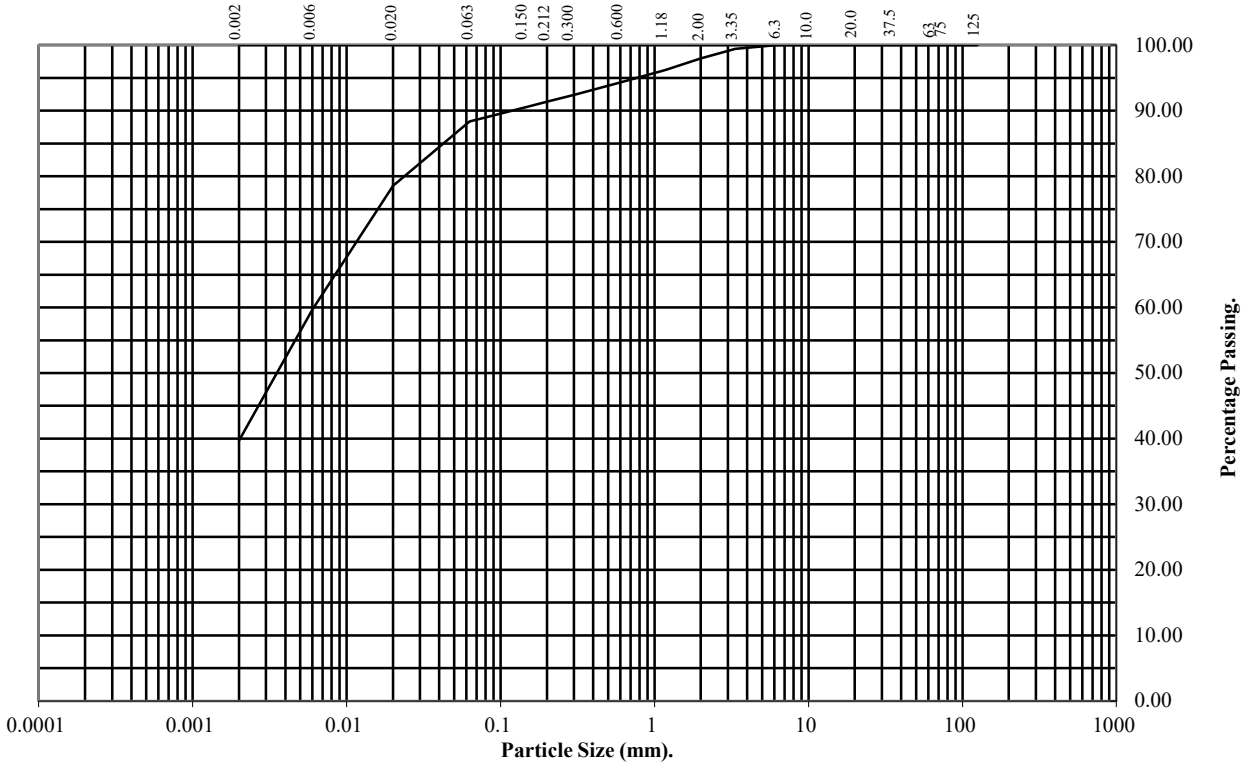
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**WS29**	**Top Depth (m):**	**1.40**
Sample Number:	**6**	**Base Depth(m):**	**1.80**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	99
2	98
1.18	96
0.6	94
0.3	92
0.212	92
0.15	91
0.063	88

Particle Diameter	Percentage Passing
0.02	79
0.006	60
0.002	40

Soil Fraction	Total Percentage
Cobbles	0
Gravel	2
Sand	10
Silt	48
Clay	40

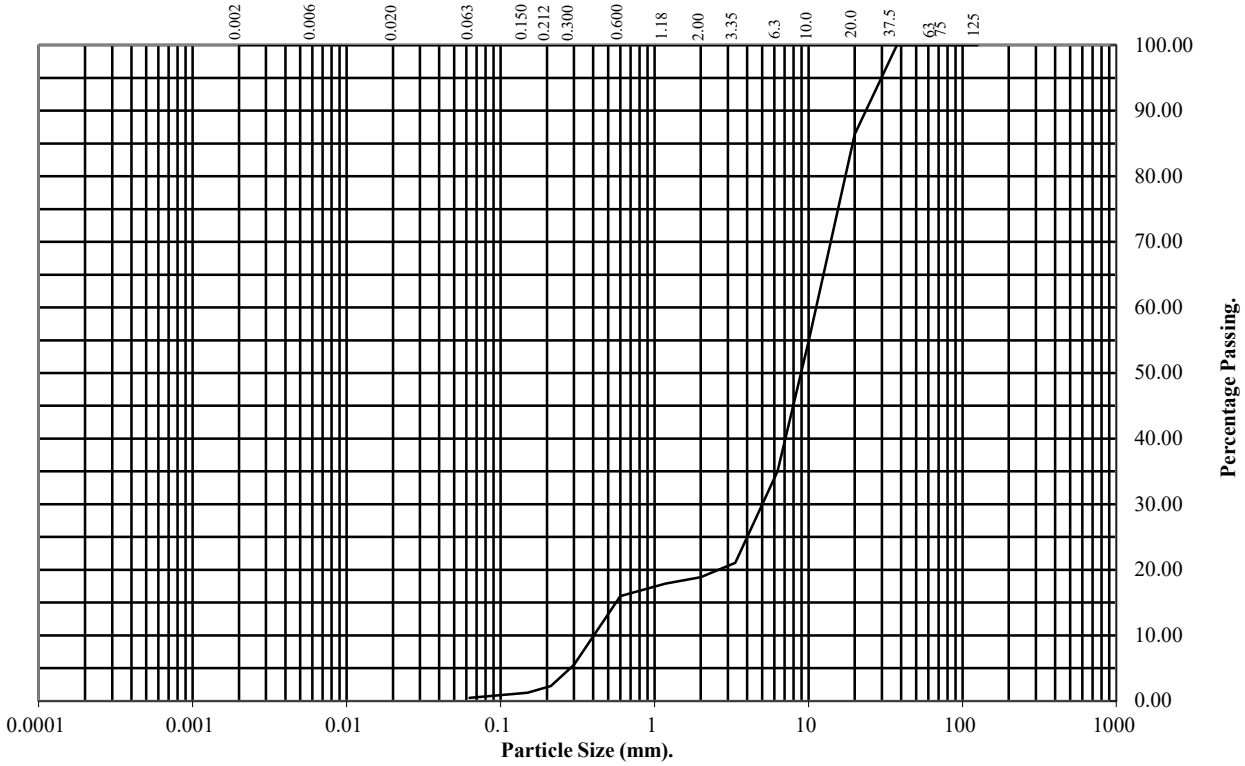
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS29**	**Top Depth (m):**	**2.00**
Sample Number:	**9**	**Base Depth(m):**	**3.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	86
10	55
6.3	35
3.35	21
2	19
1.18	18
0.6	16
0.3	6
0.212	2
0.15	1
0.063	0

Soil Fraction	Total Percentage
Cobbles	0
Gravel	81
Sand	19
Silt/Clay	0

Remarks:

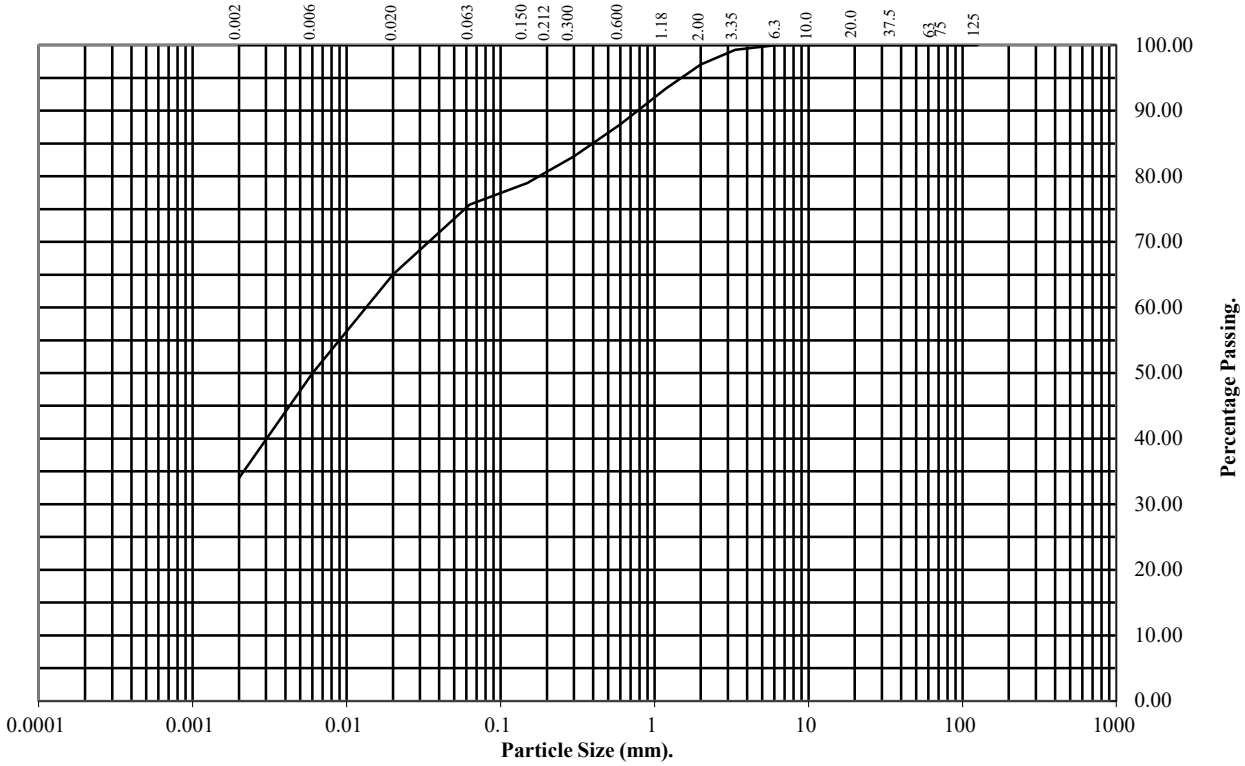
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**WS31**	**Top Depth (m):**	**0.40**
Sample Number:	**3**	**Base Depth(m):**	**0.80**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	99
2	97
1.18	93
0.6	88
0.3	83
0.212	81
0.15	79
0.063	76

Particle Diameter	Percentage Passing
0.02	65
0.006	50
0.002	34

Soil Fraction	Total Percentage
Cobbles	0
Gravel	3
Sand	21
Silt	42
Clay	34

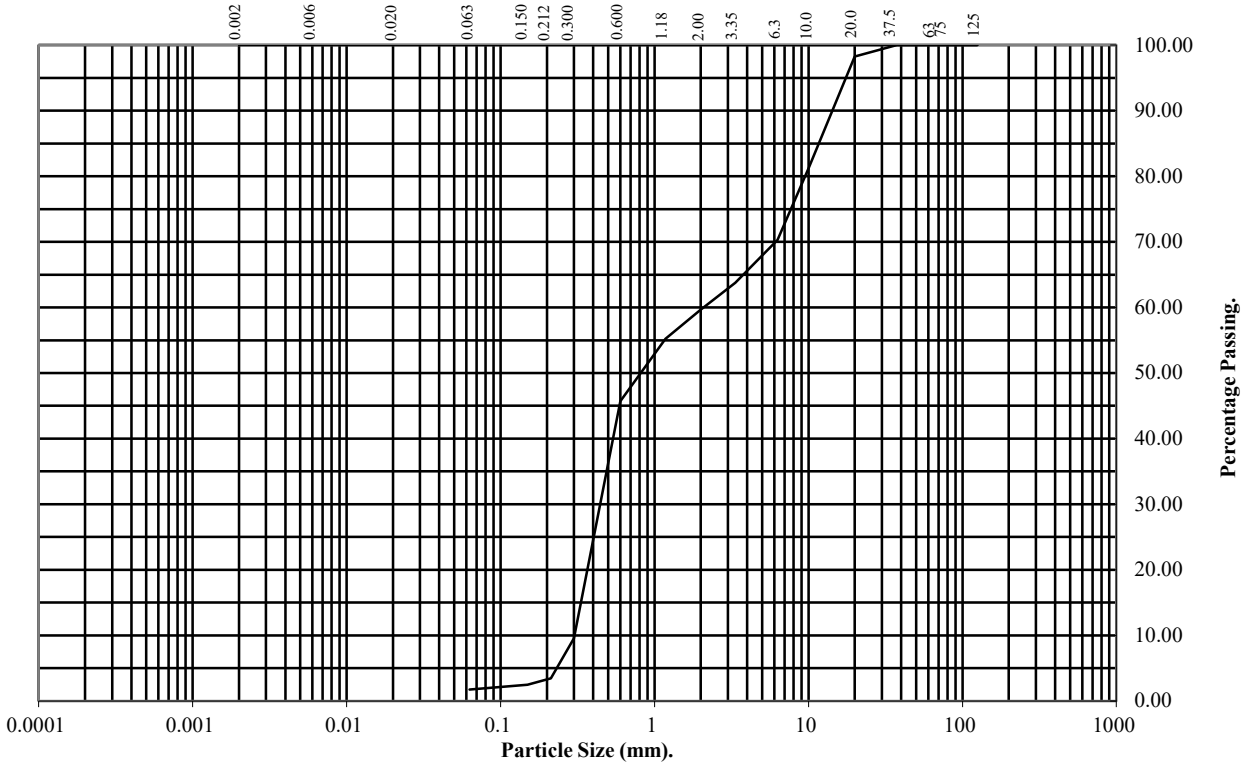
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS31**	**Top Depth (m):**	**1.50**
Sample Number:	**6**	**Base Depth(m):**	**1.80**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	98
10	81
6.3	70
3.35	64
2	60
1.18	55
0.6	46
0.3	10
0.212	3
0.15	2
0.063	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	40
Sand	58
Silt/Clay	2

Remarks:

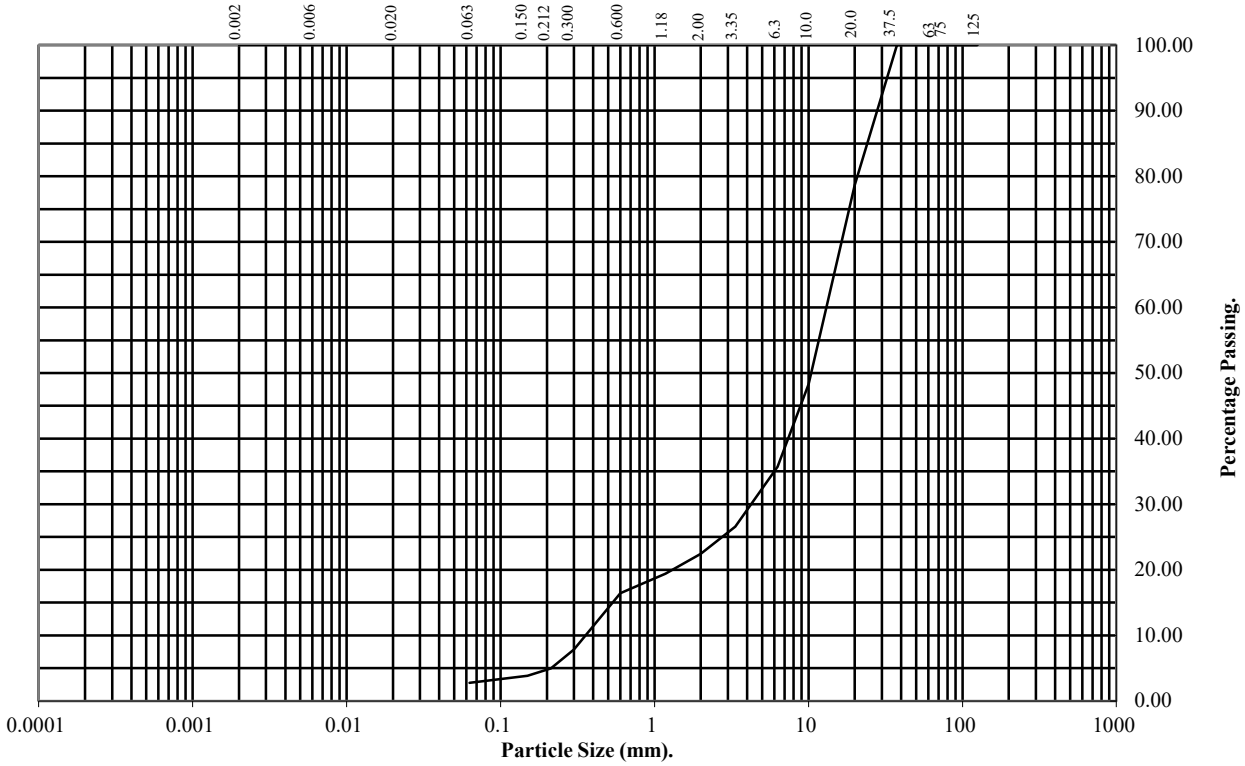
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**WS31**	**Top Depth (m):**	**3.40**
Sample Number:	**11**	**Base Depth(m):**	**3.80**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	79
10	48
6.3	36
3.35	27
2	22
1.18	19
0.6	16
0.3	8
0.212	5
0.15	4
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	78
Sand	19
Silt/Clay	3

Remarks:

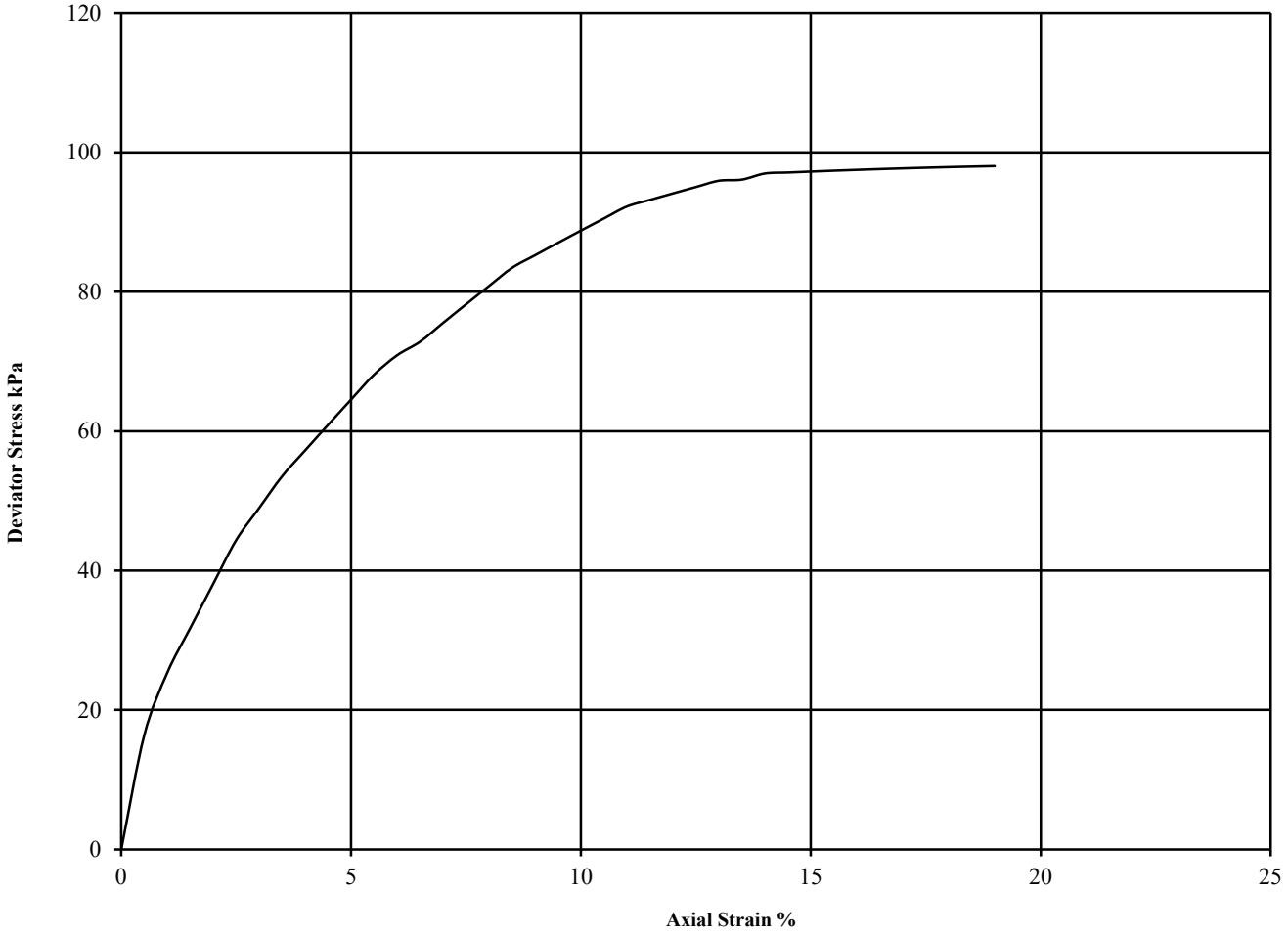
See Summary of Soil Descriptions

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number:	**WS23**	**Top Depth (m):**	**2.00**
Sample Number:	**8**	**Base Depth (m):**	**2.45**
Sample Type	**U76**		



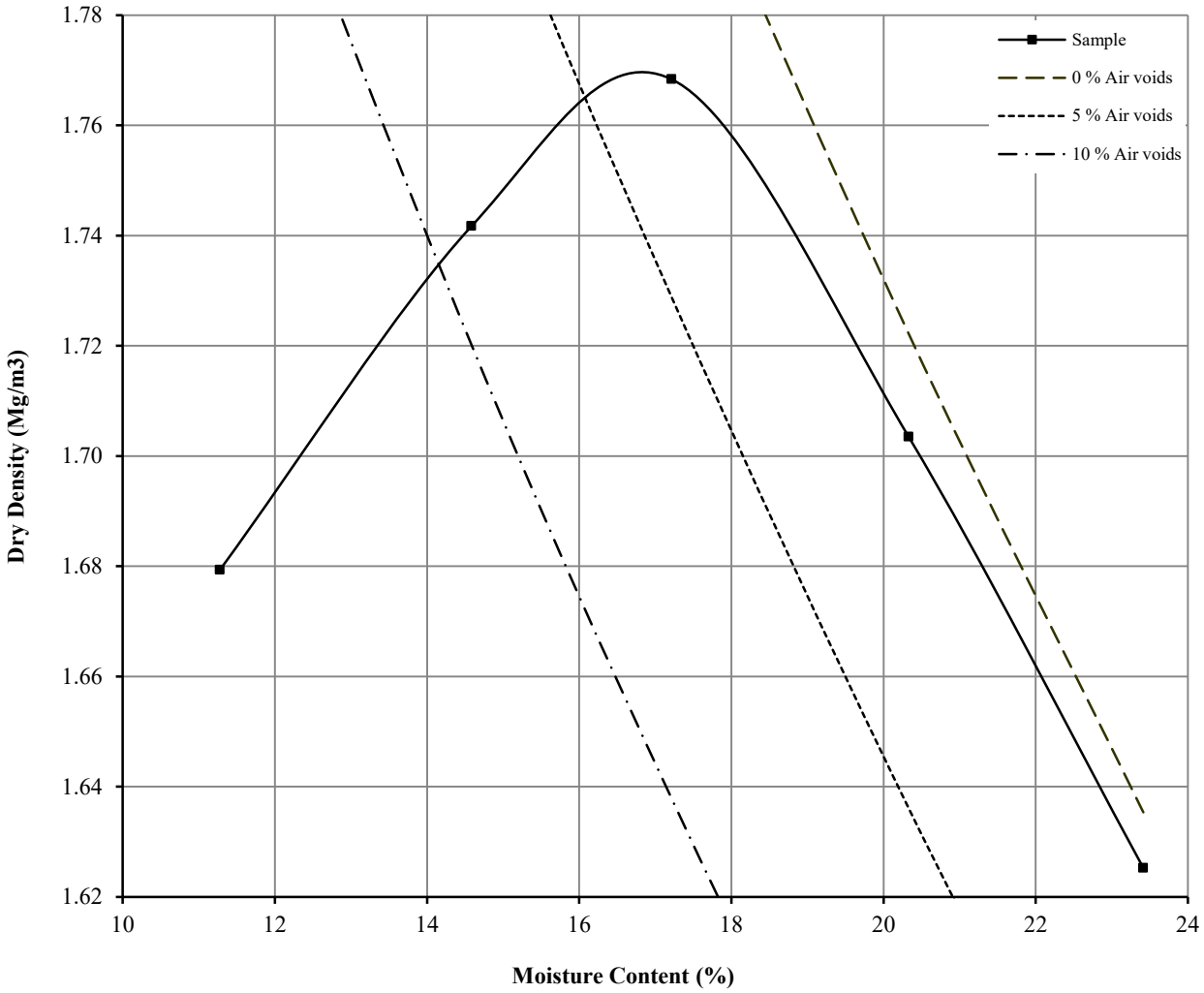
Diameter (mm):		38	Height (mm):		76	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.71
1	74	1.51	0.86	200	98	49	19.0	Plastic	See summary of soil descriptions

UKAS TESTING 4043	PSL Professional Soils Laboratory	**A46 Newark NNB**	**Contract No:** PSL21/4194 **Client Ref:** 784-B026948

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**WS25**	**Top Depth (m) :**	**2.00**
Sample Number:	**9**	**Base Depth (m) :**	**2.80**
Sample Type:	**B**		

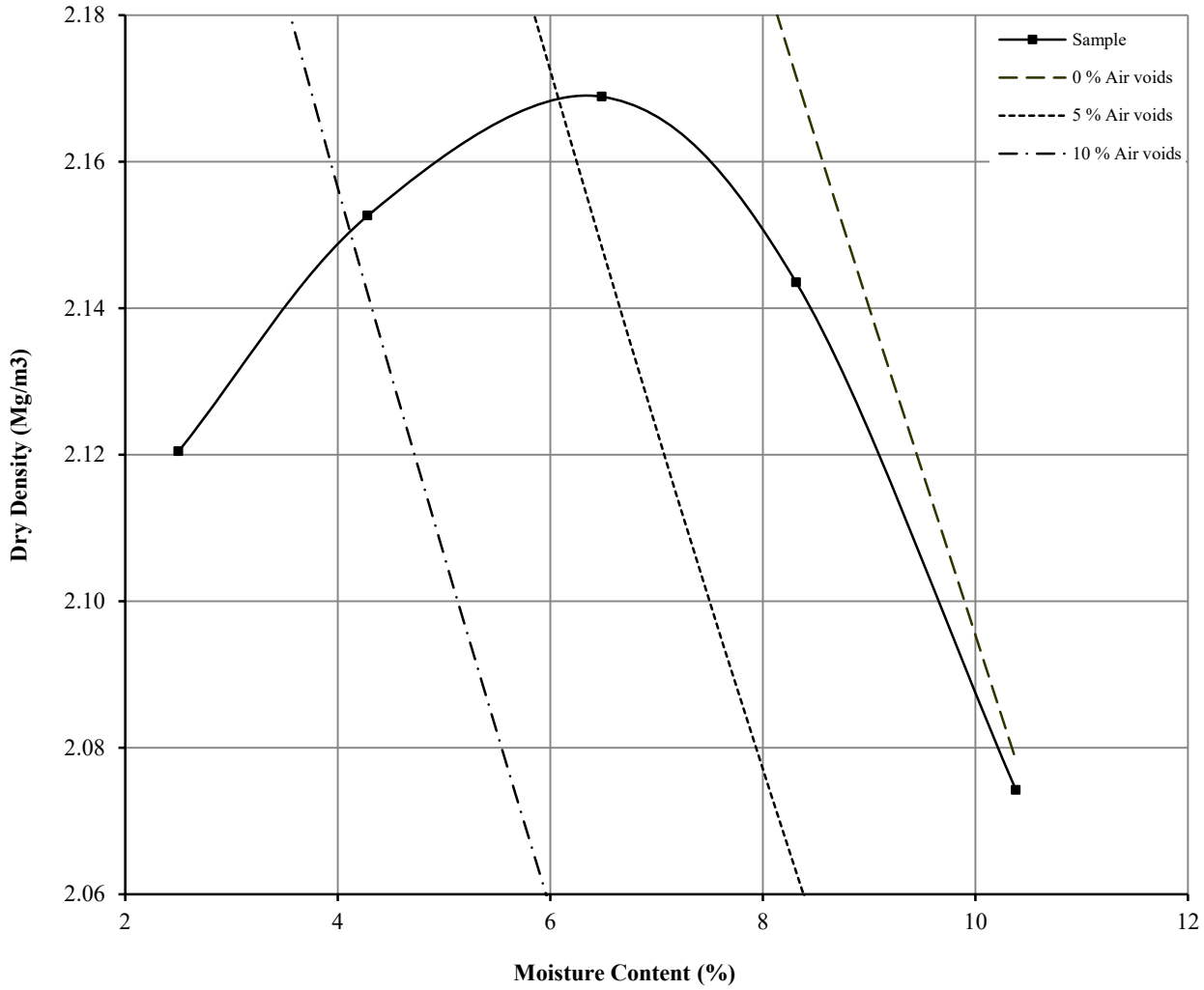


Initial Moisture Content:		23	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.65	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.77	Material Retained on 20.0 mm Test Sieve (%):		0
Optimum Moisture Content (%):		17			
Remarks See summary of soil descriptions					

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.4 : 1990

Hole Number:	**WS23**	**Top Depth (m) :**	**3.50**
Sample Number:	**10**	**Base Depth (m) :**	**4.00**
Sample Type:	**B**		



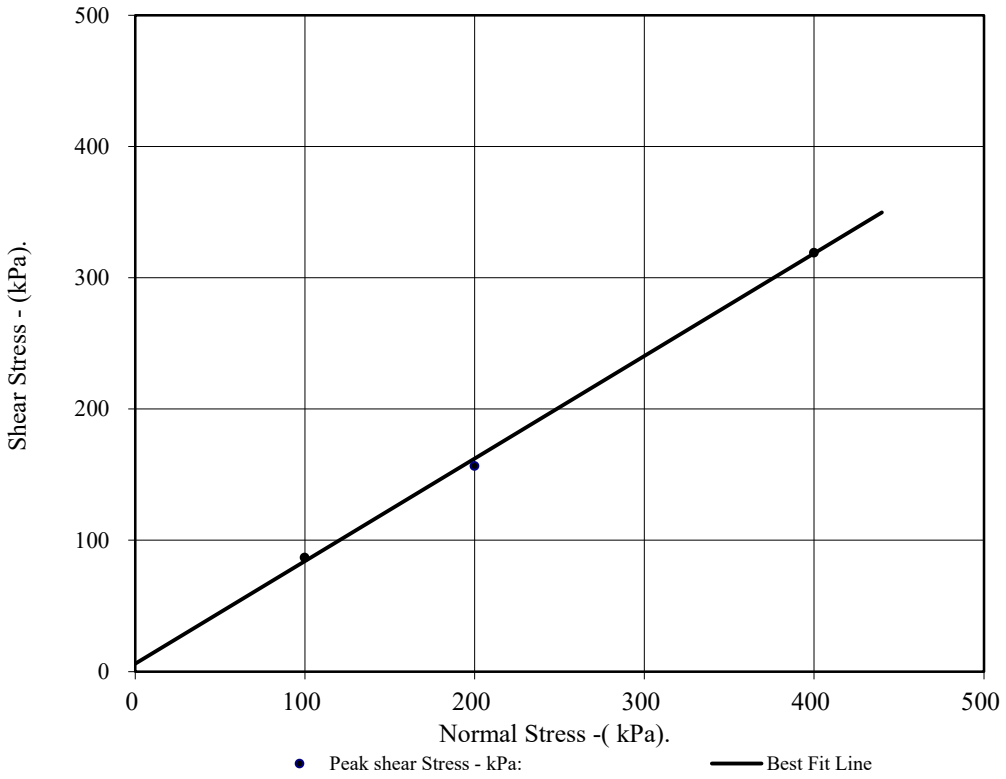
Initial Moisture Content:		6.4	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.65	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		2.17	Material Retained on 20.0 mm Test Sieve (%):		6
Optimum Moisture Content (%):		6			
Remarks See summary of soil descriptions					

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**WS23**		Top Depth:	**2.70**	
Sample Number:	**9**		Base Depth:	**3.00**	
Sample Conditions:	Dry		Sample Type	**B**	
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**		
Sample Preparation:	Material tested passing 2mm sieve Remoulded using hand tamped effort.				
Sample Description:	**See summary of soil descriptions.**				

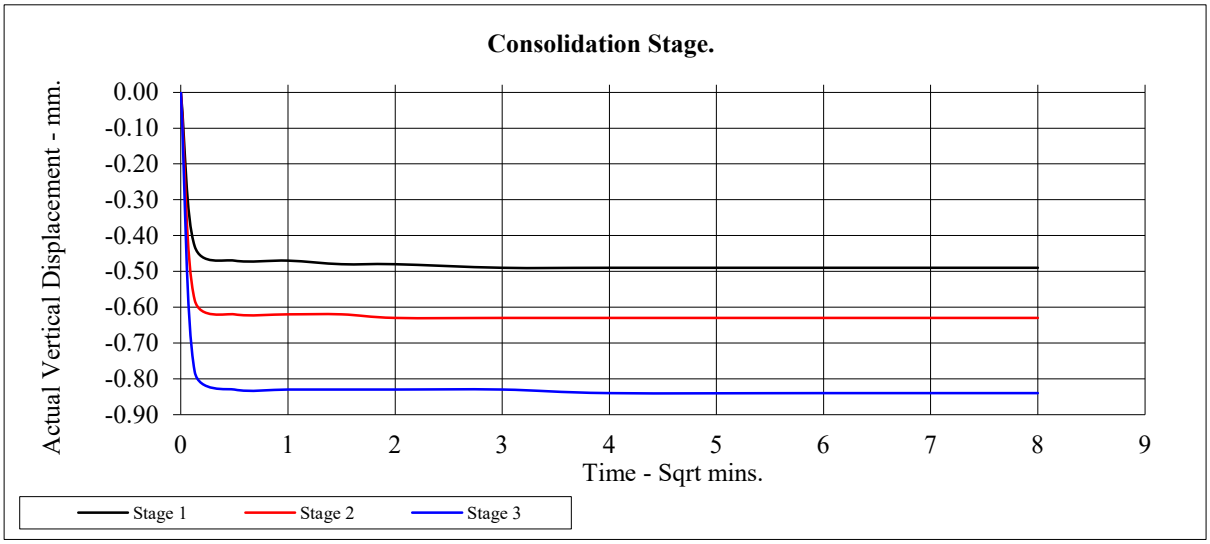
STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	19.99	19.99	19.99
Length - mm:	60.05	60.05	60.05
Moisture Content - %:	13	13	13
Bulk Density - Mg/m3:	2.04	2.04	2.04
Dry Density - Mg/m3:	1.81	1.81	1.81
Voids Ratio:	0.468	0.468	0.468
Normal Pressure- kPa	100	200	400
Consolidation Stage			
Consolidated Height - mm:	19.50	19.36	19.15
Shearing Stage			
Rate of Strain - mm/min	0.60	0.60	0.60
Displacement at peak shear stress - mm	2.11	2.71	2.71
Peak shear Stress - kPa:	87	157	319
Final Consolidated Conditions			
Moisture Content - %:	13	12	12
Bulk Density - Mg/m3:	2.09	2.11	2.13
Dry Density - Mg/m3:	1.86	1.87	1.89
Peak			
Angle of Shearing Resistance:(~~θ~~)	**38**		
Effective Cohesion - kPa:	**6**		

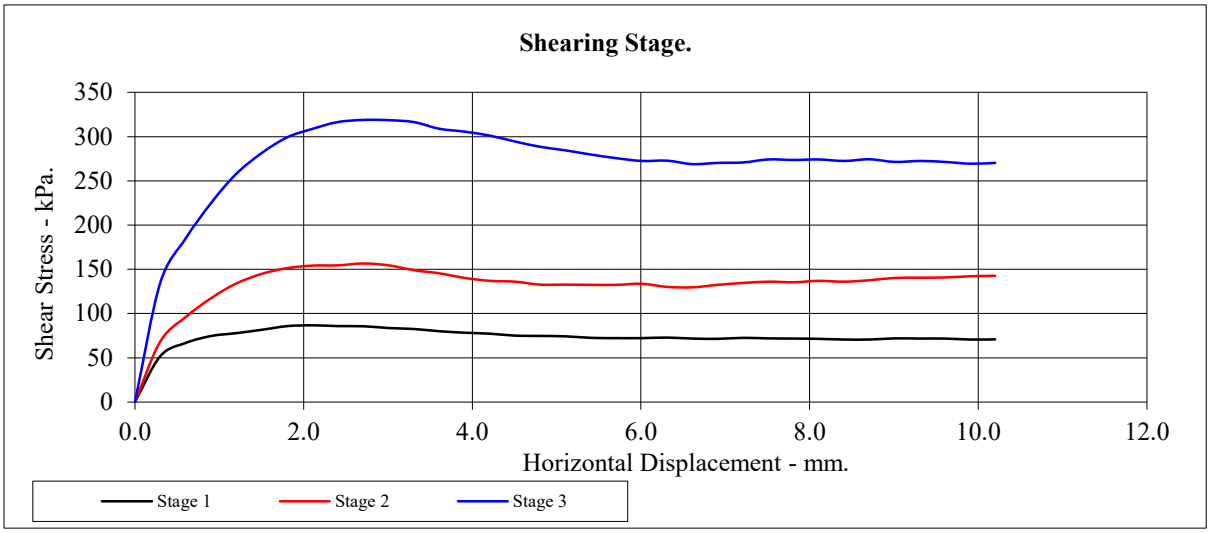


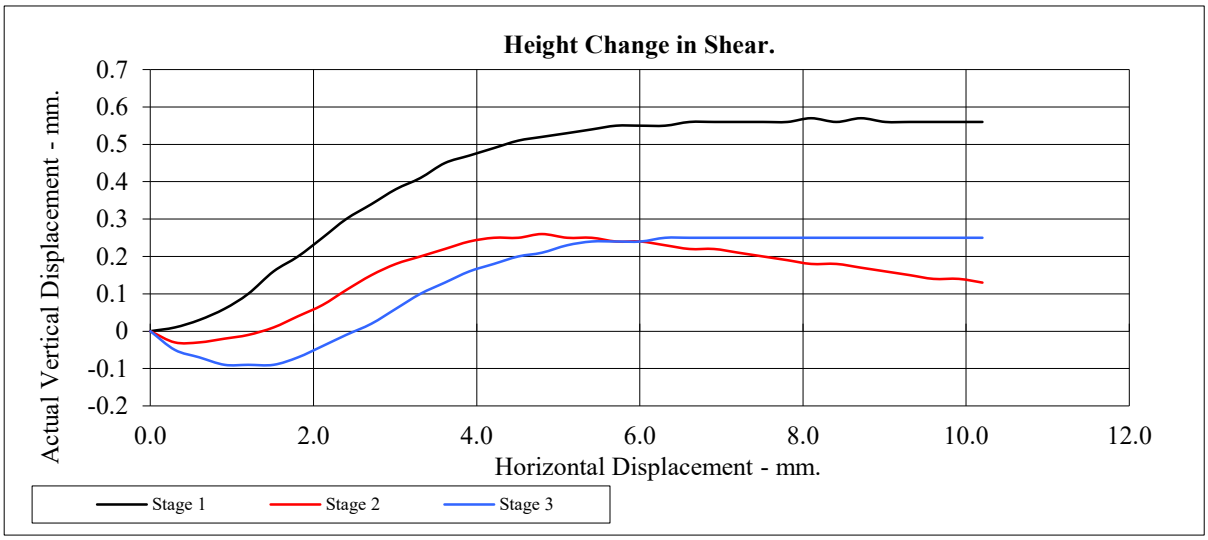
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**WS23**	Top Depth:	**2.70**
Sample Number:	**9**	Base Depth:	**3.00**





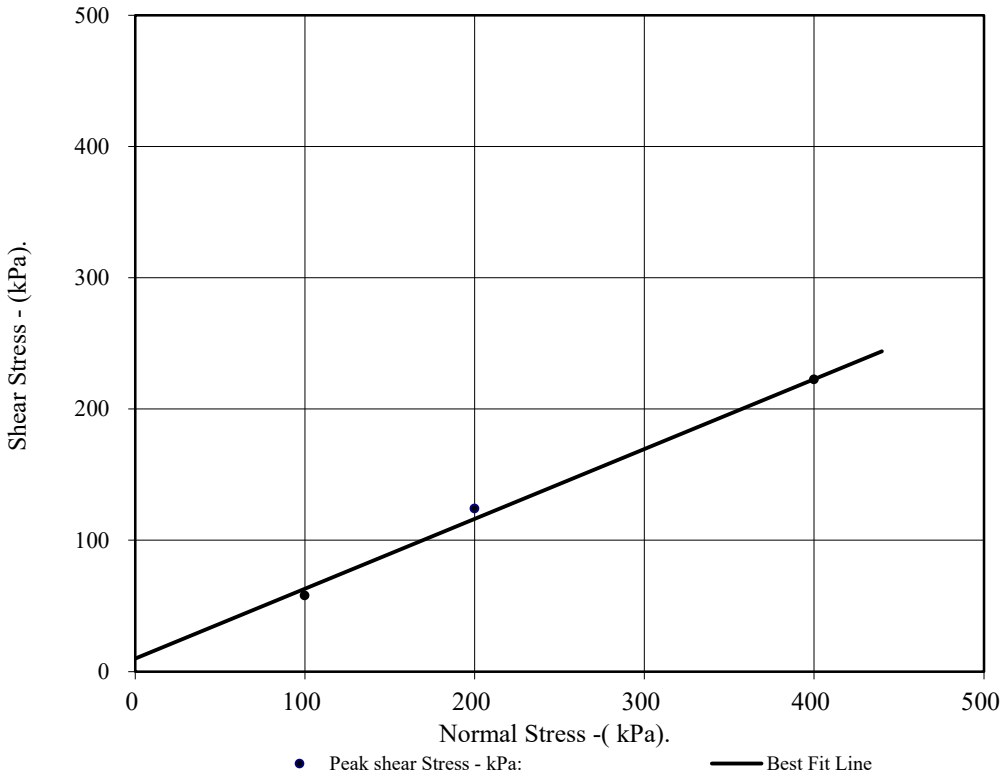


CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**WS26**		Top Depth:	**0.30**	
Sample Number:	**3**		Base Depth:	**0.70**	
Sample Conditions:	Submerged		Sample Type	**B**	
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**		
Sample Preparation:	Material tested passing 2mm sieve Remoulded using 2.5kg effort.				
Sample Description:	**See summary of soil descriptions.**				

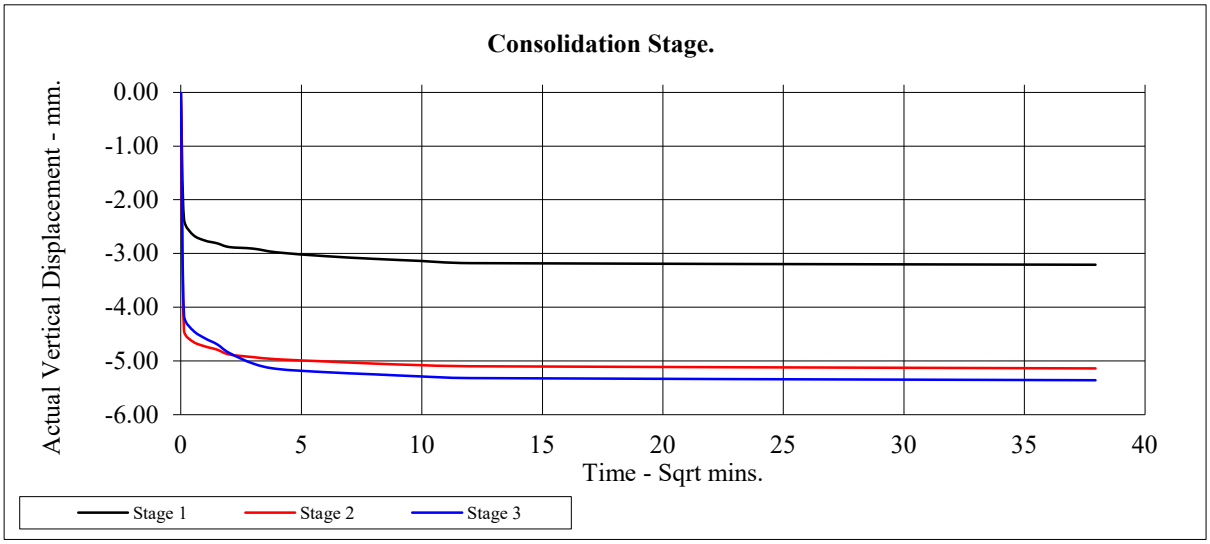
STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	20.05	20.05	20.05
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	26	26	26
Bulk Density - Mg/m3:	1.94	1.94	1.94
Dry Density - Mg/m3:	1.54	1.54	1.54
Voids Ratio:	0.718	0.718	0.724
Normal Pressure- kPa	100	200	400
Consolidation Stage			
Consolidated Height - mm:	16.84	14.91	14.89
Shearing Stage			
Rate of Strain - mm/min	0.042	0.042	0.042
Displacement at peak shear stress - mm	9.31	9.60	9.60
Peak shear Stress - kPa:	58	124	223
Final Consolidated Conditions			
Moisture Content - %:	30	28	26
Bulk Density - Mg/m3:	2.31	2.61	2.61
Dry Density - Mg/m3:	1.77	2.04	2.07
Peak			
Angle of Shearing Resistance:(~~θ~~)	**28**		
Effective Cohesion - kPa:	**10**		

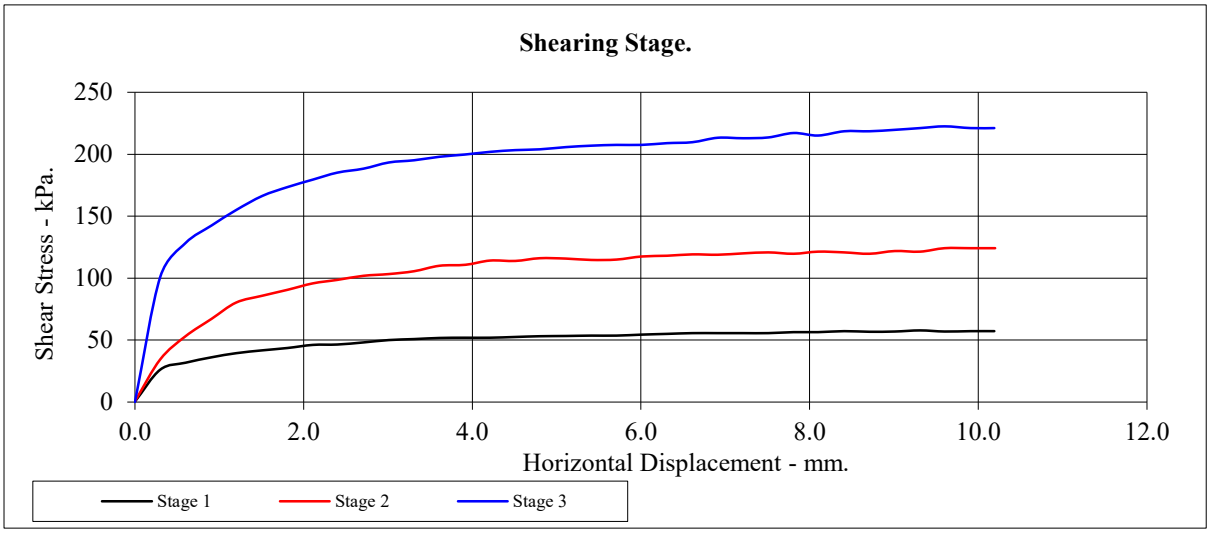


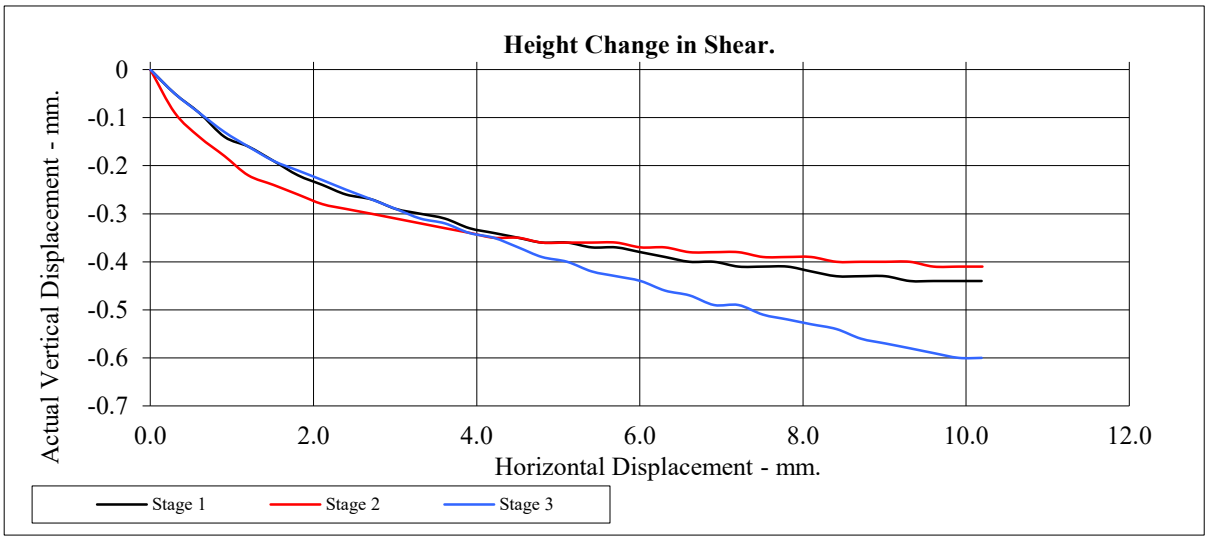
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**WS26**	Top Depth:	**0.30**
Sample Number:	**3**	Base Depth:	**0.70**





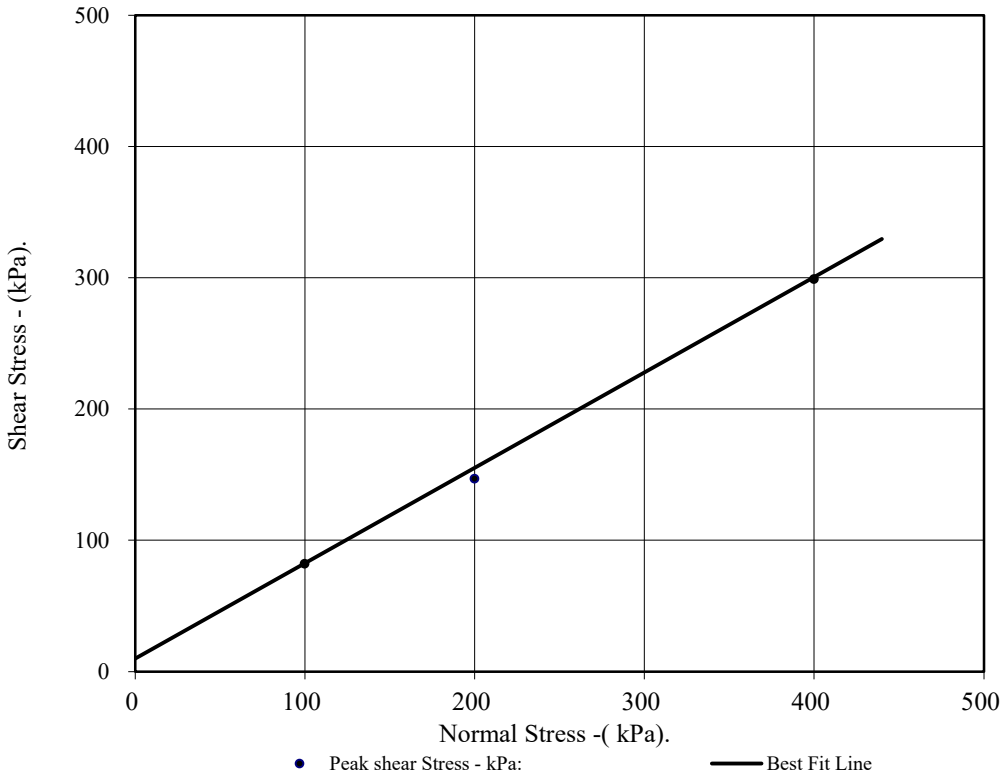


CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**WS29**		Top Depth:	**2.00**	
Sample Number:	**9**		Base Depth:	**3.00**	
Sample Conditions:	Dry		Sample Type	**B**	
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**		
Sample Preparation:	Material tested passing 2mm sieve Remoulded using hand tamped effort.				
Sample Description:	**See summary of soil descriptions.**				

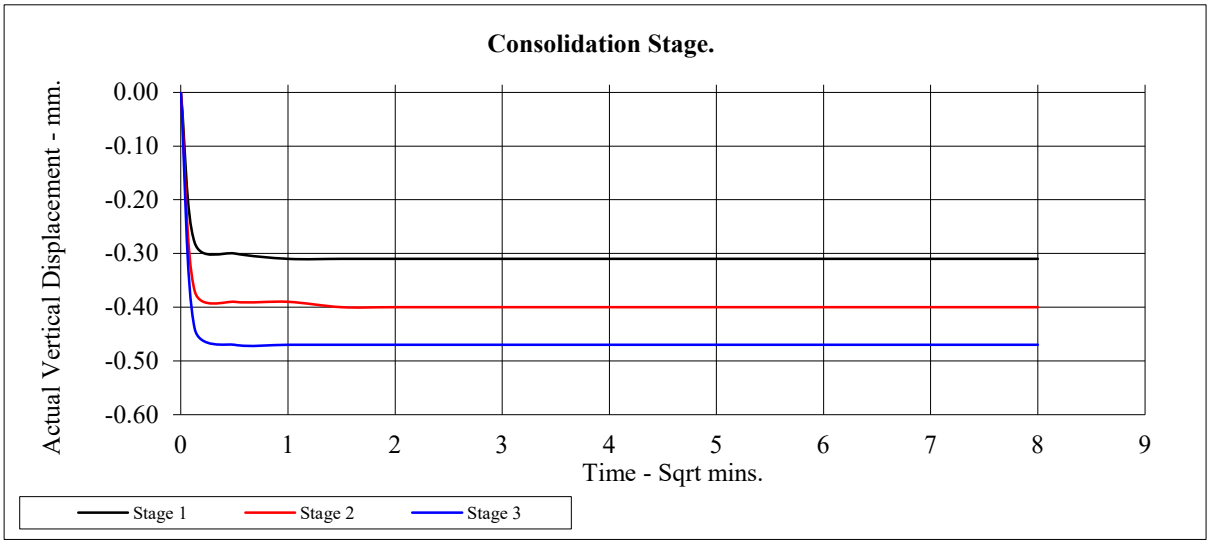
STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	19.99	19.99	19.99
Length - mm:	60.05	60.05	60.05
Moisture Content - %:	5.8	5.8	5.8
Bulk Density - Mg/m3:	1.99	1.99	1.99
Dry Density - Mg/m3:	1.89	1.89	1.89
Voids Ratio:	0.405	0.405	0.405
Normal Pressure- kPa	100	200	400
Consolidation Stage			
Consolidated Height - mm:	19.68	19.59	19.52
Shearing Stage			
Rate of Strain - mm/min	0.60	0.60	0.60
Displacement at peak shear stress - mm	1.51	1.81	2.71
Peak shear Stress - kPa:	82	147	299
Final Consolidated Conditions			
Moisture Content - %:	5.7	5.5	5.4
Bulk Density - Mg/m3:	2.03	2.03	2.04
Dry Density - Mg/m3:	1.92	1.93	1.94
Peak			
Angle of Shearing Resistance:(~~θ~~)	**36**		
Effective Cohesion - kPa:	**10**		

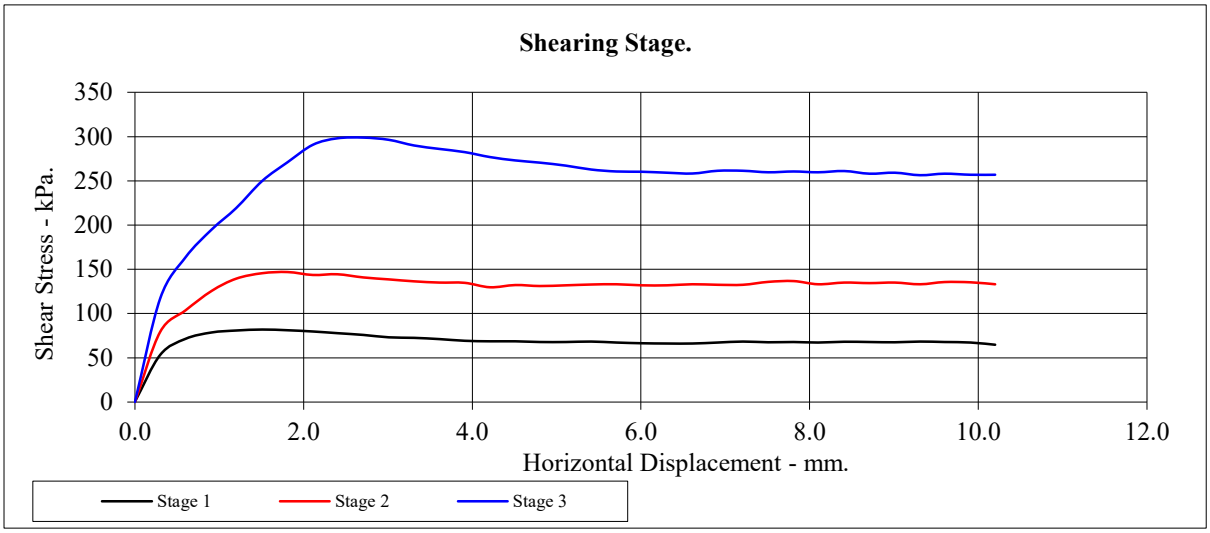


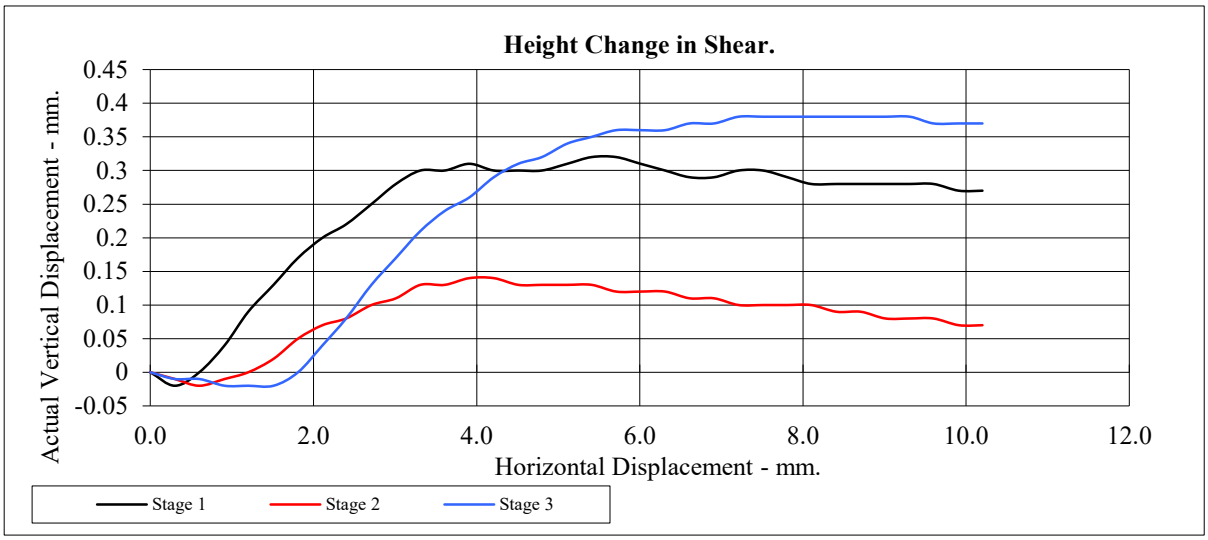
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**WS29**	Top Depth:	**2.00**
Sample Number:	**9**	Base Depth:	**3.00**







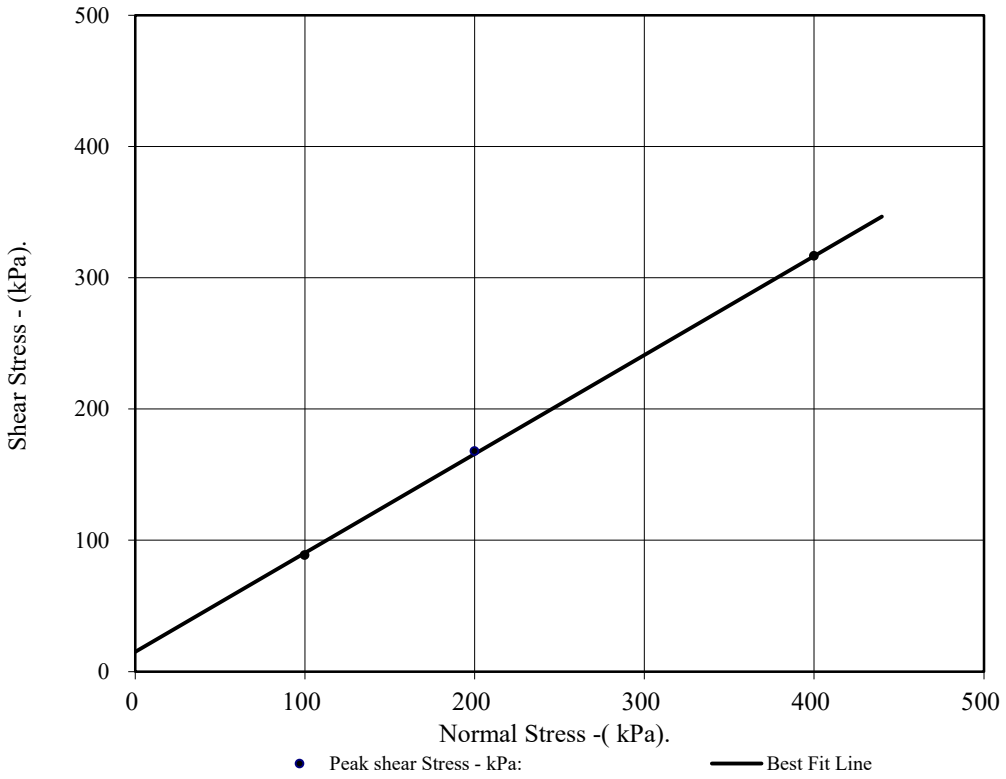
UKAS TESTING 4043	PSL Professional Soils Laboratory	**A46 Newark NNB**	**Contract No: PSL21/4194** **Client Ref: 784-B026948**

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**WS31**		Top Depth:	**4.20**
Sample Number:	**13**		Base Depth:	**4.80**
Sample Conditions:	Dry		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 2mm sieve Remoulded using hand tamped effort.			
Sample Description:	**See summary of soil descriptions.**			

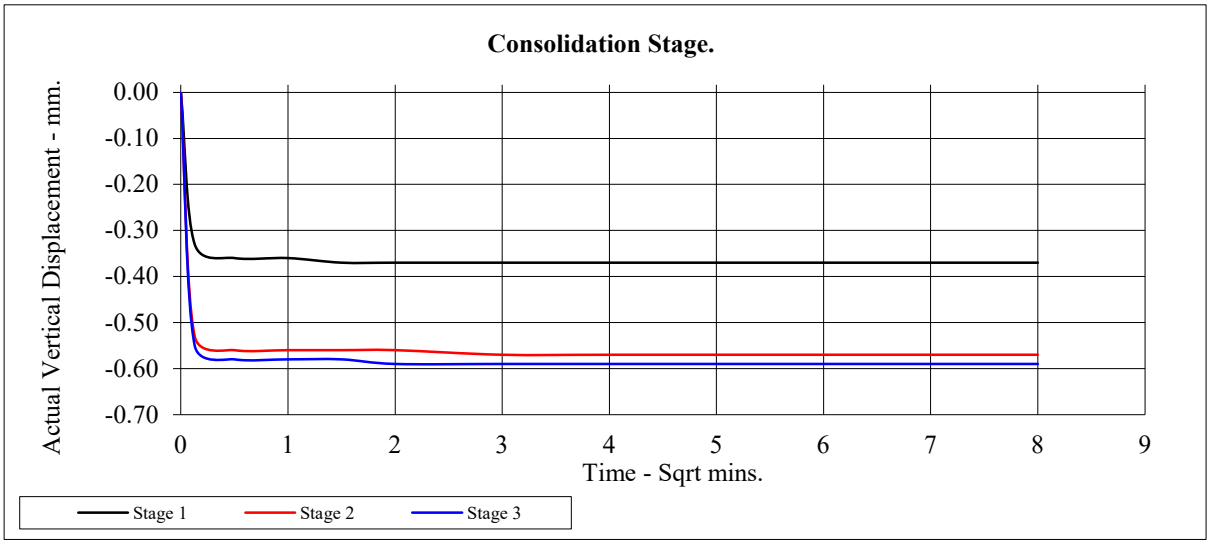
STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	19.99	19.99	19.99
Length - mm:	60.05	60.05	60.05
Moisture Content - %:	14	14	14
Bulk Density - Mg/m3:	2.04	2.04	2.04
Dry Density - Mg/m3:	1.78	1.78	1.78
Voids Ratio:	0.489	0.489	0.489
Normal Pressure- kPa	100	200	400
Consolidation Stage			
Consolidated Height - mm:	19.62	19.42	19.40
Shearing Stage			
Rate of Strain - mm/min	0.60	0.60	0.60
Displacement at peak shear stress - mm	2.11	2.40	3.91
Peak shear Stress - kPa:	89	168	317
Final Consolidated Conditions			
Moisture Content - %:	14	14	14
Bulk Density - Mg/m3:	2.07	2.09	2.10
Dry Density - Mg/m3:	1.81	1.83	1.83
Peak			
Angle of Shearing Resistance:(~~θ~~)	**37**		
Effective Cohesion - kPa:	**15**		

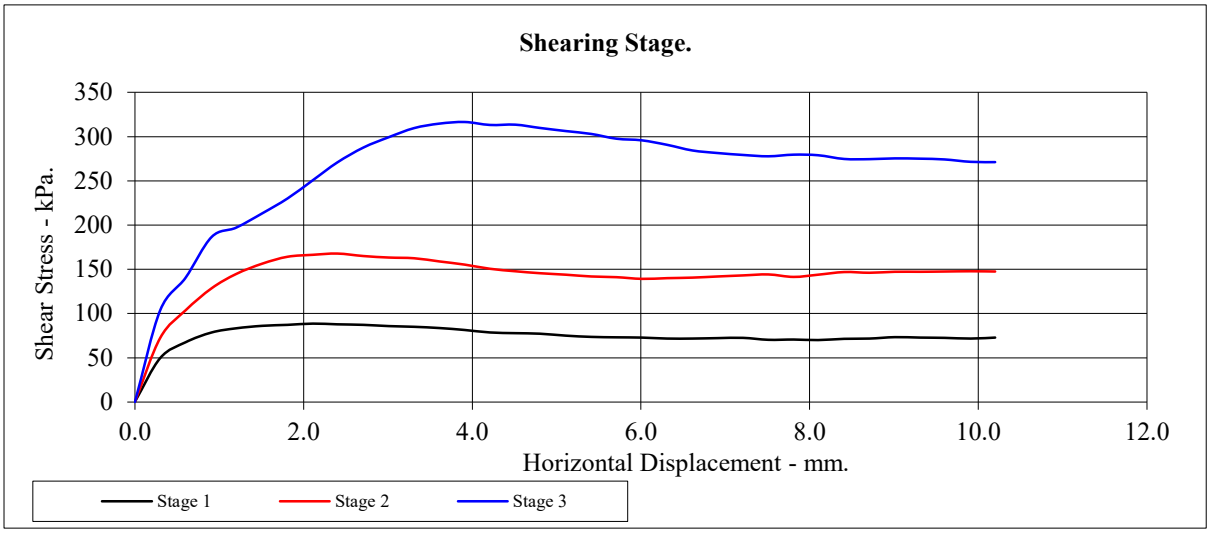


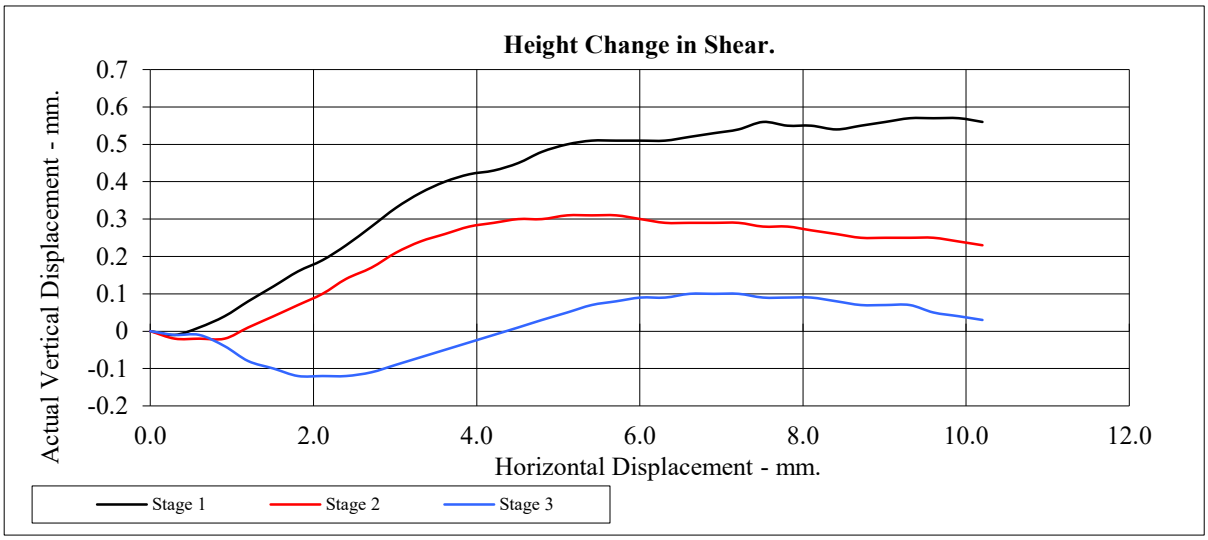
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**WS31**	Top Depth:	**4.20**
Sample Number:	**13**	Base Depth:	**4.80**







LABORATORY REPORT

4043

Contract Number: PSL21/4877

Report Date: 22 July 2021

Client's Reference: 784-B026948

Client Name: Tetra Tech
54 Hagley Road
Birmingham
B16 8PE

For the attention of: Nicholas Bool

Contract Title: A46 Newark NNB

Date Received: 15/6/2021
Date Commenced: 15/6/2021
Date Completed: 22/7/2021

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins (Director)

R Berriman (Quality Manager)

S Royle (Laboratory Manager)

[redacted]

L Knight (Senior Technician)

S Eyre (Senior Technician)

T Watkins (Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AR
[redacted]

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH02	4	B	1.40	2.00	Brown slightly gravelly sandy CLAY.
BH02	2	B	2.80	3.40	Brown gravelly very clayey SAND.
BH02	1	D	3.90	4.00	Brown slightly gravelly sandy CLAY.
BH02	2	D	6.00	6.10	Brown slightly gravelly sandy CLAY.
BH02	3	D	8.20	8.30	Brown slightly gravelly very sandy CLAY.
BH02	5	D	12.60	12.70	Brown sandy CLAY.
BH03	4	B	3.60	4.00	Brown very sandy GRAVEL.
BH07	6	B	0.60	1.00	Brown slightly gravelly very sandy CLAY.
BH07	1	D	1.70	1.80	Brown slightly gravelly very sandy CLAY.
BH07	2	B	2.00	3.00	Brown slightly gravelly slightly clayey silty SAND.
BH14	6	B	0.50	1.00	Brown gravelly very sandy CLAY.
BH14	7	D	1.20		Brown slightly gravelly very sandy CLAY.
BH14	-	B	2.10	2.40	Brown very sandy slightly silty GRAVEL.
BH14	14	B	3.10	3.40	Brown very sandy slightly silty GRAVEL.
BH14	1	D	4.70	4.80	Brown slightly gravelly sandy CLAY.
BH14	2	B	7.00	8.50	Brown slightly gravelly very sandy CLAY.
BH14	3	D	7.00	7.50	Brown highly weathered MUDSTONE.
BH14	5	D	8.20	8.30	Brown highly weathered MUDSTONE.
BH01	3	B	0.20	0.50	Brown very sandy GRAVEL.

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH19	1	D	1.50	1.60	Brown slightly gravelly very sandy CLAY.
BH19	4	B	2.50	3.90	Brown very sandy clayey GRAVEL.
BH51	1	D	1.40	1.50	Brown slightly gravelly sandy CLAY.
BH51	2	B	2.50	3.00	Brown very sandy slightly clayey GRAVEL.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH02	4	B	1.40	2.00	36			40	20	20	94	Intermediate Plasticity CI
BH02	2	B	2.80	3.40	22				NP			
BH02	1	D	3.90	4.00	22			38	19	19	93	Intermediate Plasticity CI
BH02	2	D	6.00	6.10	24							
BH02	3	D	8.20	8.30	20			32	16	16	94	Low Plasticity CL
BH02	5	D	12.60	12.70	23							
BH07	1	D	1.70	1.80	25			35	17	18	93	Intermediate Plasticity CI
BH14	7	D	1.20		19			31	16	15	94	Low Plasticity CL
BH14	1	D	4.70	4.80	23			39	20	19	94	Intermediate Plasticity CI
BH14	3	D	7.00	7.50	39			44	23	21	95	Intermediate Plasticity CI
BH14	5	D	8.20	8.30	26			40	22	18	94	Intermediate Plasticity CI
BH19	1	D	1.50	1.60	18			32	16	16	93	Low Plasticity CL
BH51	1	D	1.40	1.50	27			37	18	19	93	Intermediate Plasticity CI

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL Professional Soils Laboratory

A46 Newark NNB

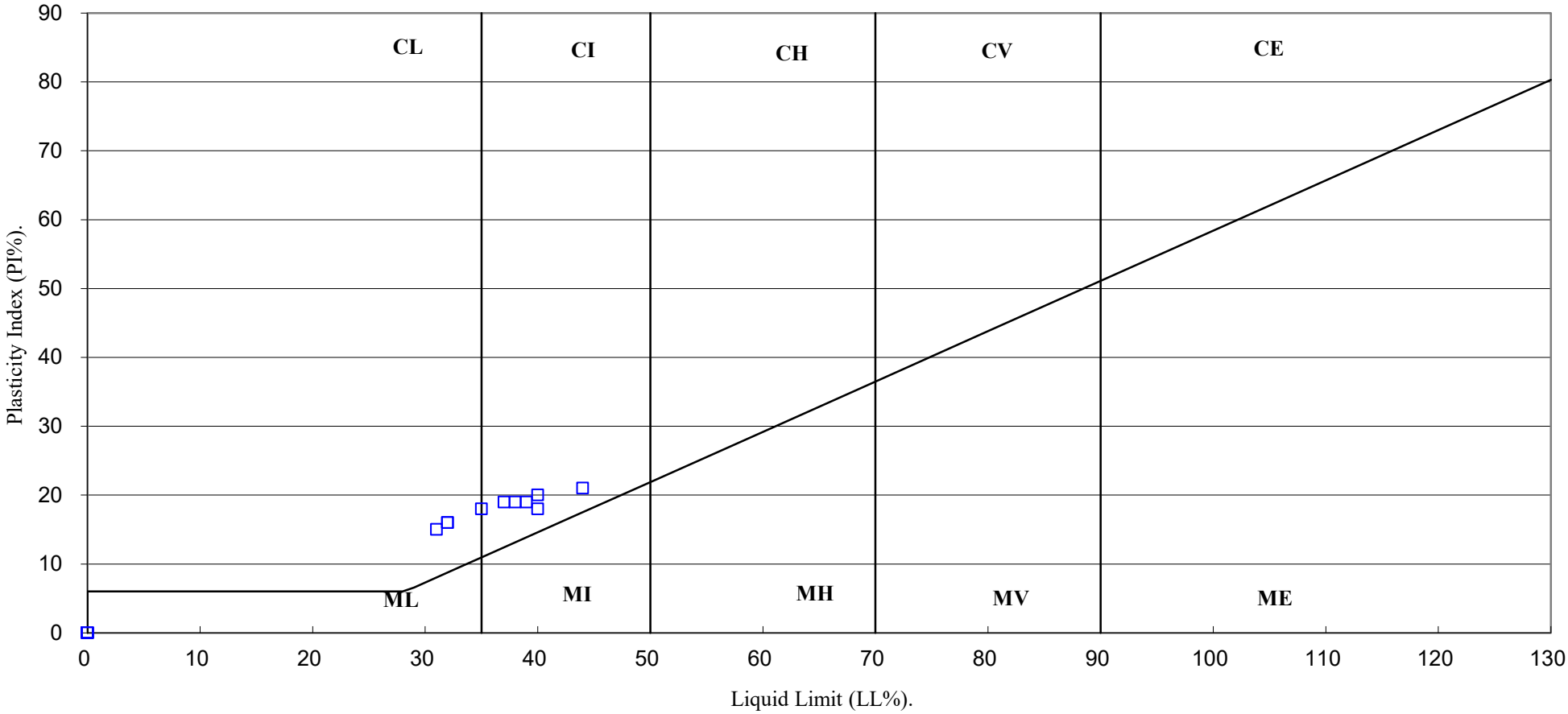
Contract No:

PSL21/4877

Client Ref:

784-B026948

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



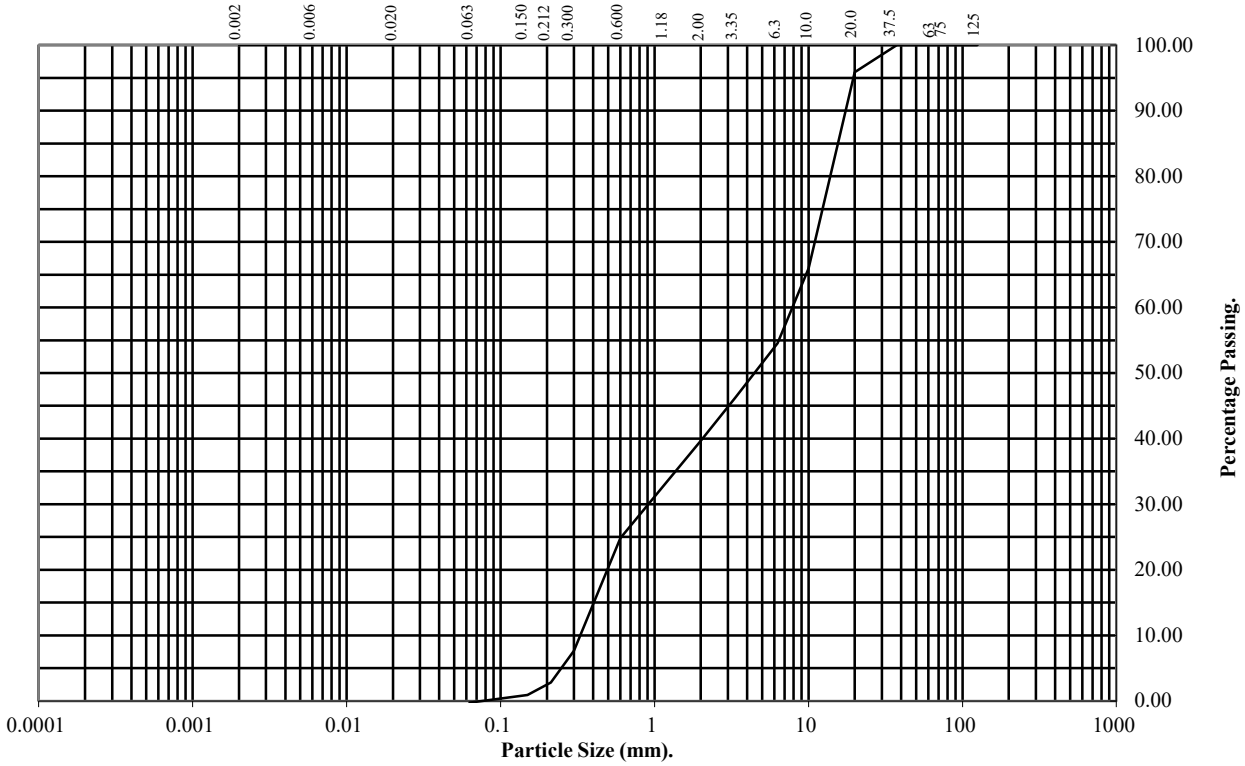
UKAS TESTING 4043	PSL Professional Soils Laboratory	A46 Newark NNB	Contract No: PSL21/4877 Client Ref: 784-B026948

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH01**	**Top Depth (m):**	**0.20**
Sample Number:	**3**	**Base Depth(m):**	**0.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	96
10	66
6.3	55
3.35	46
2	40
1.18	33
0.6	25
0.3	8
0.212	3
0.15	1
0.063	0

Soil Fraction	Total Percentage
Cobbles	0
Gravel	60
Sand	40
Silt/Clay	0

Remarks:

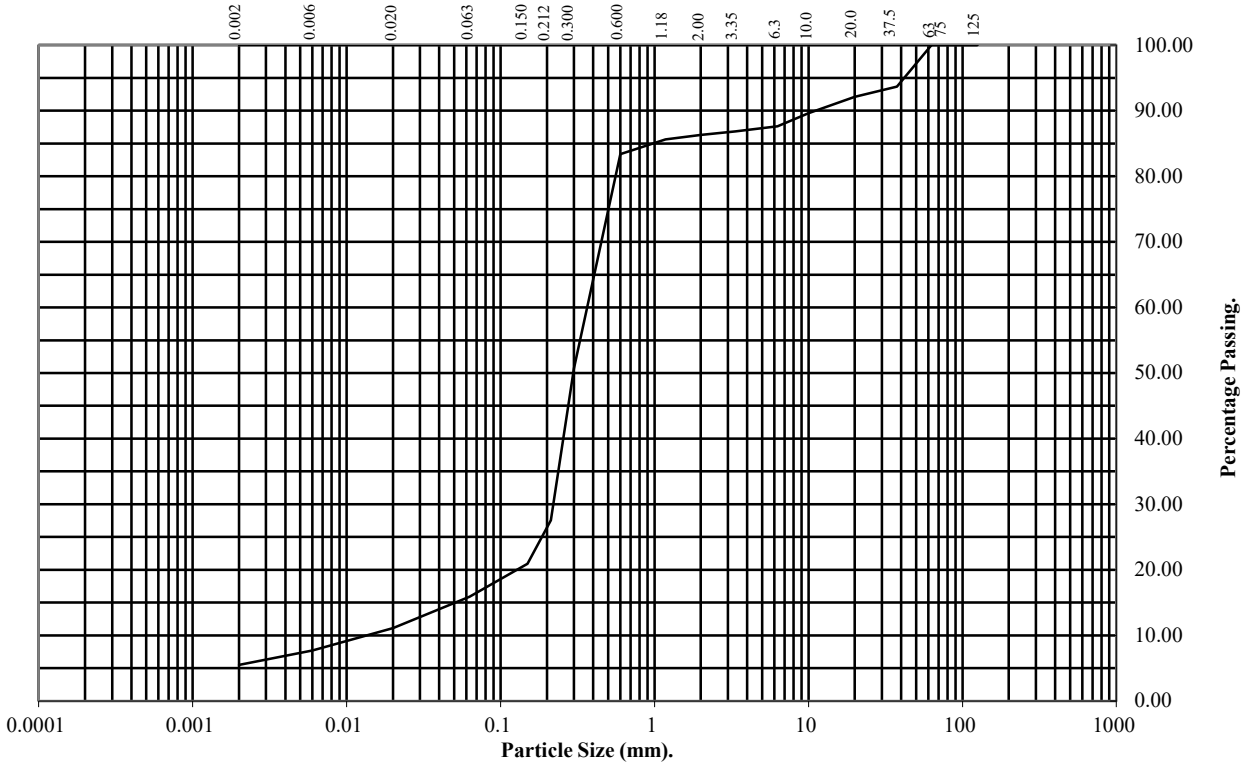
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH02**	**Top Depth (m):**	**2.80**
Sample Number:	**2**	**Base Depth(m):**	**3.40**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	94
20	92
10	90
6.3	88
3.35	87
2	86
1.18	86
0.6	83
0.3	51
0.212	28
0.15	21
0.063	16

Particle Diameter	Percentage Passing
0.02	11
0.006	8
0.002	6

Soil Fraction	Total Percentage
Cobbles	0
Gravel	14
Sand	70
Silt	10
Clay	6

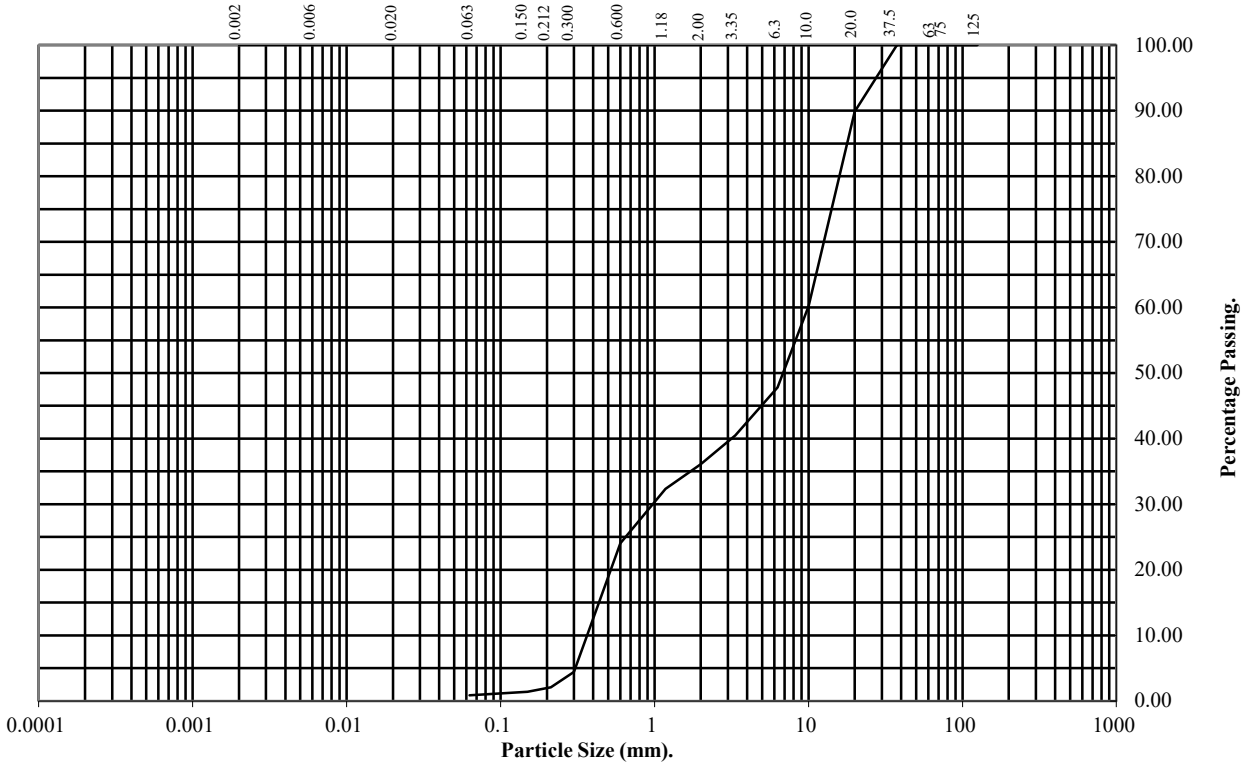
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH03**	**Top Depth (m):**	**3.60**
Sample Number:	**4**	**Base Depth(m):**	**4.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	90
10	60
6.3	48
3.35	41
2	36
1.18	32
0.6	24
0.3	4
0.212	2
0.15	1
0.063	1

Soil Fraction	Total Percentage
Cobbles	0
Gravel	64
Sand	35
Silt/Clay	1

Remarks:

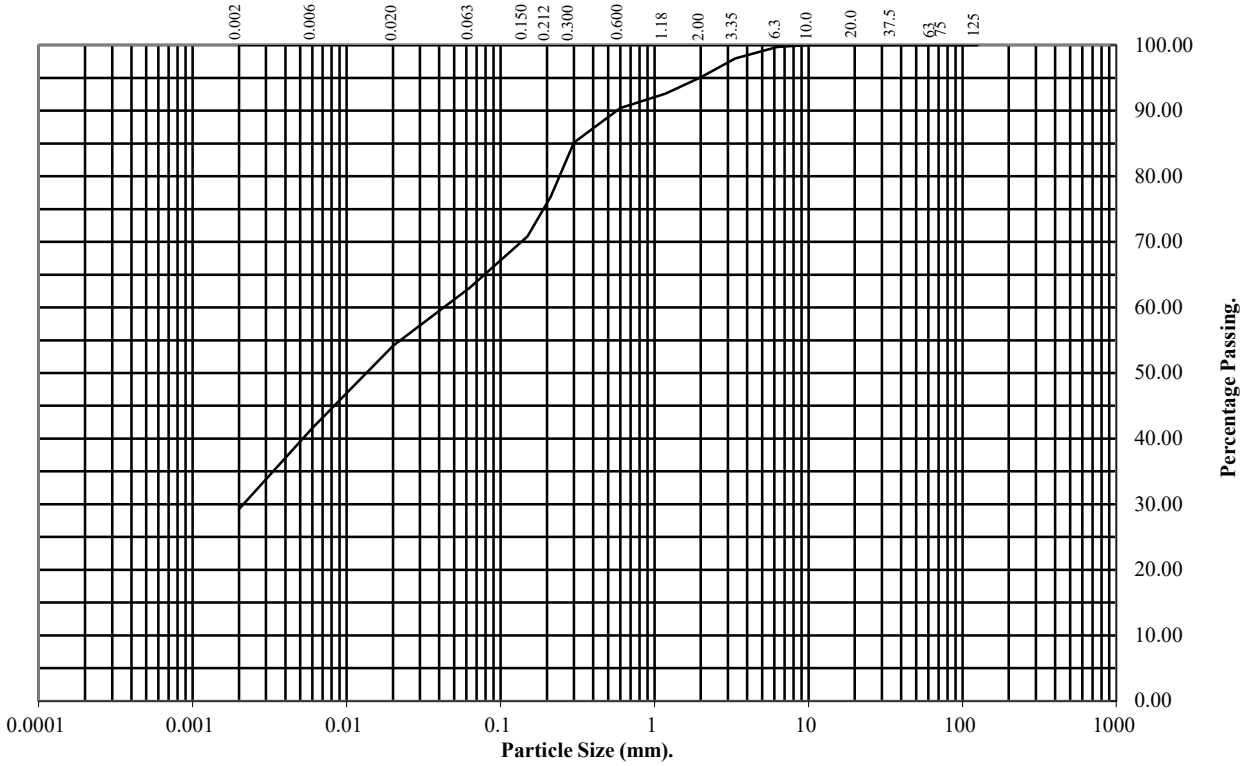
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH07**	**Top Depth (m):**	**0.60**
Sample Number:	**6**	**Base Depth(m):**	**1.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	98
2	95
1.18	93
0.6	90
0.3	85
0.212	77
0.15	71
0.063	63

Particle Diameter	Percentage Passing
0.02	54
0.006	42
0.002	29

Soil Fraction	Total Percentage
Cobbles	0
Gravel	5
Sand	32
Silt	34
Clay	29

Remarks:

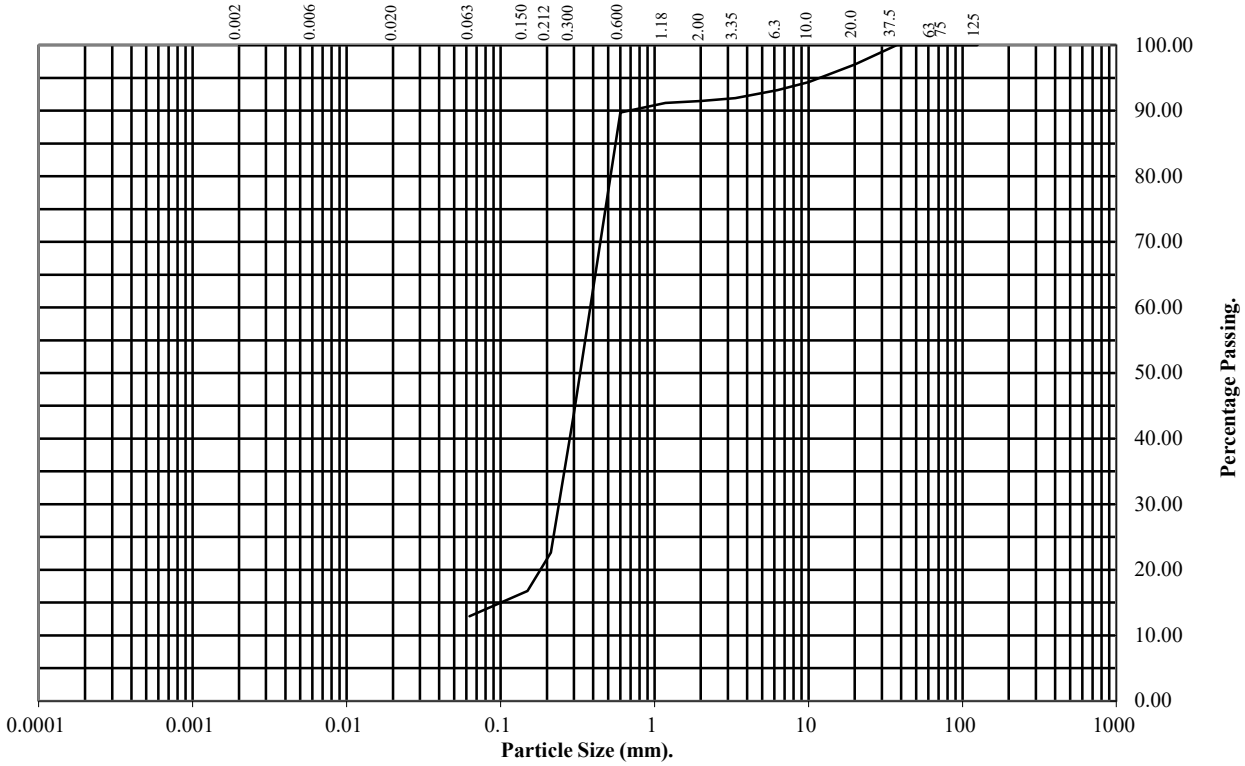
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH07**	**Top Depth (m):**	**2.00**
Sample Number:	**2**	**Base Depth(m):**	**3.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	97
10	94
6.3	93
3.35	92
2	91
1.18	91
0.6	90
0.3	44
0.212	23
0.15	17
0.063	13

Soil Fraction	Total Percentage
Cobbles	0
Gravel	9
Sand	78
Silt/Clay	13

Remarks:

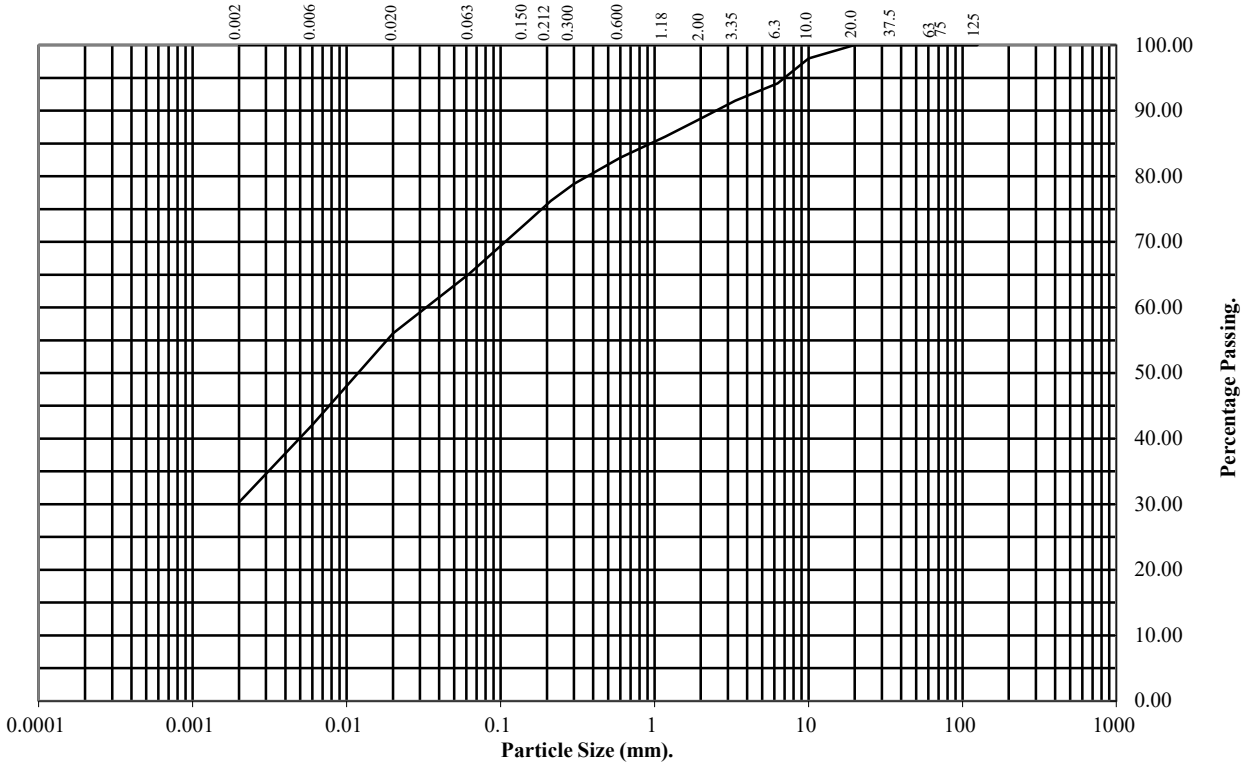
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH14**	**Top Depth (m):**	**0.50**
Sample Number:	**6**	**Base Depth(m):**	**1.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	98
6.3	94
3.35	92
2	89
1.18	86
0.6	83
0.3	79
0.212	76
0.15	73
0.063	65

Particle Diameter	Percentage Passing
0.02	56
0.006	42
0.002	30

Soil Fraction	Total Percentage
Cobbles	0
Gravel	11
Sand	24
Silt	35
Clay	30

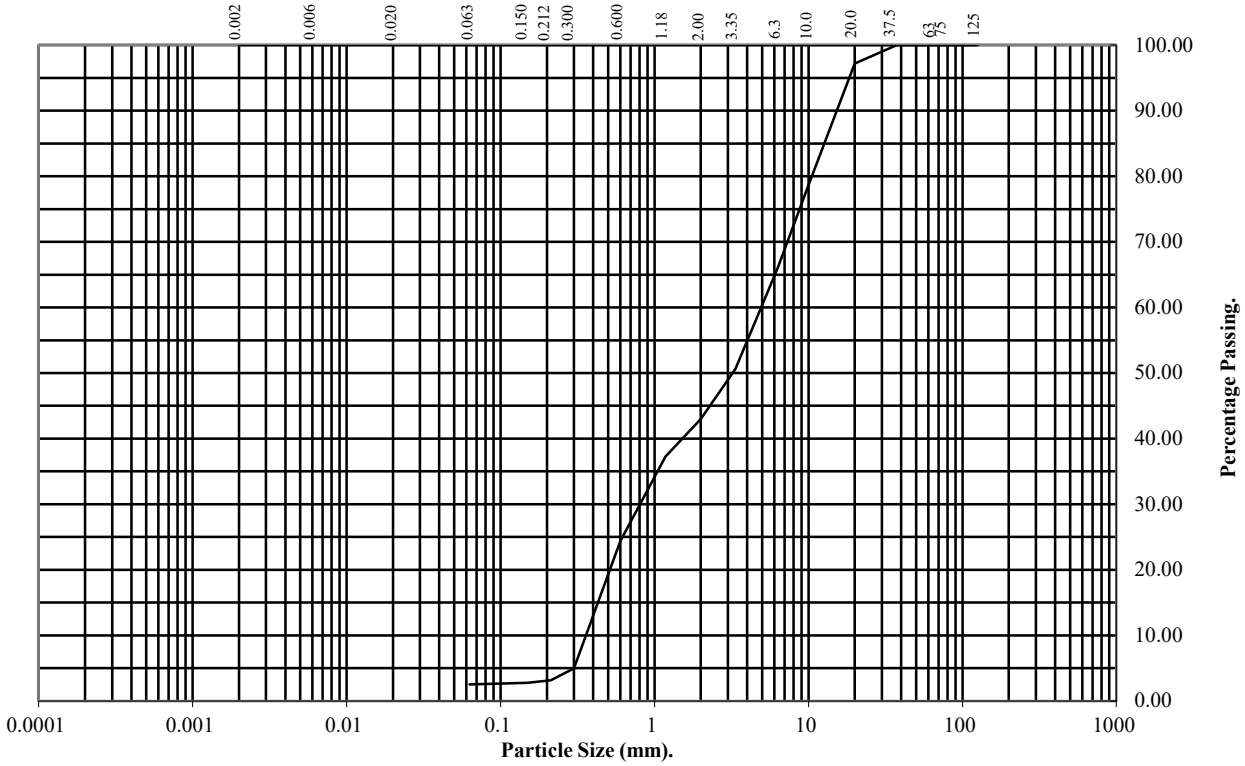
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH14**	**Top Depth (m):**	**2.10**
Sample Number:		**Base Depth(m):**	**2.40**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	97
10	79
6.3	66
3.35	51
2	43
1.18	37
0.6	24
0.3	5
0.212	3
0.15	3
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	57
Sand	40
Silt/Clay	3

Remarks:

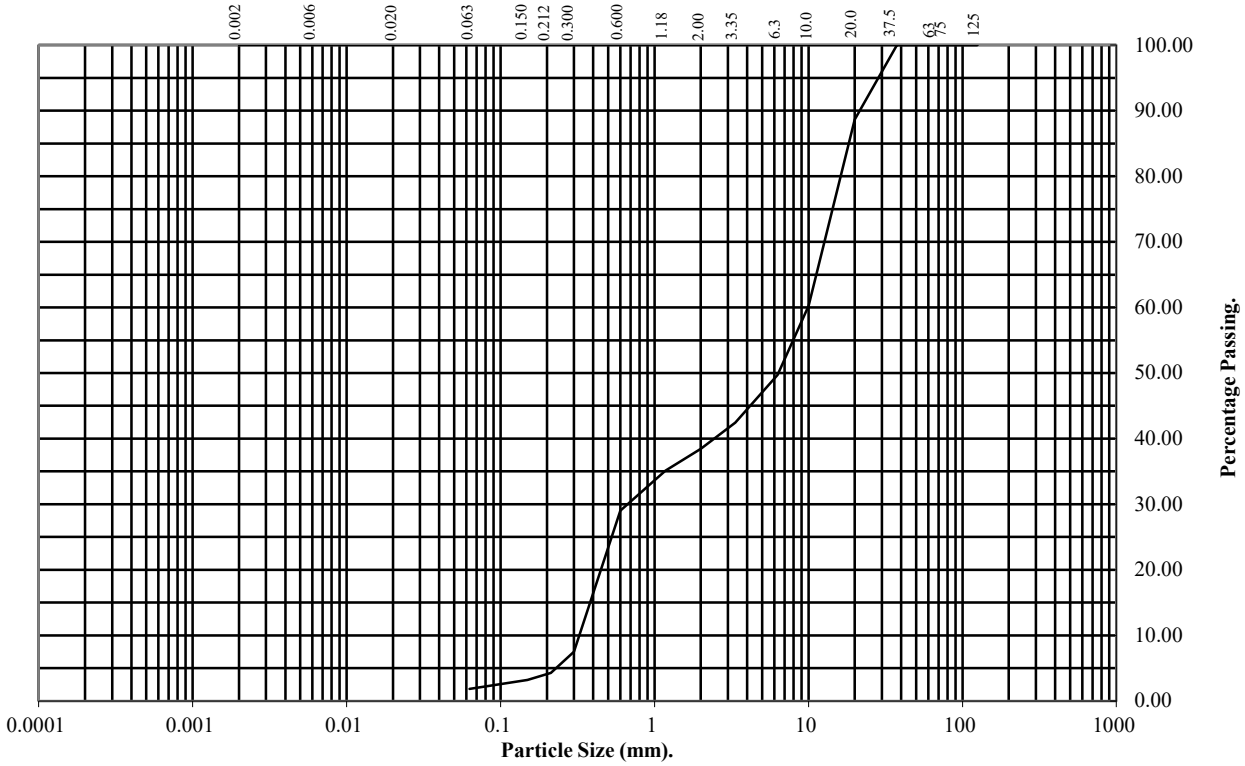
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH14**	**Top Depth (m):**	**3.10**
Sample Number:	**14**	**Base Depth(m):**	**3.40**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	89
10	60
6.3	50
3.35	42
2	38
1.18	35
0.6	29
0.3	8
0.212	4
0.15	3
0.063	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	62
Sand	36
Silt/Clay	2

Remarks:

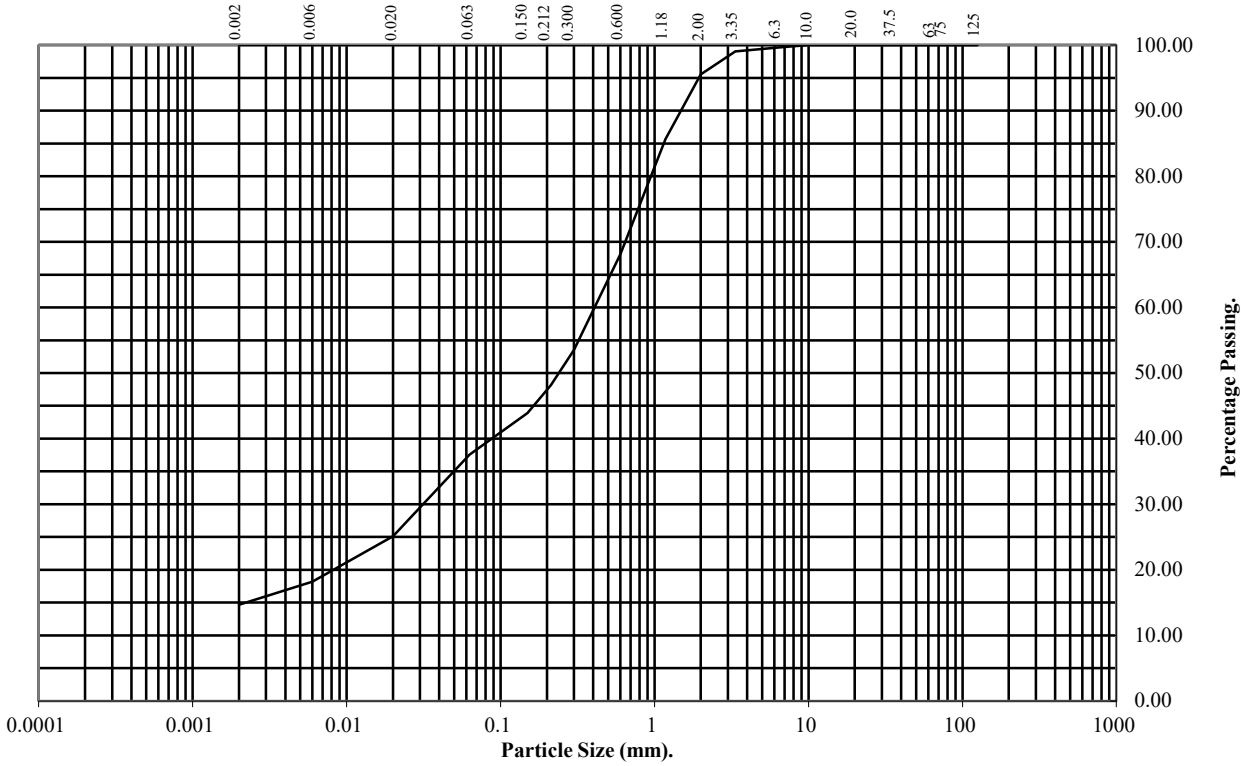
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH14**	**Top Depth (m):**	**7.00**
Sample Number:	**2**	**Base Depth(m):**	**8.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	99
2	96
1.18	86
0.6	68
0.3	54
0.212	48
0.15	44
0.063	38

Particle Diameter	Percentage Passing
0.02	25
0.006	18
0.002	15

Soil Fraction	Total Percentage
Cobbles	0
Gravel	4
Sand	58
Silt	23
Clay	15

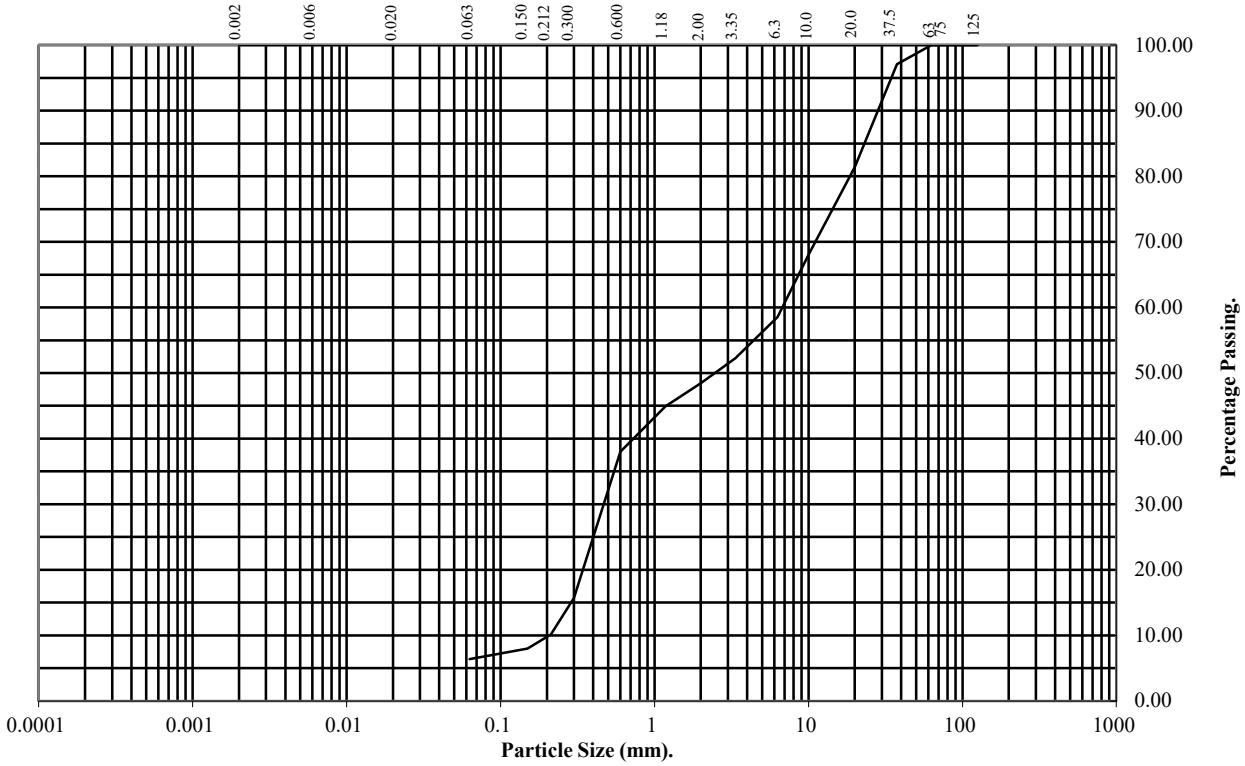
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH19**	**Top Depth (m):**	**2.50**
Sample Number:	**4**	**Base Depth(m):**	**3.90**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	97
20	81
10	68
6.3	59
3.35	52
2	48
1.18	45
0.6	38
0.3	16
0.212	10
0.15	8
0.063	6

Soil Fraction	Total Percentage
Cobbles	0
Gravel	52
Sand	42
Silt/Clay	6

Remarks:

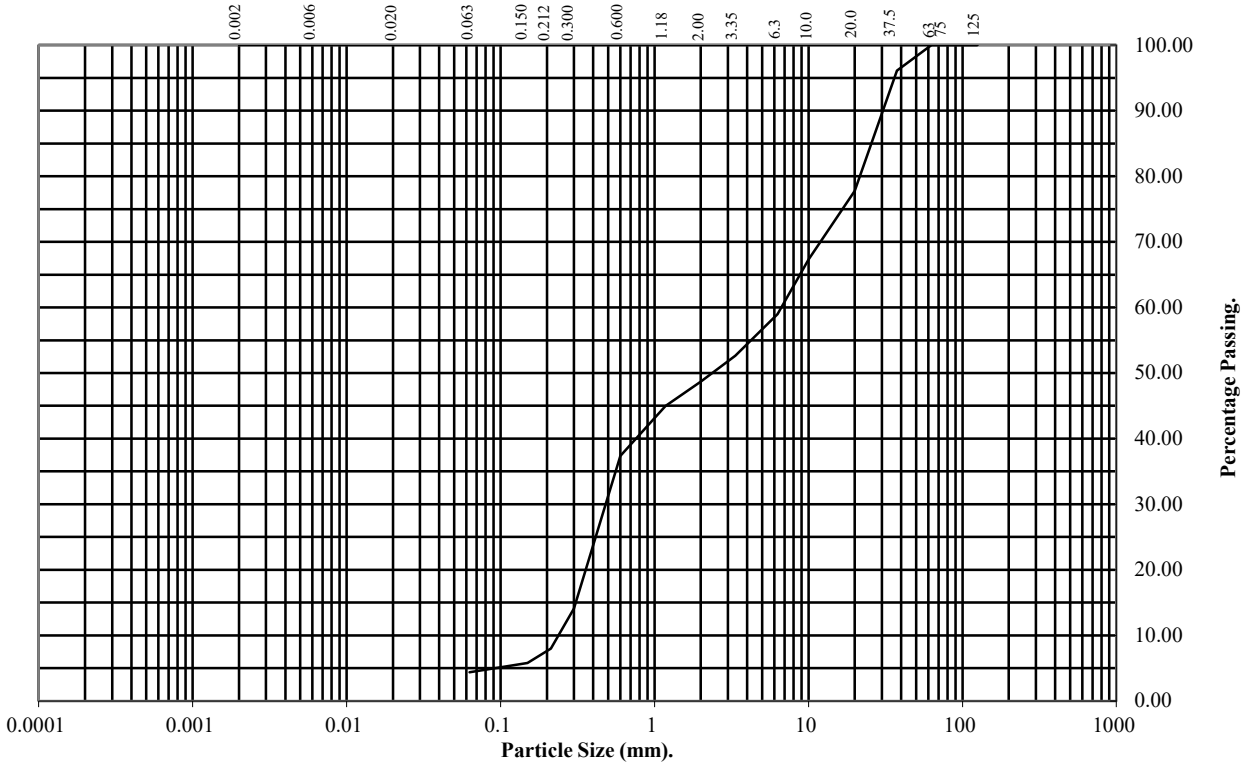
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH51**	**Top Depth (m):**	**2.50**
Sample Number:	**2**	**Base Depth(m):**	**3.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	96
20	78
10	67
6.3	59
3.35	53
2	49
1.18	45
0.6	37
0.3	14
0.212	8
0.15	6
0.063	4

Soil Fraction	Total Percentage
Cobbles	0
Gravel	51
Sand	45
Silt/Clay	4

Remarks:

See Summary of Soil Descriptions

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		Area	D_e^2	D_e	Failure Load (P)		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH02	15.90	2	A	Perp	84	43	3612	4598.94	67.82	-	0.77	0.17	1.147	0.19	Valid	
BH02	16.70	3	A	Perp	85	38	3230	4112.56	64.13	-	1.01	0.25	1.119	0.27	Valid	
BH02	20.55	6	A	Perp	85	37	3145	4004.34	63.28	-	0.41	0.10	1.112	0.11	Valid	
BH02	22.80	5	A	Perp	85	45	3825	4870.14	69.79	-	0.68	0.14	1.162	0.16	Valid	
BH14	10.70	1	A	Perp	105	53	5565	7085.58	84.18	-	1.48	0.21	1.264	0.26	Valid	
BH14	13.60	2	A	Perp	102	49	4998	6363.65	79.77	-	0.41	0.06	1.234	0.08	Valid	
BH14	18.50	5	A	Perp	106	50	5300	6748.17	82.15	-	0.76	0.11	1.250	0.14	Valid	
BH16	12.55	3	A	Perp	87	40	3480	4430.87	66.56	-	0.77	0.17	1.137	0.20	Valid	
BH16	15.35	4	A	Perp	87	44	3828	4873.96	69.81	-	2.43	0.50	1.162	0.58	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular

UKAS TESTING 4043

PSL Professional Soils Laboratory

A46 Newark NNB

Contract No:

PSL21/4877

Client Ref:

784-B026948

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		D_e^2	D_e	Failure Load		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	L	D		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH02	15.90	2	D	Par	-	84	7056	84.00	-	0.04	0.006	1.263	0.01	Valid	
BH02	16.70	3	D	Par	-	85	7225	85.00	-	0.25	0.035	1.270	0.04	Valid	
BH02	20.55	6	D	Par	-	85	7225	85.00	-	0.37	0.051	1.270	0.07	Valid	
BH02	22.80	5	D	Par	-	85	7225	85.00	-	0.41	0.057	1.270	0.07	Valid	
BH14	10.70	1	D	Par	-	105	11025	105.00	-	0.94	0.085	1.396	0.12	Valid	
BH14	13.60	2	D	Par	-	102	10404	102.00	-	0.21	0.020	1.378	0.03	Valid	
BH14	18.50	5	D	Par	-	106	11236	106.00	-	0.63	0.056	1.402	0.08	Valid	
BH16	12.55	3	D	Par	-	87	7569	87.00	-	0.96	0.127	1.283	0.16	Valid	
BH16	15.35	4	D	Par	-	87	7569	87.00	-	1.61	0.213	1.283	0.27	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

UKAS TESTING 4043	PSL Professional Soils Laboratory	A46 Newark NNB	Contract No: PSL21/4877 Client Ref: 784-B026948

DETERMINATION OF UNCONFINED COMPRESSIVE STRENGTH

ISRM Suggested Methods, pp 111 –116, 1981.

Hole Number	Sample Number	Sample Type	Top Depth (m)	Base Depth (m)	Sample Diameter (mm)	Sample Length (mm)	Height Ratio	Initial Mass (g)	Bulk Density (Mg/m)	Moisture Content (%)	Dry Density (Mg/m)	Load Failure (kN)	UCS (MPa)	Failure Mode	Date Tested	Remarks
BH16	2	C	11.10	11.30	89	154	1.7	2252	2.35	9.0	2.16	7.2	1.2	Brittle	21/07/21	
BH14	1	C	10.70	11.20	105	200	1.9	3989	2.30	10.1	2.09	41.7	4.8	Brittle	21/07/21	
BH14	6	C	22.90	23.15	106	200	1.9	4101	2.32	11.7	2.08	10.8	1.2	Brittle	21/07/21	

PSL Professional Soils Laboratory	A46 Newark NNB	Contract No: PSL21/4877 Client Ref: 784-B026948

2531

ANALYTICAL TEST REPORT

Contract no: 97825

Contract name: A46 Newark NNB

Client reference: PSL21/4877

Clients name: Professional Soils Laboratory

Clients address: 5/7 Hexthorpe Road
Doncaster
DN4 0AR

Samples received: 25 June 2021

Analysis started: 25 June 2021

Analysis completed: 02 July 2021

Report issued: 02 July 2021

Notes:
Opinions and interpretations expressed herein are outside the UKAS accreditation scope.
Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.
All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.
Methods, procedures and performance data are available on request.
Results reported herein relate only to the material supplied to the laboratory.
This report shall not be reproduced except in full, without prior written approval.
Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

Key:
U UKAS accredited test
M MCERTS & UKAS accredited test
$ Test carried out by an approved subcontractor
I/S Insufficient sample to carry out test
N/S Sample not suitable for testing

Approved by: [redacted]
Rachael Burton
Customer Support Squad Leader

Chemtech Environmental Limited

SOILS

Lab number			97825-1	97825-2	97825-3	97825-4	97825-5	97825-6
Sample id			BH02	BH02	BH07	BH07	BH51	BH14
Depth (m)			9.30-9.50	20.55-20.70	0.60-1.00	1.70-1.80	1.40-1.50	16.90-17.15
Date sampled			-	-	06/05/2021	07/05/2021	13/05/2021	13/05/2021
Test	**Method**	**Units**						
pH	CE004 [U]	units	8.8	8.8	8.0	7.6	-	8.3
Magnesium (2:1 water soluble)	CE061	mg/l Mg	31	62	10	9.5	-	34
Chloride (2:1 water soluble)	CE049 [U]	mg/l Cl	12	226	7.5	9.3	-	48
Nitrate (2:1 water soluble)	CE049 [U]	mg/l NO_3	<1	<1	3.5	<1	-	<1
Sulphate (2:1 water soluble)	CE061	mg/l SO_4	1105	3214	194	126	-	2597
Sulphate (total)	CE062	mg/kg SO_4	2611	10388	1111	413	-	212277
Sulphur (total)	CE119	mg/kg S	644	17069	777	165	-	72621
Sulphur (total)	CE119	% w/w S	0.06	1.71	0.08	0.02	-	7.26
Total Organic Carbon (TOC)	CE197	% w/w C	-	-	-	-	0.1	-
Estimate of OMC (calculated from TOC)	CE197	% w/w	-	-	-	-	0.2	-

Chemtech Environmental Limited

SOILS

Lab number			97825-7	97825-8
Sample id			BH14	BH16
Depth (m)			1.60-1.90	12.55-12.85
Date sampled			04/05/2021	06/05/2021
Test	**Method**	**Units**		
pH	CE004 [U]	units	-	7.7
Magnesium (2:1 water soluble)	CE061	mg/l Mg	-	66
Chloride (2:1 water soluble)	CE049 [U]	mg/l Cl	-	25
Nitrate (2:1 water soluble)	CE049 [U]	mg/l NO_3	-	<1
Sulphate (2:1 water soluble)	CE061	mg/l SO_4	-	1987
Sulphate (total)	CE062	mg/kg SO_4	-	17635
Sulphur (total)	CE119	mg/kg S	-	9196
Sulphur (total)	CE119	% w/w S	-	0.92
Total Organic Carbon (TOC)	CE197	% w/w C	0.6	-
Estimate of OMC (calculated from TOC)	CE197	% w/w	1.1	-

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE004	pH	Based on BS 1377, pH Meter	As received	U	-	units
CE061	Magnesium (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry		1	mg/l Mg
CE049	Chloride (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l Cl
CE049	Nitrate (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l NO_3
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry		10	mg/l SO_4
CE062	Sulphate (total)	Acid extraction, ICP-OES	Dry		100	mg/kg SO_4
CE119	Sulphur (total)	Acid extraction, ICP-OES	Dry		100	mg/kg S
CE119	Sulphur (total)	Acid extraction, ICP-OES	Dry		0.01	% w/w S
CE197	Total Organic Carbon (TOC)	Carbon Analyser	Dry		0.1	% w/w C
CE197	Estimate of OMC (calculated from TOC)	Calculation from Total Organic Carbon	Dry		0.1	% w/w

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
97825-1	BH02	9.30-9.50	Y	All(NSD)
97825-2	BH02	20.55-20.70	Y	All(NSD)
97825-3	BH07	0.60-1.00	Y	ALL(EHT)
97825-4	BH07	1.70-1.80	Y	ALL(EHT)
97825-5	BH51	1.40-1.50	Y	ALL(EHT)
97825-6	BH14	16.90-17.15	Y	ALL(EHT)
97825-7	BH14	1.60-1.90	Y	ALL(EHT)
97825-8	BH16	12.55-12.85	Y	ALL(EHT)

PSL
Professional Soils Laboratory

TEST AMENDMENT NOTICE

(Please tick boxes as appropriate)

From: LISA WILSON To: NICHOLAS BOOL

Date: 14/7/2021 Laboratory Ref: PSL21/4877

Contract Number: 784-B026148 Location: A46 NEWARK NNB

☑ BH ○ TP Sample Number BH19 Depth (m): 4.6-4.7

Sample Type: ○ U ○ B ☑ D ○ W ○ P ○ C

Test/s: Atterberg

The above sample cannot be tested for the following reasons:

☑ The Sample has not been received

☐ There is insufficient material for BS1377: 1990 testing

Maximum Grain Size (Minimum 10%): ○ Fine ○ Medium ○ Coarse

Sample Mass (kg): .....

Required Mass (kg): .....

☐ The Sample has been previously tested.

☐ The Sample has been misplaced in the Laboratory.

☐ The Sample is unsuitable for testing because:

Please advise action required:

☐ Perform original test on the following alternative Sample:

○ BH ○ TP Sample Number: Depth (m):

Sample Type: ○ U ○ B ○ D ○ W ○ P ○ C

☐ Combine original Sample with the following sample:

○ BH ○ TP Sample Number: Depth (m):

Sample Type: ○ U ○ B ○ D ○ W ○ P ○ C

☐ Perform the following alternative test/s on the original Sample

☐ Perform non-standard test on material available

☐ Take no further action.

Signed ..... Date .....
(Project Engineer)

LABORATORY REPORT

4043

Contract Number: PSL21/5122

Report Date: 22 July 2021

Client's Reference: 784-B026948

Client Name: Tetra Tech
54 Hagley Road
Birmingham
B16 8PE

For the attention of: Nicholas Bool

Contract Title: A46 Newark NNB

Date Received: 23/6/2021
Date Commenced: 23/6/2021
Date Completed: 22/7/2021

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins (Director)

R Berriman (Quality Manager)

S Royle (Laboratory Manager)

[redacted]

L Knight (Senior Technician)

S Eyre (Senior Technician)

T Watkins (Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AR
[redacted]

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH01	-	B	1.20	1.70	Brown very sandy slightly silty GRAVEL.
BH01	1	U	10.65	10.90	Stiff brown sandy CLAY.
BH03A	-	D	1.30	1.40	Brown CLAY with some organic material.
BH03A	-	B	1.50	1.80	Brown clayey silty SAND.
BH11	5	B	1.50		Brown very sandy clayey silty GRAVEL.
BH11	10	B	3.00		Brown slightly sandy slightly clayey GRAVEL.
BH11	12	D	4.00		Brown CLAY with some organic material.
BH11	14	B	5.00		Brown very sandy slightly silty GRAVEL.
BH11	15	D	5.50		Brown slightly gravelly very sandy CLAY.
BH51	2	D	6.00	6.45	Brown sandy CLAY
BH52	6	B	0.50		Brown slightly gravelly very sandy CLAY with some organic material.
BH52	12	B	1.50	1.95	Brown slightly gravelly slightly sandy CLAY.
BH52	14	B	2.50		Brown very sandy CLAY.
BH52	17	D	4.00		Brown sandy GRAVEL.
BH52	22	B	6.50		Brown sandy GRAVEL.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH03A	-	D	1.30	1.40	67			74	33	41	100	Very High Plasticity CV
BH11	12	D	4.00		68			88	36	52	52	Very High Plasticity CV
BH11	15	D	5.50		22			34	17	17	95	Low Plasticity CL
BH51	2	D	6.00	6.45	23			37	18	19	100	Intermediate Plasticity CI
BH52	6	B	0.50		33			64	29	35	95	High Plasticity CH
BH52	12	B	1.50	1.95	38			60	28	32	98	High Plasticity CH
BH52	17	D	4.00		6.3				NP			
BH52	22	B	6.50		3.3				NP			

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL Professional Soils Laboratory

A46 Newark NNB

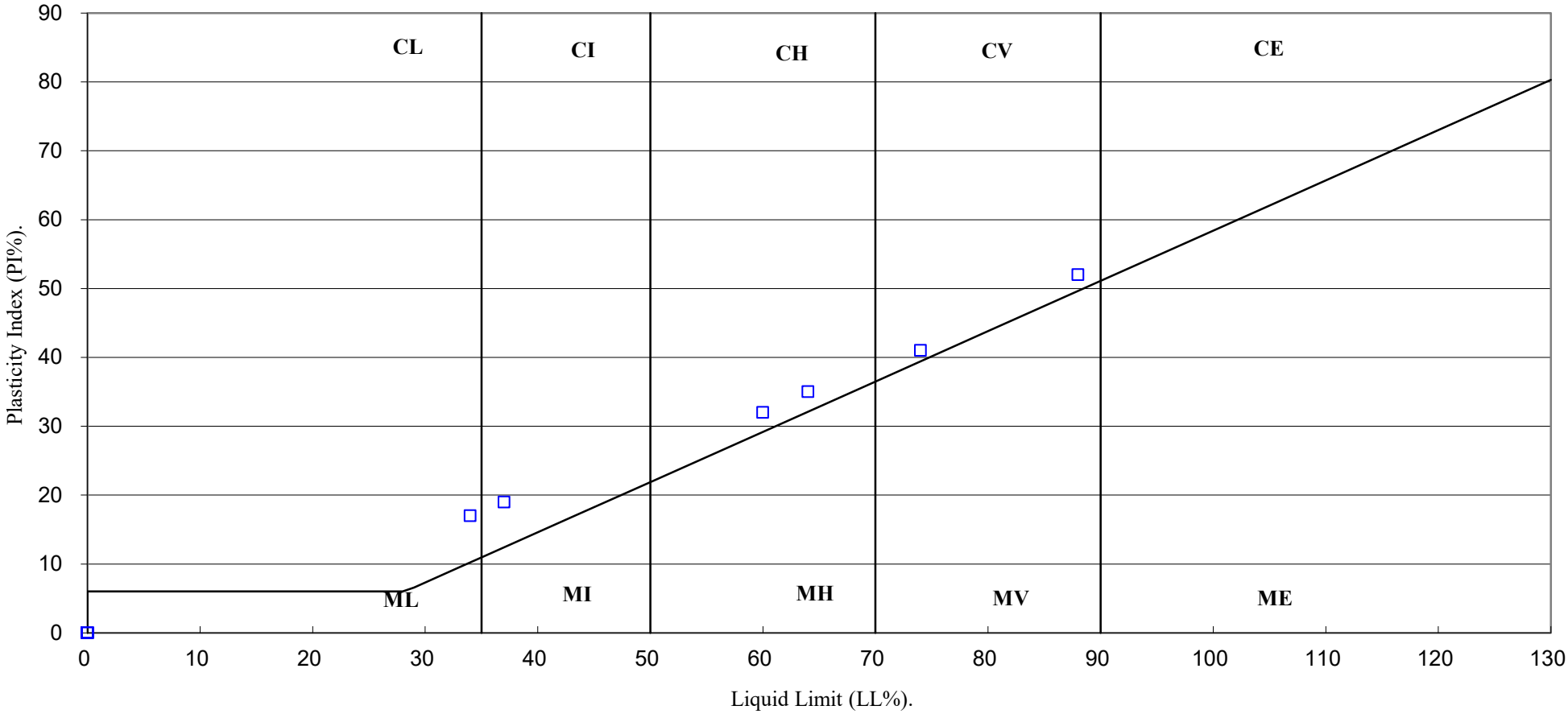
Contract No:

PSL21/5122

Client Ref:

784-B026948

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



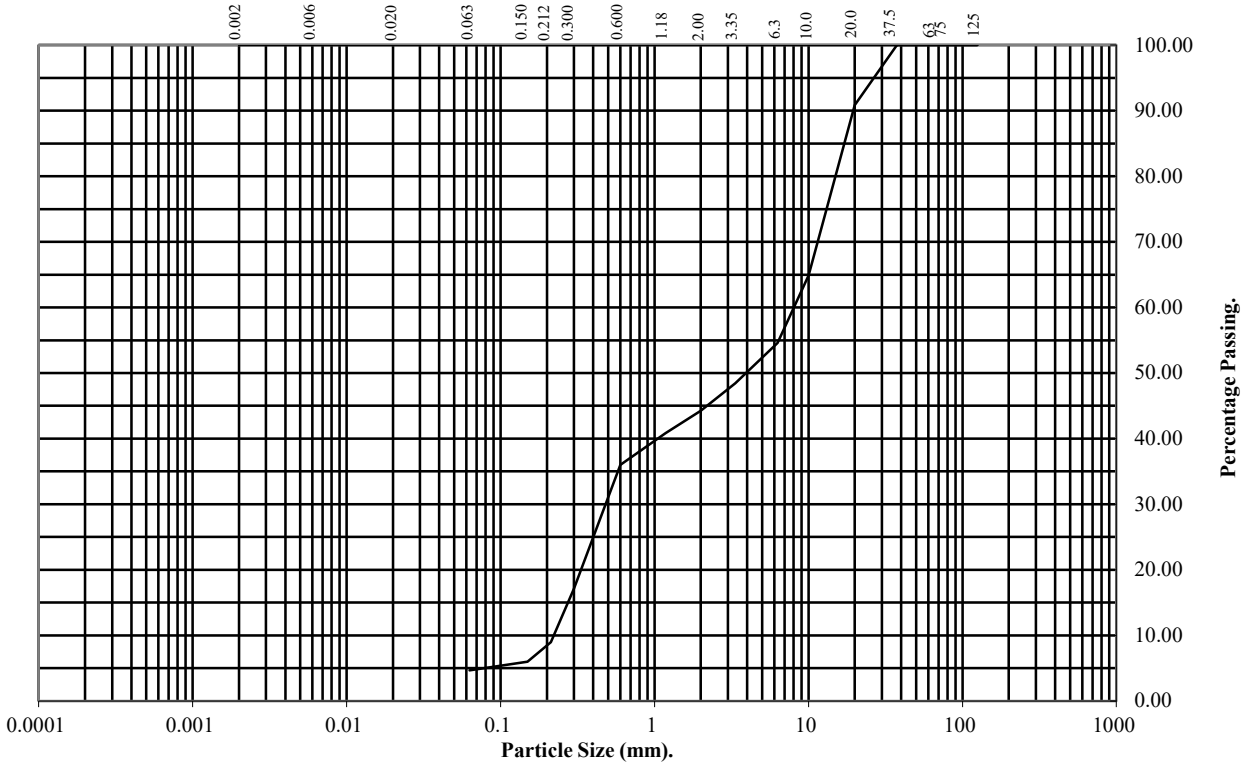
UKAS TESTING 4043	PSL Professional Soils Laboratory	A46 Newark NNB	Contract No: PSL21/5122 Client Ref: 784-B026948

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH01**	**Top Depth (m):**	**1.20**
Sample Number:		**Base Depth(m):**	**1.70**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	91
10	65
6.3	55
3.35	48
2	44
1.18	41
0.6	36
0.3	17
0.212	9
0.15	6
0.063	5

Soil Fraction	Total Percentage
Cobbles	0
Gravel	56
Sand	39
Silt/Clay	5

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

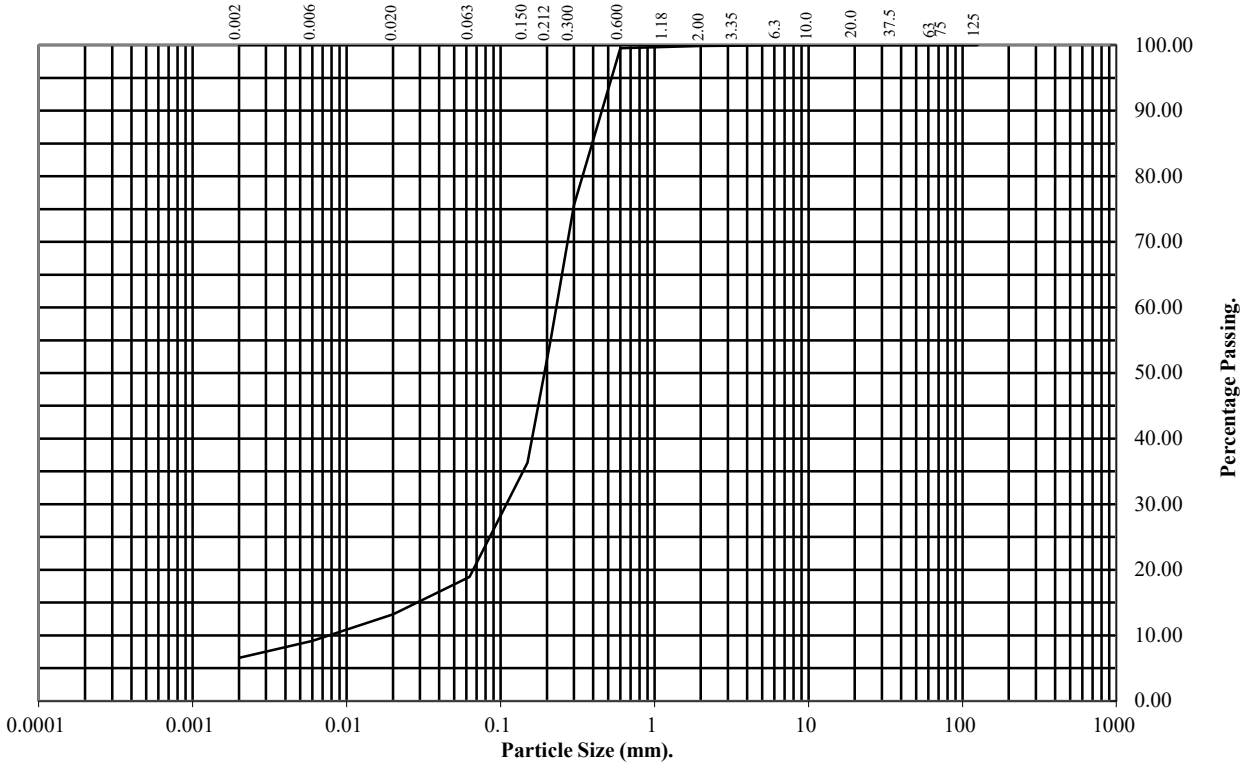
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: **BH03A** **Top Depth (m):** **1.50**

Sample Number: **Base Depth(m):** **1.80**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	100
0.3	76
0.212	55
0.15	36
0.063	19

Particle Diameter	Percentage Passing
0.02	13
0.006	9
0.002	7

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	81
Silt	12
Clay	7

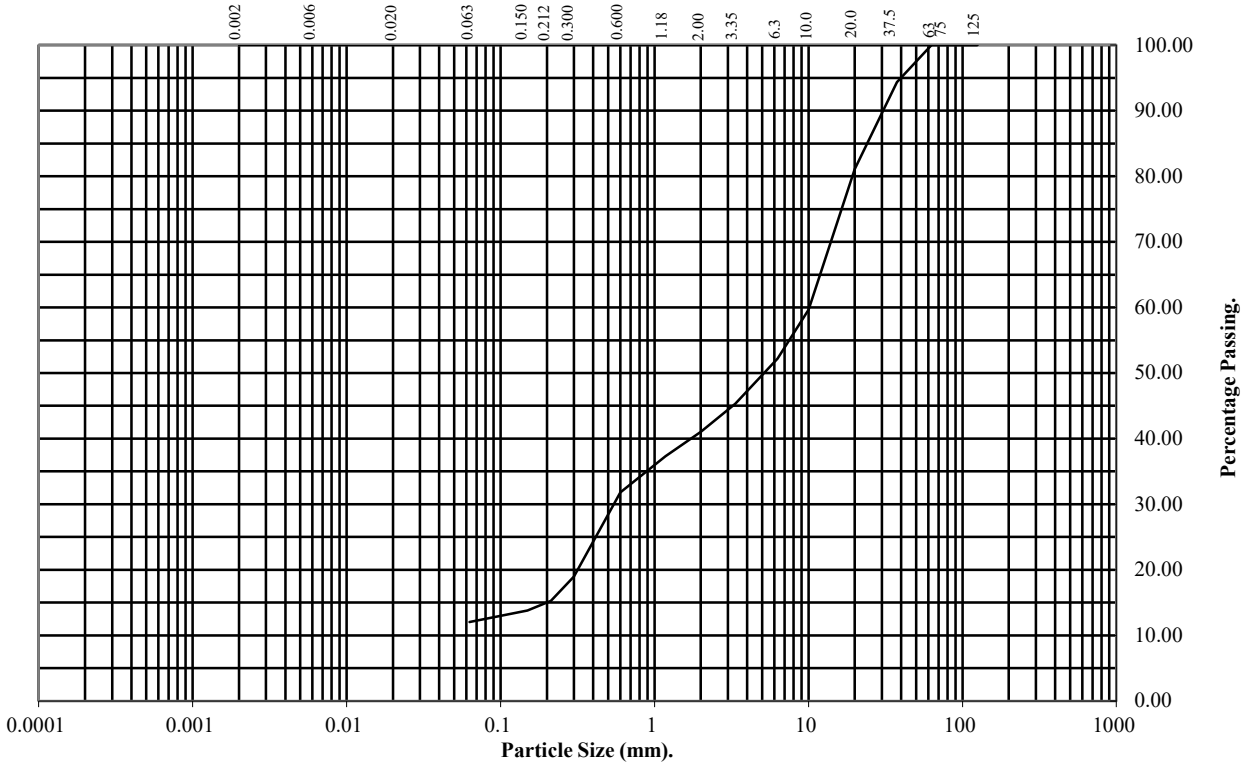
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH11**	**Top Depth (m):**	**1.50**
Sample Number:	**5**	**Base Depth(m):**	
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	94
20	81
10	60
6.3	52
3.35	45
2	41
1.18	37
0.6	32
0.3	19
0.212	15
0.15	14
0.063	12

Soil Fraction	Total Percentage
Cobbles	0
Gravel	59
Sand	29
Silt/Clay	12

Remarks:

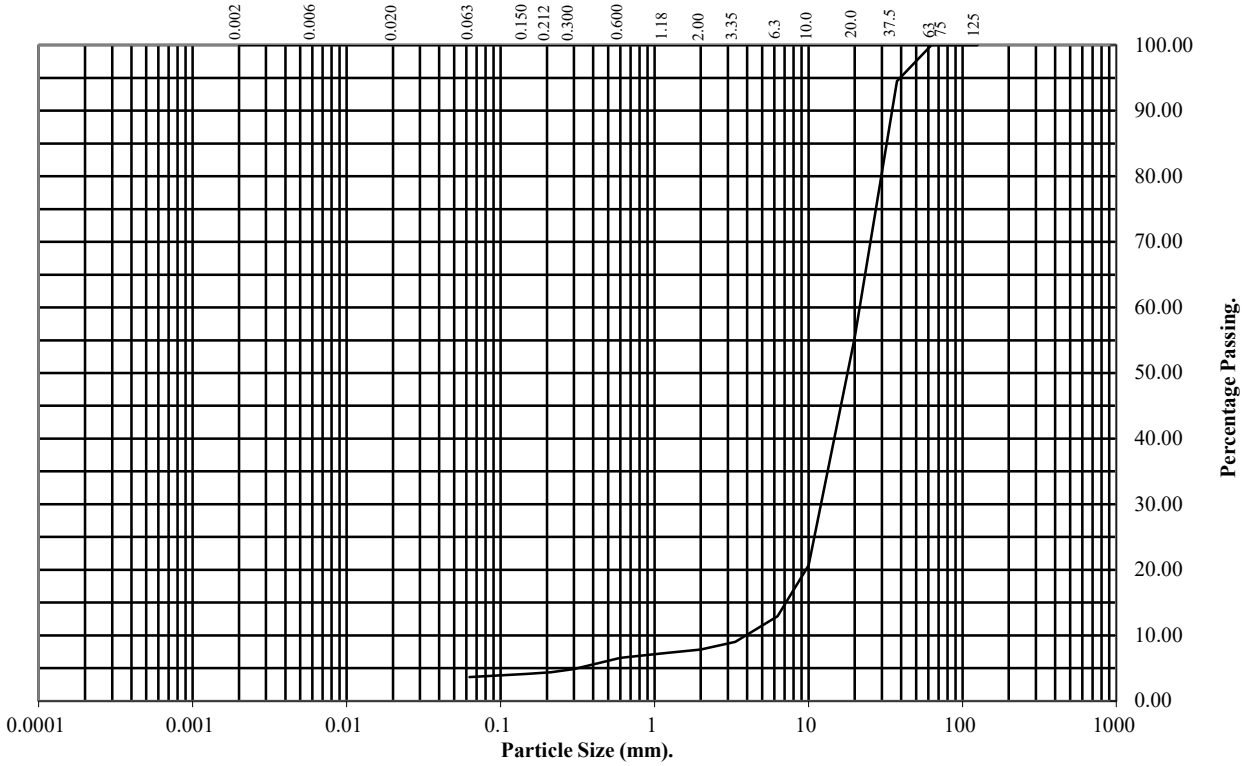
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH11**	**Top Depth (m):**	**3.00**
Sample Number:	**10**	**Base Depth(m):**	
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	95
20	55
10	21
6.3	13
3.35	9
2	8
1.18	7
0.6	7
0.3	5
0.212	4
0.15	4
0.063	4

Soil Fraction	Total Percentage
Cobbles	0
Gravel	92
Sand	4
Silt/Clay	4

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

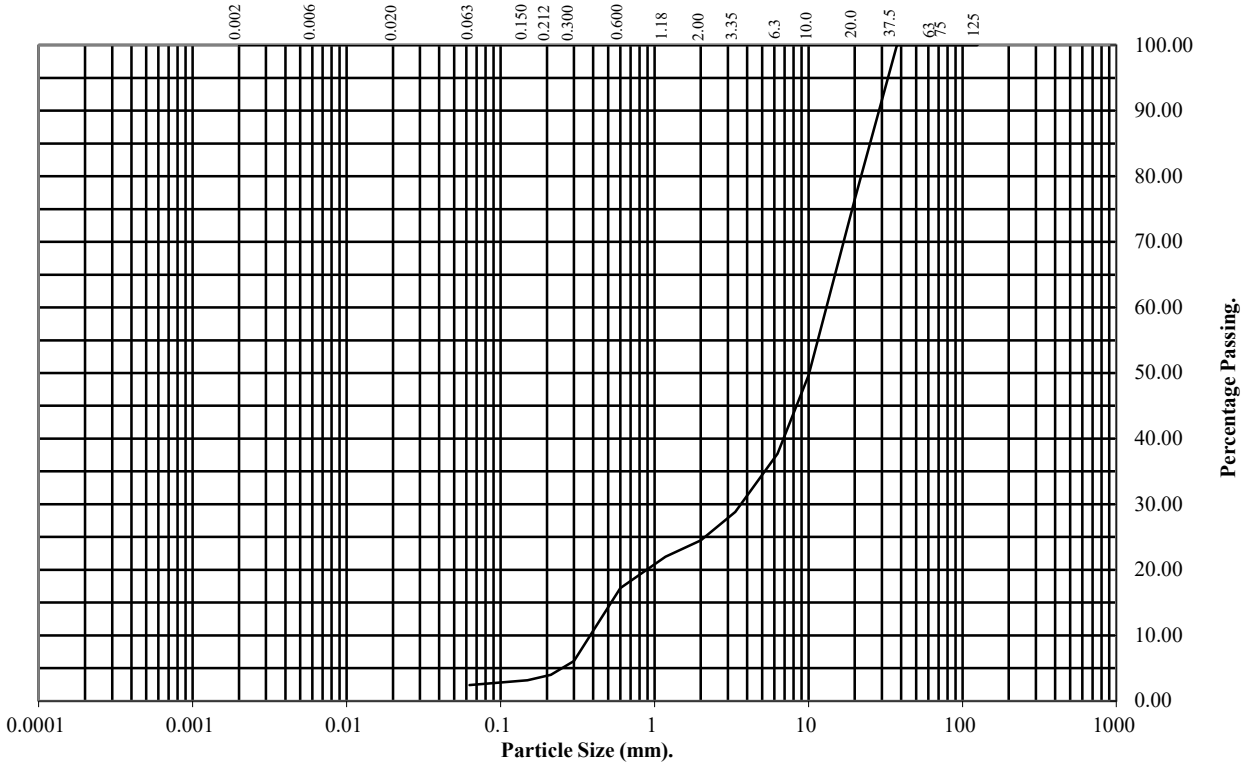
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: BH11 **Top Depth (m):** 5.00

Sample Number: 14 **Base Depth(m):**

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	76
10	50
6.3	38
3.35	29
2	24
1.18	22
0.6	17
0.3	6
0.212	4
0.15	3
0.063	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	76
Sand	22
Silt/Clay	2

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

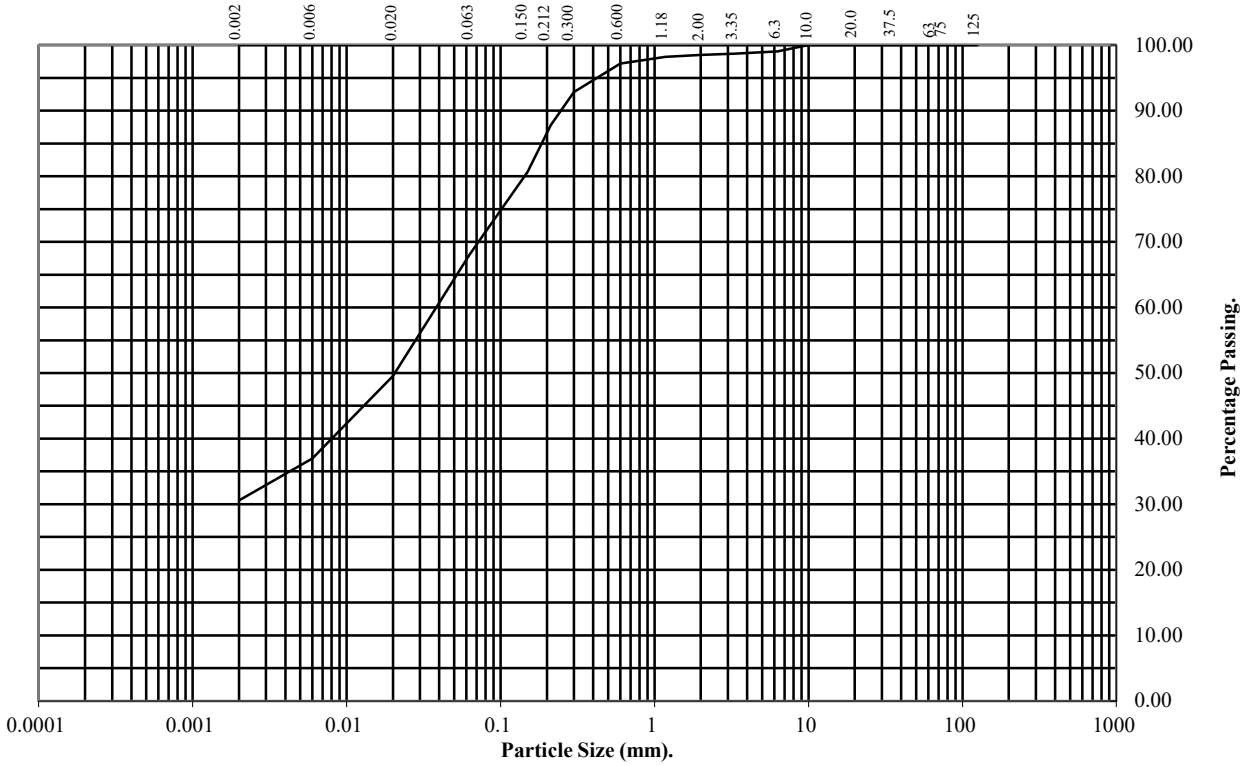
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: BH52 **Top Depth (m):** 0.50

Sample Number: 6 **Base Depth(m):**

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	99
3.35	99
2	99
1.18	98
0.6	97
0.3	93
0.212	88
0.15	81
0.063	68

Particle Diameter	Percentage Passing
0.02	50
0.006	37
0.002	31

Soil Fraction	Total Percentage
Cobbles	0
Gravel	1
Sand	31
Silt	37
Clay	31

Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

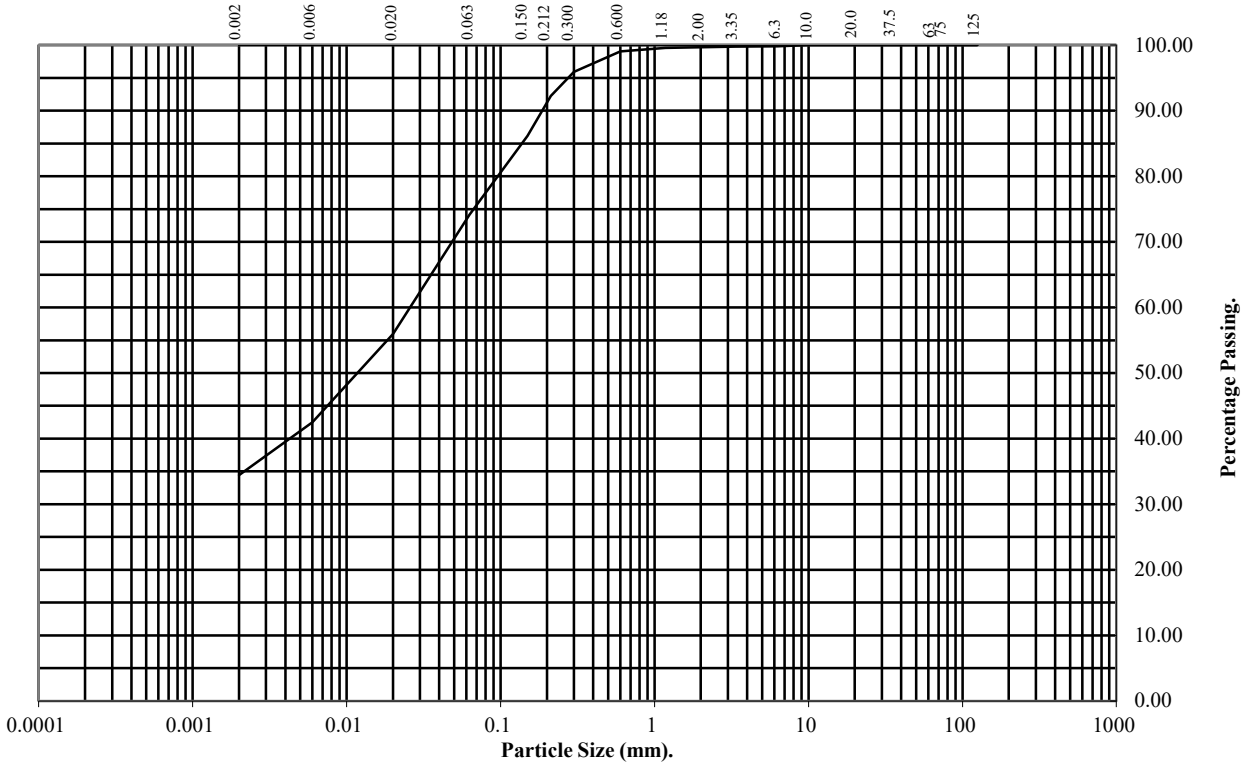
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: BH52 **Top Depth (m):** 2.50

Sample Number: 14 **Base Depth(m):**

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	99
0.3	96
0.212	92
0.15	86
0.063	74

Particle Diameter	Percentage Passing
0.02	56
0.006	42
0.002	34

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	26
Silt	40
Clay	34

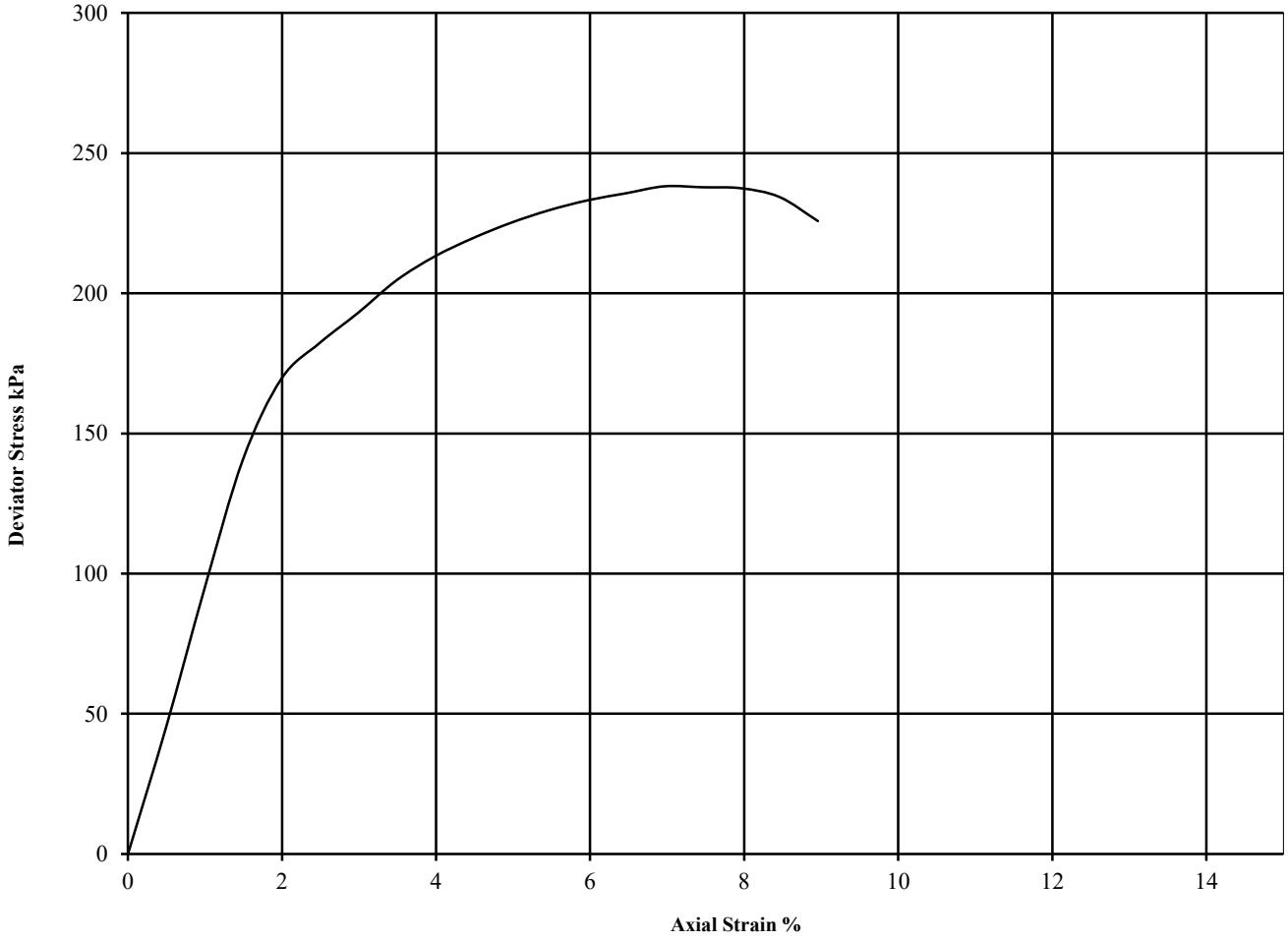
Remarks:
See Summary of Soil Descriptions

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number:	**BH01**	**Top Depth (m):**	**10.65**
Sample Number:	**1**	**Base Depth (m):**	**10.90**
Sample Type	**U**		



Diameter (mm):		103	Height (mm):		207	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.36
1	23	2.05	1.67	100	238	119	7.0	Brittle	See summary of soil descriptions

*** Single stage test due to early brittle failure**

2531

ANALYTICAL TEST REPORT

Contract no: 98041

Contract name: A46 Newark NNB

Client reference: PSL21/5122

Clients name: Professional Soils Laboratory

Clients address: 5/7 Hexthorpe Road
Doncaster
DN4 0AR

Samples received: 02 July 2021

Analysis started: 02 July 2021

Analysis completed: 08 July 2021

Report issued: 09 July 2021

Notes:
Opinions and interpretations expressed herein are outside the UKAS accreditation scope.
Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.
All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.
Methods, procedures and performance data are available on request.
Results reported herein relate only to the material supplied to the laboratory.
This report shall not be reproduced except in full, without prior written approval.
Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

Key:
U UKAS accredited test
M MCERTS & UKAS accredited test
$ Test carried out by an approved subcontractor
I/S Insufficient sample to carry out test
N/S Sample not suitable for testing

Approved by: [redacted]
Rachael Burton
Customer Support Squad Leader

Chemtech Environmental Limited

SOILS

Lab number			98041-1	98041-2	98041-3	98041-4	98041-5	98041-6
Sample id			BH01	BH01	BH03A	BH03A	BH11	BH11
Depth (m)			12.30-12.40	24.15-24.25	1.30-1.40	13.95-14.10	3.00	4.00
Date sampled			-	-	-	-	-	-
Test	**Method**	**Units**						
pH	CE004 [U]	units	8.4	8.3	-	-	8.6	7.6
Magnesium (2:1 water soluble)	CE061	mg/l Mg	50	60	-	-	7.1	142
Chloride (2:1 water soluble)	CE049 [U]	mg/l Cl	9.5	281	-	-	21	12
Nitrate (2:1 water soluble)	CE049 [U]	mg/l NO_3	1.2	<1	-	-	1.6	<1
Sulphate (2:1 water soluble)	CE061	mg/l SO_4	1089	3097	-	-	86	2290
Sulphate (total)	CE062	mg/kg SO_4	4466	103301	-	-	8445	8382
Sulphur (total)	CE119	mg/kg S	1398	32449	-	-	433	9819
Sulphur (total)	CE119	% w/w S	0.14	3.24	-	-	0.04	0.98
Total Organic Carbon (TOC)	CE197	% w/w C	-	-	3.1	0.4	-	-
Estimate of OMC (calculated from TOC)	CE197	% w/w	-	-	5.4	0.7	-	-

Chemtech Environmental Limited

SOILS

Lab number			98041-7
Sample id			BH11
Depth (m)			5.50
Date sampled			-
Test	**Method**	**Units**	
pH	CE004 [U]	units	7.9
Magnesium (2:1 water soluble)	CE061	mg/l Mg	43
Chloride (2:1 water soluble)	CE049 [U]	mg/l Cl	28
Nitrate (2:1 water soluble)	CE049 [U]	mg/l NO_3	<1
Sulphate (2:1 water soluble)	CE061	mg/l SO_4	716
Sulphate (total)	CE062	mg/kg SO_4	2438
Sulphur (total)	CE119	mg/kg S	1834
Sulphur (total)	CE119	% w/w S	0.18
Total Organic Carbon (TOC)	CE197	% w/w C	-
Estimate of OMC (calculated from TOC)	CE197	% w/w	-

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE004	pH	Based on BS 1377, pH Meter	As received	U	-	units
CE061	Magnesium (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry		1	mg/l Mg
CE049	Chloride (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l Cl
CE049	Nitrate (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l NO_3
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry		10	mg/l SO_4
CE062	Sulphate (total)	Acid extraction, ICP-OES	Dry		100	mg/kg SO_4
CE119	Sulphur (total)	Acid extraction, ICP-OES	Dry		100	mg/kg S
CE119	Sulphur (total)	Acid extraction, ICP-OES	Dry		0.01	% w/w S
CE197	Total Organic Carbon (TOC)	Carbon Analyser	Dry		0.1	% w/w C
CE197	Estimate of OMC (calculated from TOC)	Calculation from Total Organic Carbon	Dry		0.1	% w/w

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
98041-1	BH01	12.30-12.40	Y	All (NSD)
98041-2	BH01	24.15-24.25	Y	All (NSD)
98041-3	BH03A	1.30-1.40	Y	All (NSD)
98041-4	BH03A	13.95-14.10	Y	All (NSD)
98041-5	BH11	3.00	Y	All (NSD)
98041-6	BH11	4.00	Y	All (NSD)
98041-7	BH11	5.50	Y	All (NSD)

LABORATORY REPORT

4043

Contract Number: PSL21/5123

Report Date: 21 July 2021

Client's Reference: 784-B026948

Client Name: Tetra Tech
54 Hagley Road
Birmingham
B16 8PE

For the attention of: Nicholas Bool

Contract Title: A46 Newark NNB

Date Received: 23/6/2021
Date Commenced: 23/6/2021
Date Completed: 21/7/2021

Notes: Opinions and Interpretations are outside the UKAS Accreditation

Checked and Approved Signatories:

A Watkins (Director) [redacted]

R Berriman (Quality Manager)

S Royle (Laboratory Manager)

L Knight (Assistant Laboratory Manager)

S Eyre (Senior Technician)

T Watkins (Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AR
[redacted]

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH07	4	B	6.00		Brown very sandy slightly silty GRAVEL.
BH18	8	B	1.50		Reddish brown gravelly sandy CLAY.
BH18	11	B	2.50		Brown slightly gravelly very sandy CLAY.
BH35	15	B	2.00	3.00	Reddish brown highly weathered MUDSTONE.
BH35	16	B	3.50	4.00	Brown very gravelly SAND.
BH35	18	D	5.00	5.10	Brown slightly gravelly slightly sandy CLAY.
BH35	20	B	9.00	10.00	Brown slightly sandy slightly silty GRAVEL.
BH36	9	B	1.20	4.00	Brown sandy slightly silty GRAVEL.
BH36	13	D	4.20	4.30	Brown very gravelly sandy CLAY.
BH36	18	B	6.50	7.50	Brown slightly gravelly clayey silty SAND.
BH46	4	B	0.70		Dark brown TOPSOIL.
BH47	6	B	0.70		Brown very sandy slightly clayey very silty GRAVEL.
BH48	11	B	1.20	1.80	Brown slightly gravelly very sandy CLAY.
BH48	12	B	1.80	3.50	Brown gravelly silty SAND.
BH48	15	B	4.00	5.00	Reddish brown highly weathered MUDSTONE.
BH48	16	D	6.80	6.90	Brown highly weathered MUDSTONE.
BH49	7	B	0.80		Brown slightly gravelly sandy CLAY.
BH50	6	B	1.00	1.20	Brown slightly gravelly sandy CLAY.
BH53	10	B	1.50		Brown slightly gravelly sandy CLAY.

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH53	18	B	4.50		Brown very sandy slightly silty GRAVEL.
BH63	5	B	1.00		Brown very sandy silty GRAVEL.
BH63	10	B	2.50		Brown slightly gravelly sandy CLAY.
BH65	5	B	1.00		Brown very gravelly very silty SAND.
BH65	9	B	2.50		Reddish brown slightly gravelly sandy CLAY.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH07	4	B	6.00		4.9				NP			
BH18	8	B	1.50		27			39	19	20	81	Intermediate Plasticity CI
BH18	11	B	2.50		17			33	17	16	94	Low Plasticity CL
BH35	15	B	2.00	3.00	23			30	16	14	55	Low Plasticity CL
BH35	16	B	3.50	4.00	3.3				NP			
BH35	18	D	5.00	5.10	32			61	26	35	93	High Plasticity CH
BH36	9	B	1.20	4.00	3.9				NP			
BH36	13	D	4.20	4.30	16			37	19	18	61	Intermediate Plasticity CI
BH48	11	B	1.20	1.80	13			32	15	17	93	Low Plasticity CL
BH48	15	B	4.00	5.00	18			40	19	21	82	Intermediate Plasticity CI
BH48	16	D	6.80	6.90	28			35	18	17	87	Intermediate Plasticity CI
BH49	7	B	0.80		22			48	23	25	94	Intermediate Plasticity CI
BH50	6	B	1.00	1.20	14			38	20	18	91	Intermediate Plasticity CI
BH53	10	B	1.50		33			46	22	24	95	Intermediate Plasticity CI
BH63	5	B	1.00		6.1				NP			
BH63	10	B	2.50		22			45	23	22	93	Intermediate Plasticity CI
BH65	9	B	2.50		23			38	20	18	94	Intermediate Plasticity CI

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL Professional Soils Laboratory

A46 Newark NNB

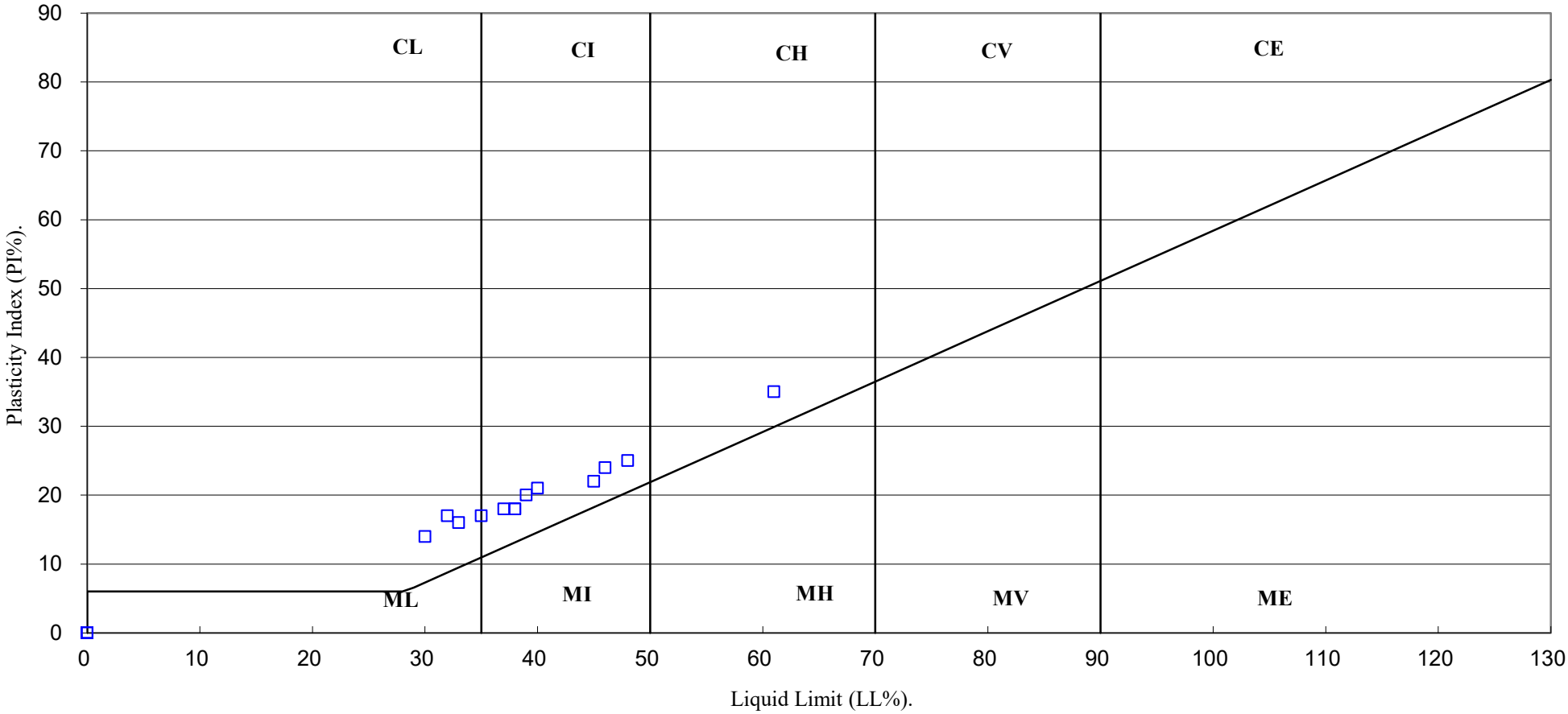
Contract No:

PSL21/5123

Client Ref:

784-B026948

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL Professional Soils Laboratory	A46 Newark NNB	Contract No: PSL21/5123 Client Ref: 784-B026948

PARTICLE SIZE DISTRIBUTION TEST

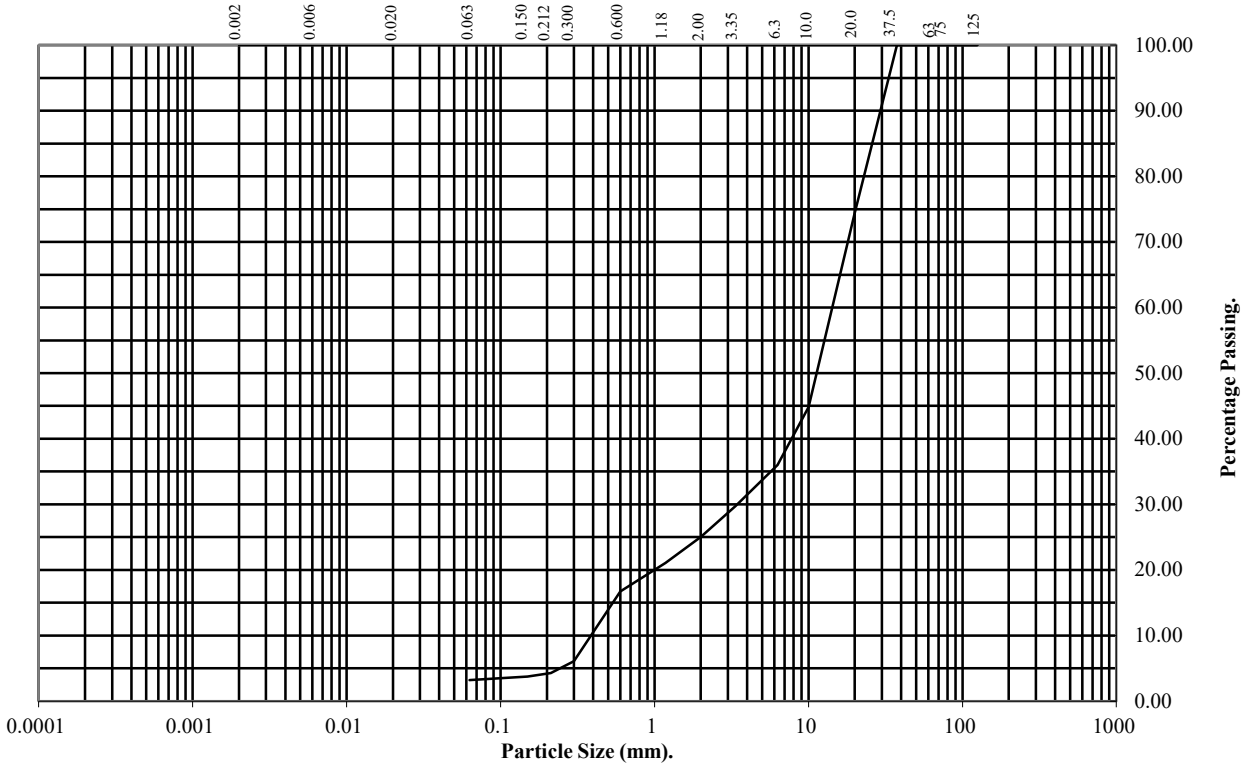
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: BH07 **Top Depth (m):** 6.00

Sample Number: 4 **Base Depth(m):**

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	74
10	45
6.3	36
3.35	30
2	25
1.18	21
0.6	17
0.3	6
0.212	4
0.15	4
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	75
Sand	22
Silt/Clay	3

Remarks:

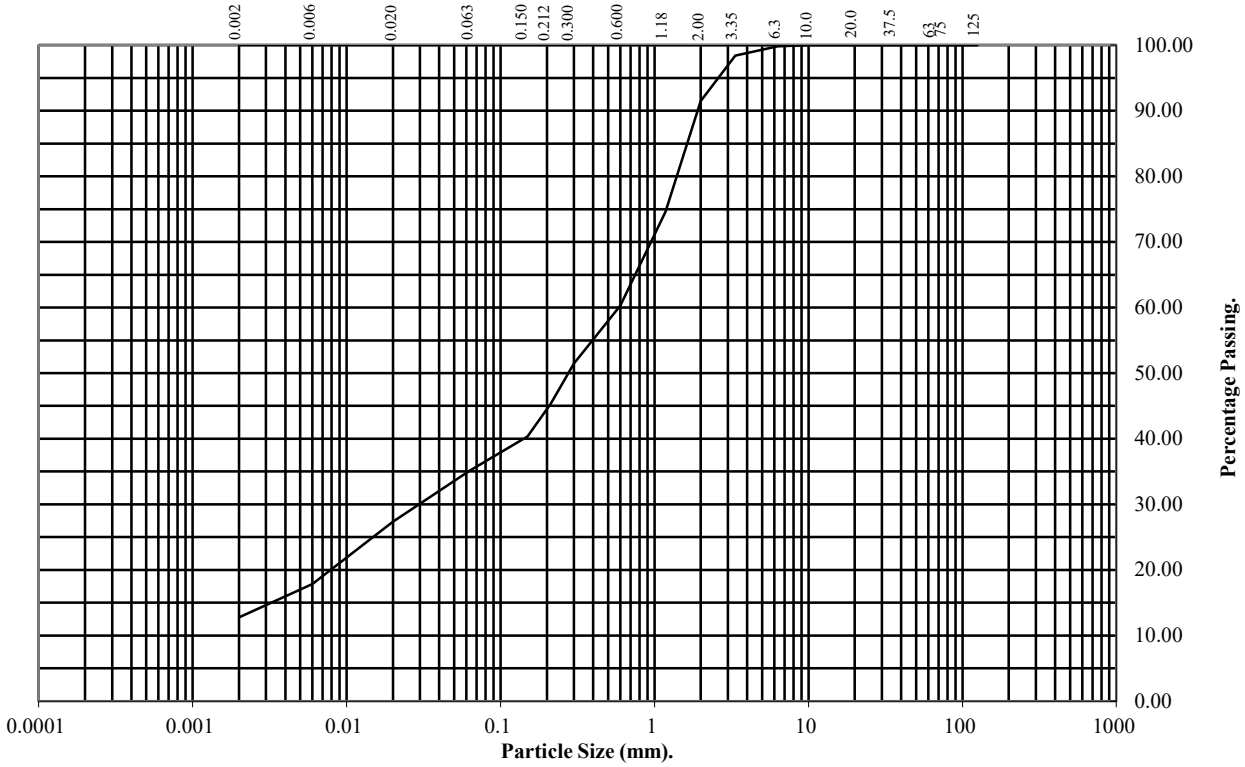
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH35**	**Top Depth (m):**	**2.00**
Sample Number:	**15**	**Base Depth(m):**	**3.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	98
2	91
1.18	75
0.6	60
0.3	51
0.212	45
0.15	40
0.063	35

Particle Diameter	Percentage Passing
0.02	27
0.006	18
0.002	13

Soil Fraction	Total Percentage
Cobbles	0
Gravel	9
Sand	56
Silt	22
Clay	13

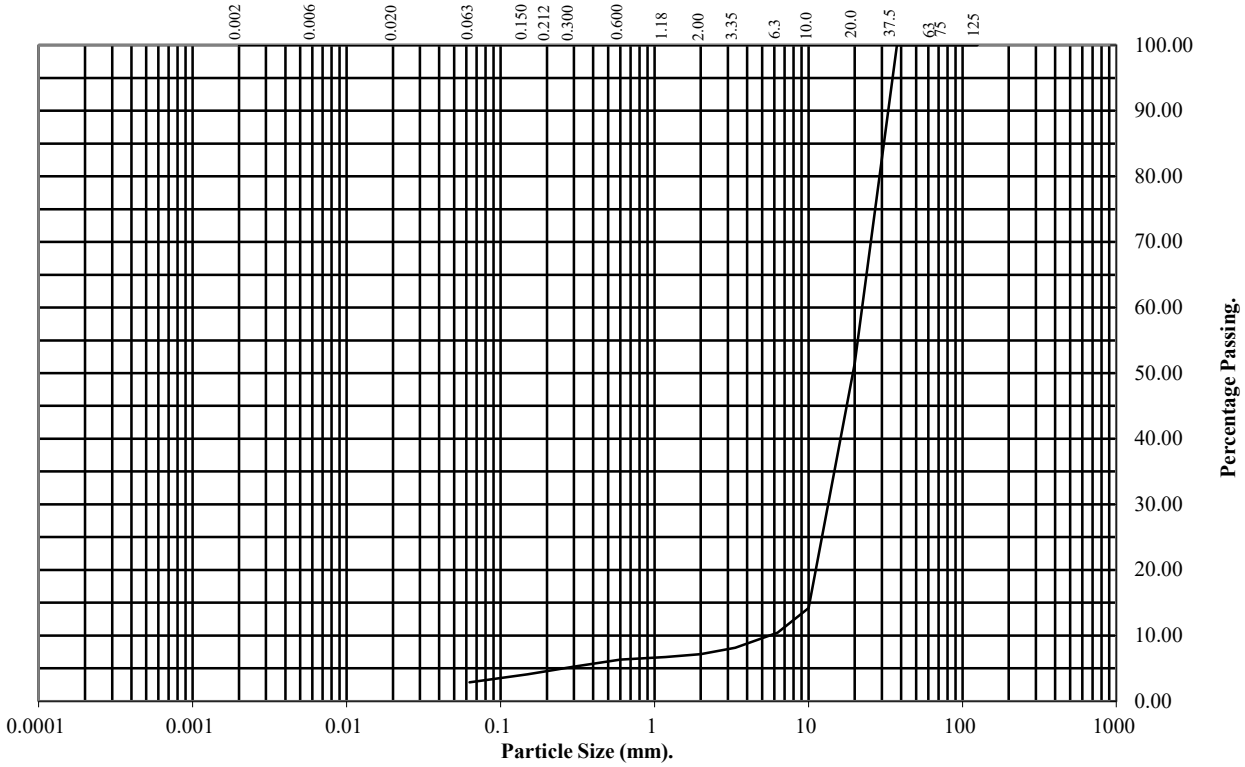
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH35**	**Top Depth (m):**	**9.00**
Sample Number:	**20**	**Base Depth(m):**	**10.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	51
10	14
6.3	10
3.35	8
2	7
1.18	7
0.6	6
0.3	5
0.212	5
0.15	4
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	93
Sand	4
Silt/Clay	3

Remarks:

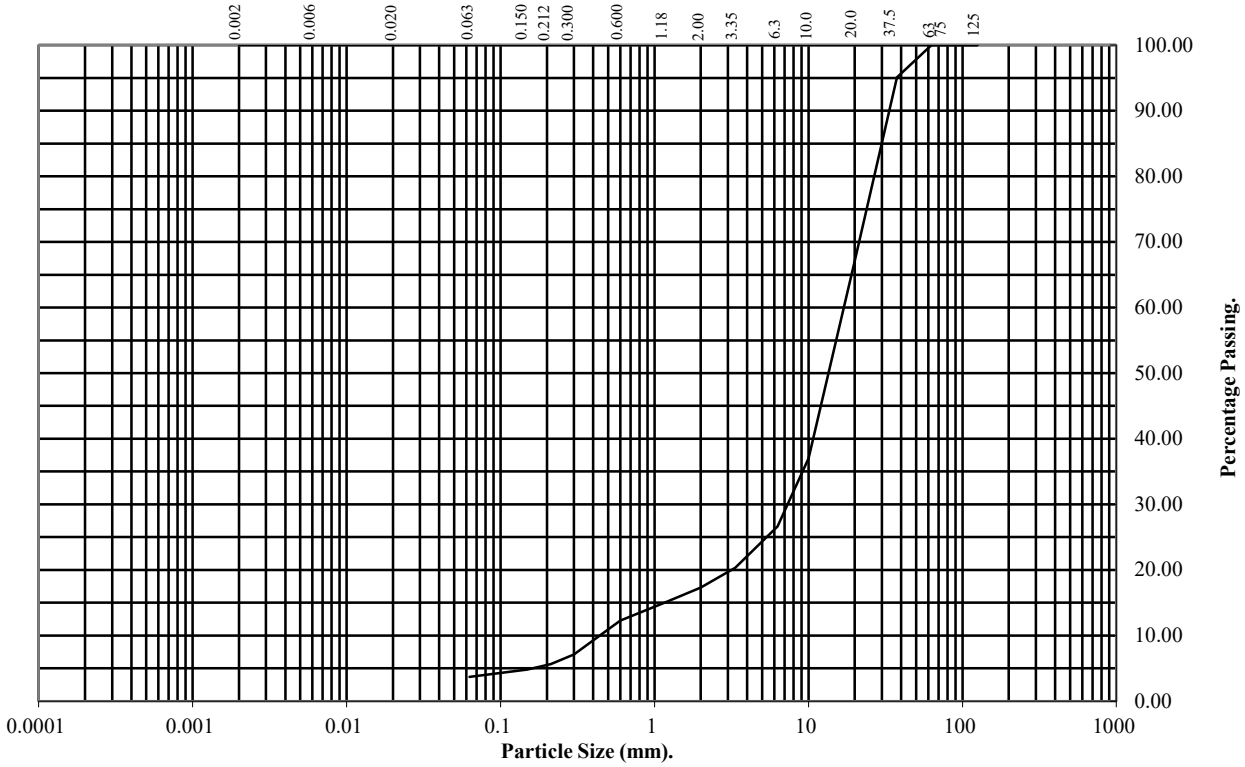
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH36**	**Top Depth (m):**	**1.20**
Sample Number:	**9**	**Base Depth(m):**	**4.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	95
20	67
10	37
6.3	27
3.35	20
2	17
1.18	15
0.6	12
0.3	7
0.212	6
0.15	5
0.063	4

Soil Fraction	Total Percentage
Cobbles	0
Gravel	83
Sand	13
Silt/Clay	4

Remarks:

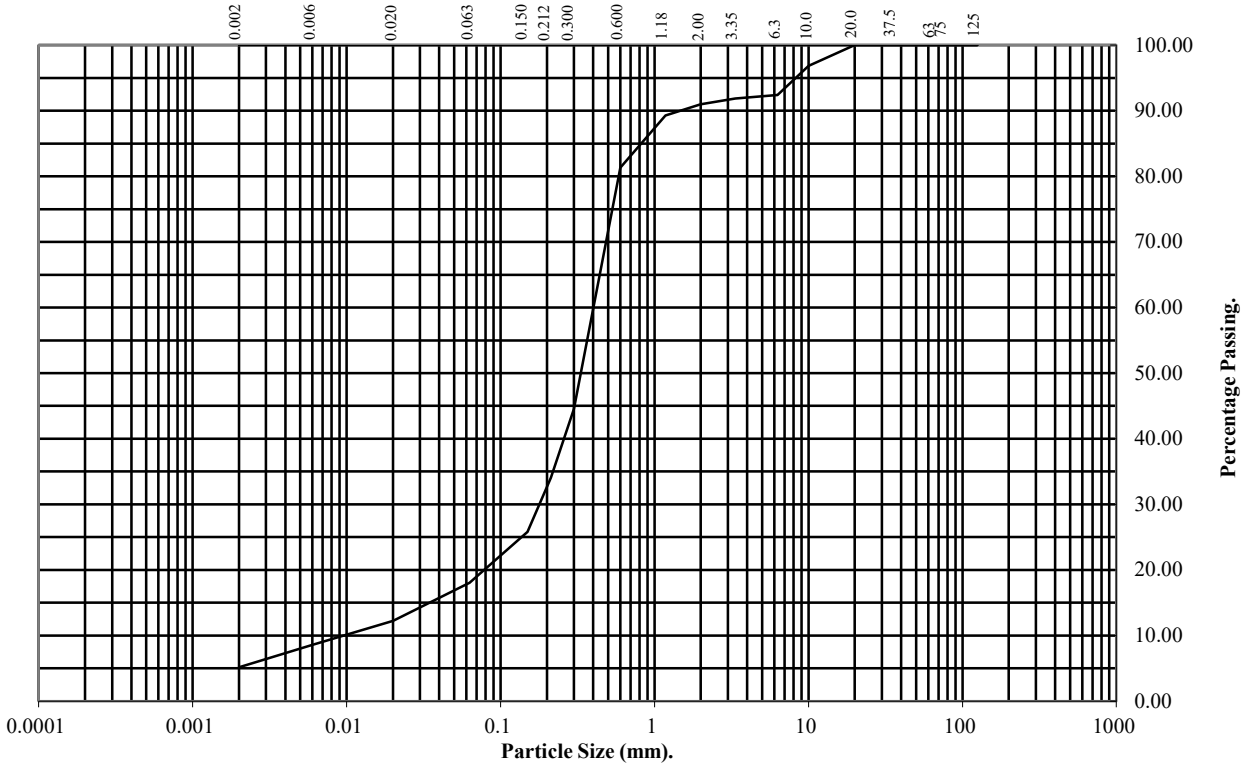
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH36**	**Top Depth (m):**	**6.50**
Sample Number:	**18**	**Base Depth(m):**	**7.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	97
6.3	92
3.35	92
2	91
1.18	89
0.6	81
0.3	45
0.212	34
0.15	26
0.063	18

Particle Diameter	Percentage Passing
0.02	12
0.006	9
0.002	5

Soil Fraction	Total Percentage
Cobbles	0
Gravel	9
Sand	73
Silt	13
Clay	5

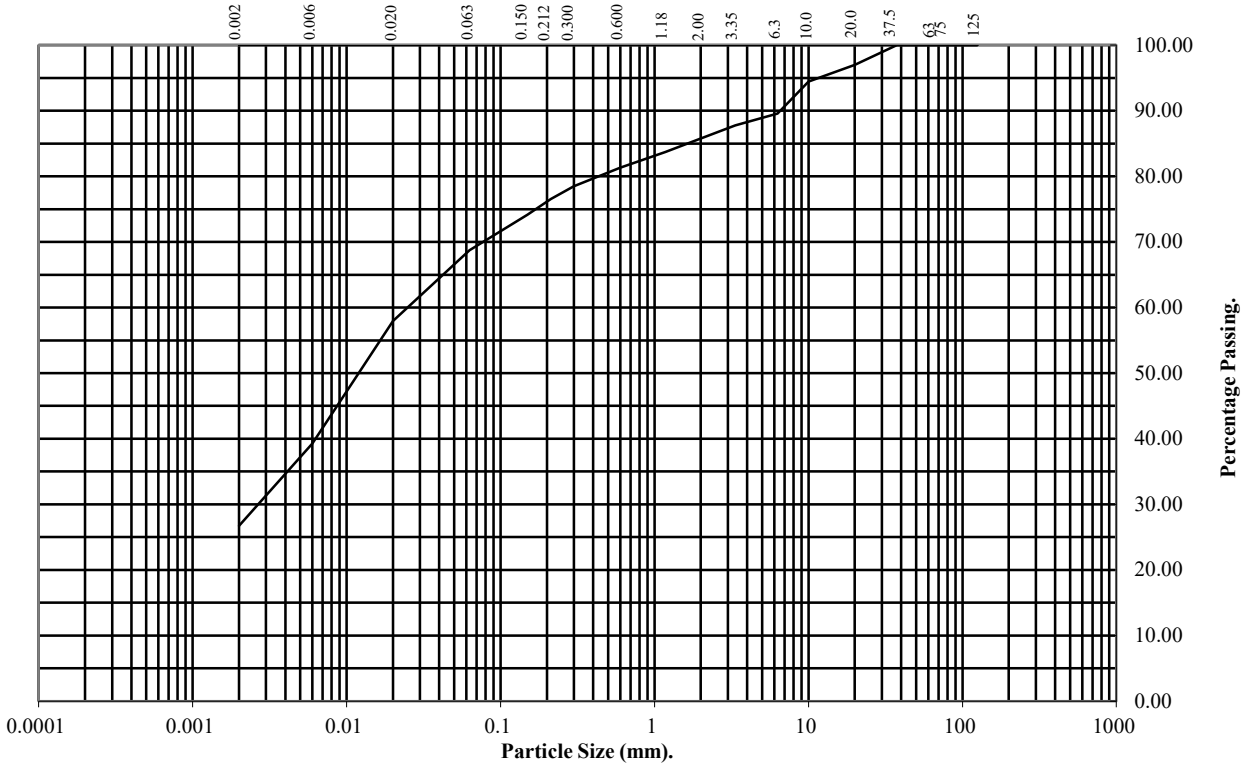
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH46**	**Top Depth (m):**	**0.70**
Sample Number:	**4**	**Base Depth(m):**	
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	97
10	94
6.3	90
3.35	88
2	86
1.18	84
0.6	81
0.3	78
0.212	77
0.15	74
0.063	69

Particle Diameter	Percentage Passing
0.02	58
0.006	39
0.002	27

Soil Fraction	Total Percentage
Cobbles	0
Gravel	14
Sand	17
Silt	42
Clay	27

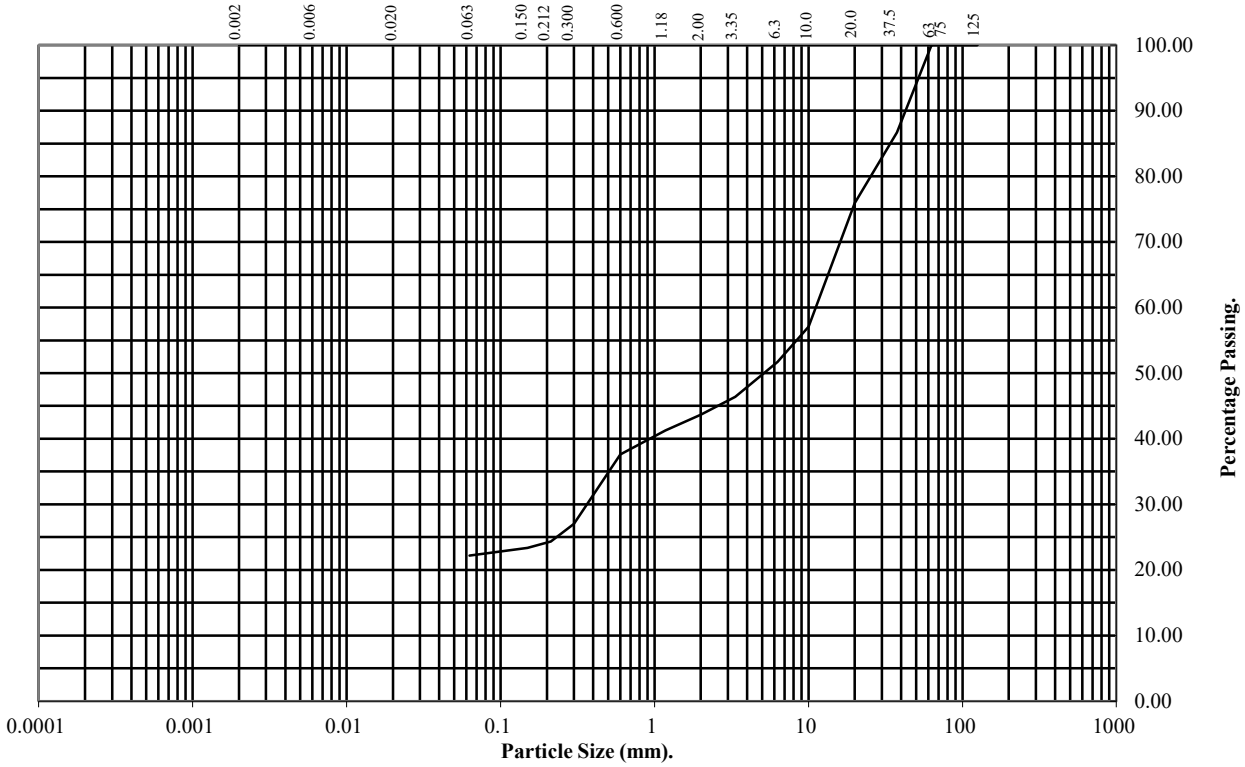
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH47**	**Top Depth (m):**	**0.70**
Sample Number:	**6**	**Base Depth(m):**	
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	87
20	76
10	57
6.3	52
3.35	46
2	44
1.18	41
0.6	38
0.3	27
0.212	24
0.15	23
0.063	22

Soil Fraction	Total Percentage
Cobbles	0
Gravel	56
Sand	22
Silt/Clay	22

Remarks:

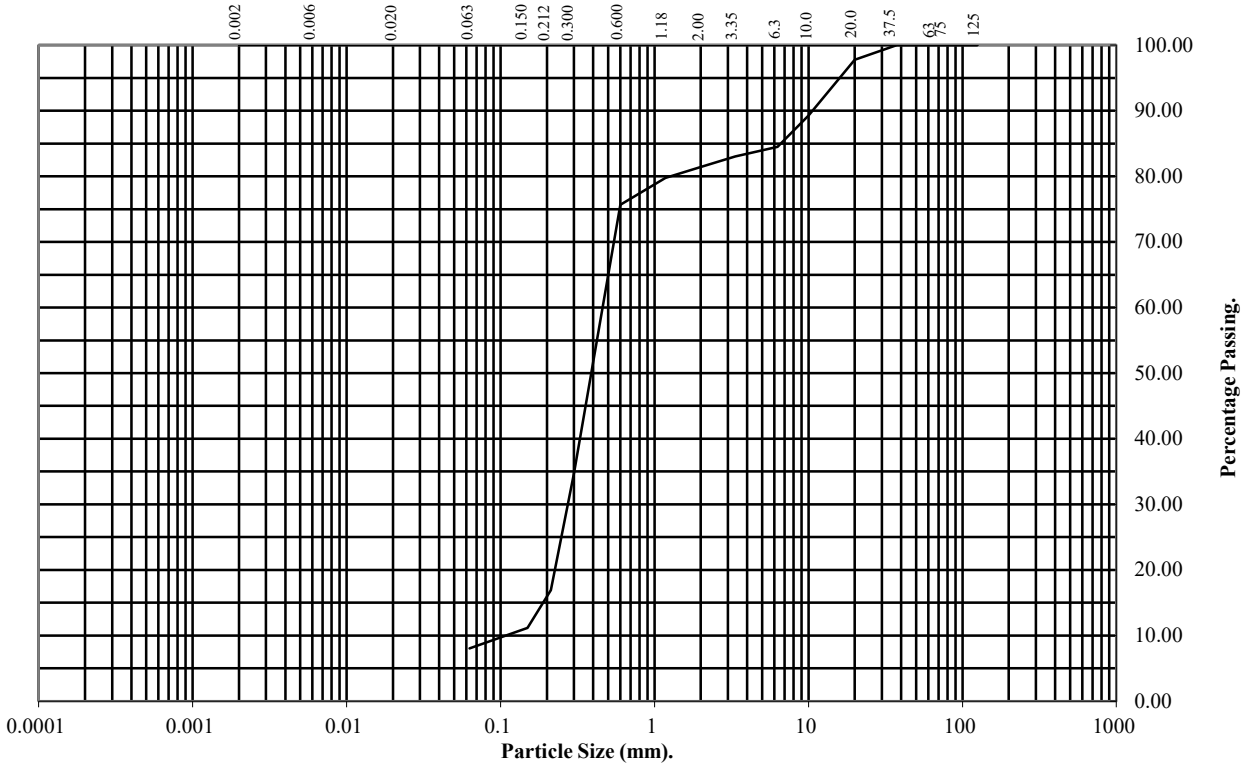
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH48**	**Top Depth (m):**	**1.80**
Sample Number:	**12**	**Base Depth(m):**	**3.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	98
10	89
6.3	85
3.35	83
2	81
1.18	80
0.6	76
0.3	35
0.212	17
0.15	11
0.063	8

Soil Fraction	Total Percentage
Cobbles	0
Gravel	19
Sand	73
Silt/Clay	8

Remarks:

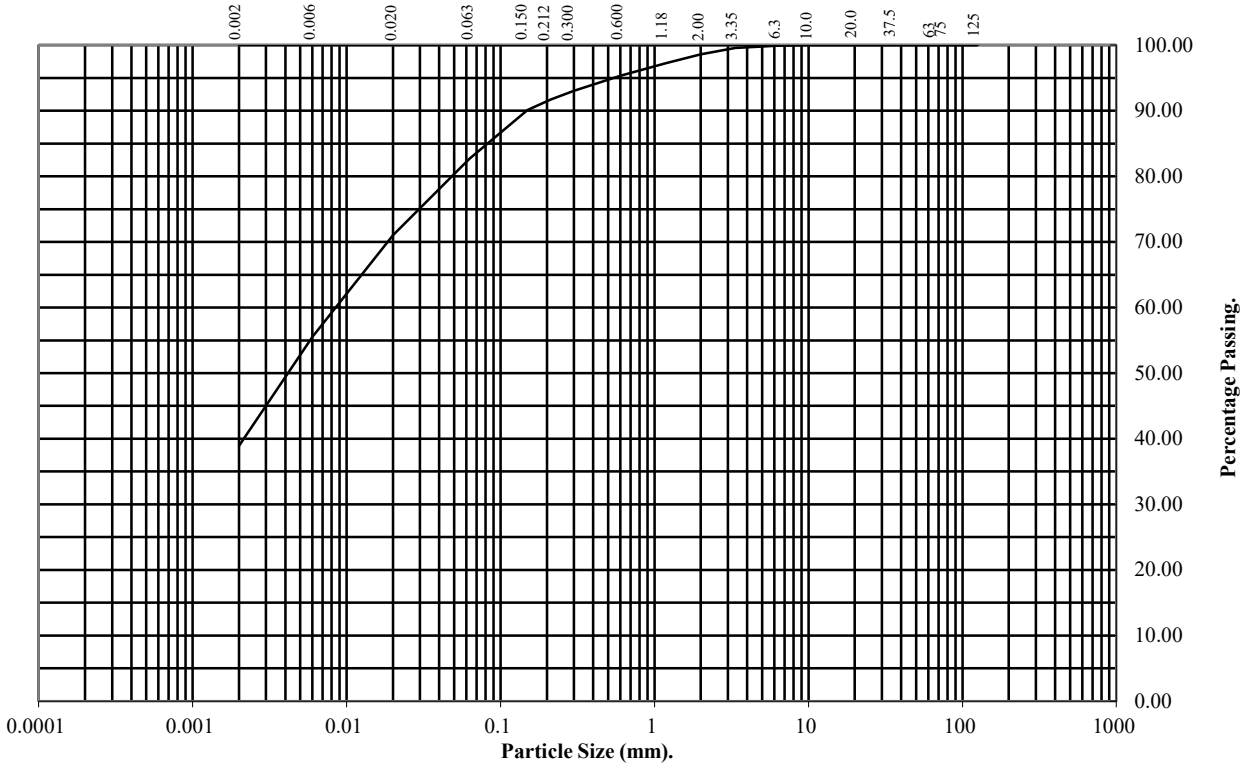
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH49**	**Top Depth (m):**	**0.80**
Sample Number:	**7**	**Base Depth(m):**	
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	99
1.18	97
0.6	95
0.3	93
0.212	92
0.15	90
0.063	83

Particle Diameter	Percentage Passing
0.02	71
0.006	56
0.002	39

Soil Fraction	Total Percentage
Cobbles	0
Gravel	1
Sand	16
Silt	44
Clay	39

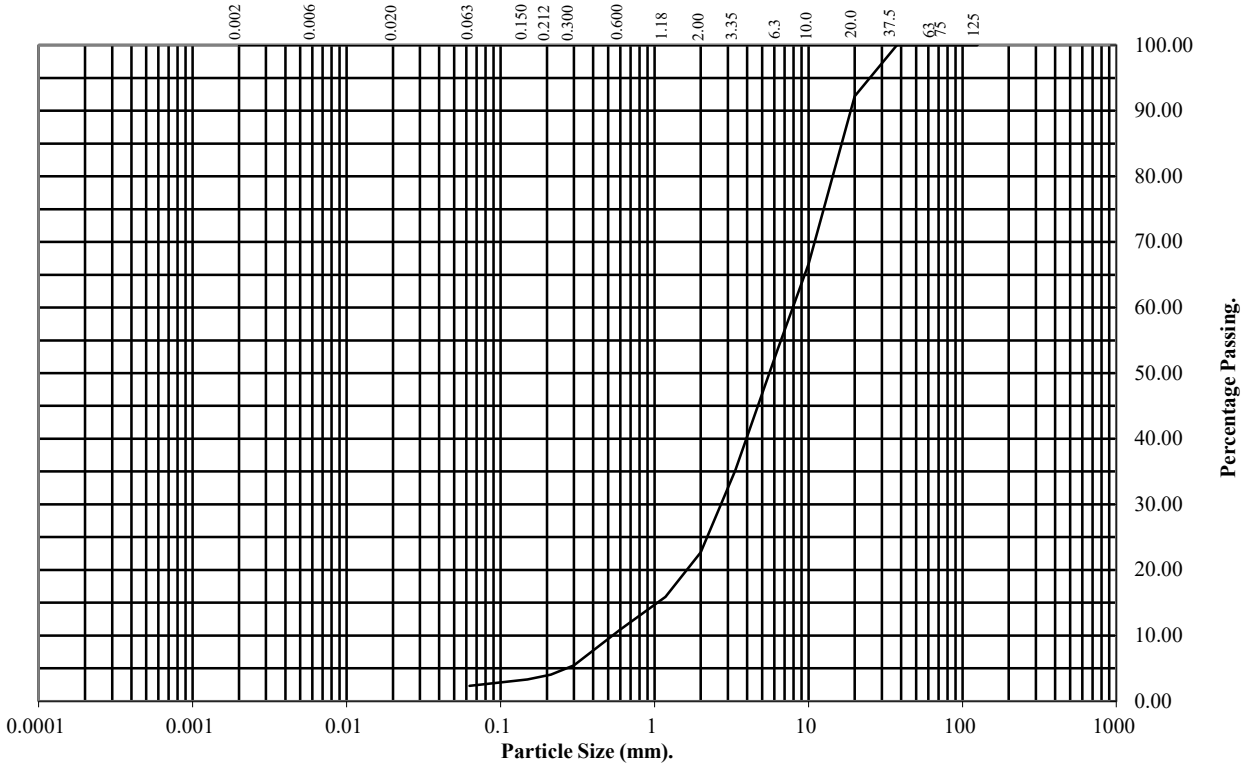
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH53**	**Top Depth (m):**	**4.50**
Sample Number:	**18**	**Base Depth(m):**	
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	92
10	67
6.3	54
3.35	35
2	23
1.18	16
0.6	11
0.3	5
0.212	4
0.15	3
0.063	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	77
Sand	21
Silt/Clay	2

Remarks:

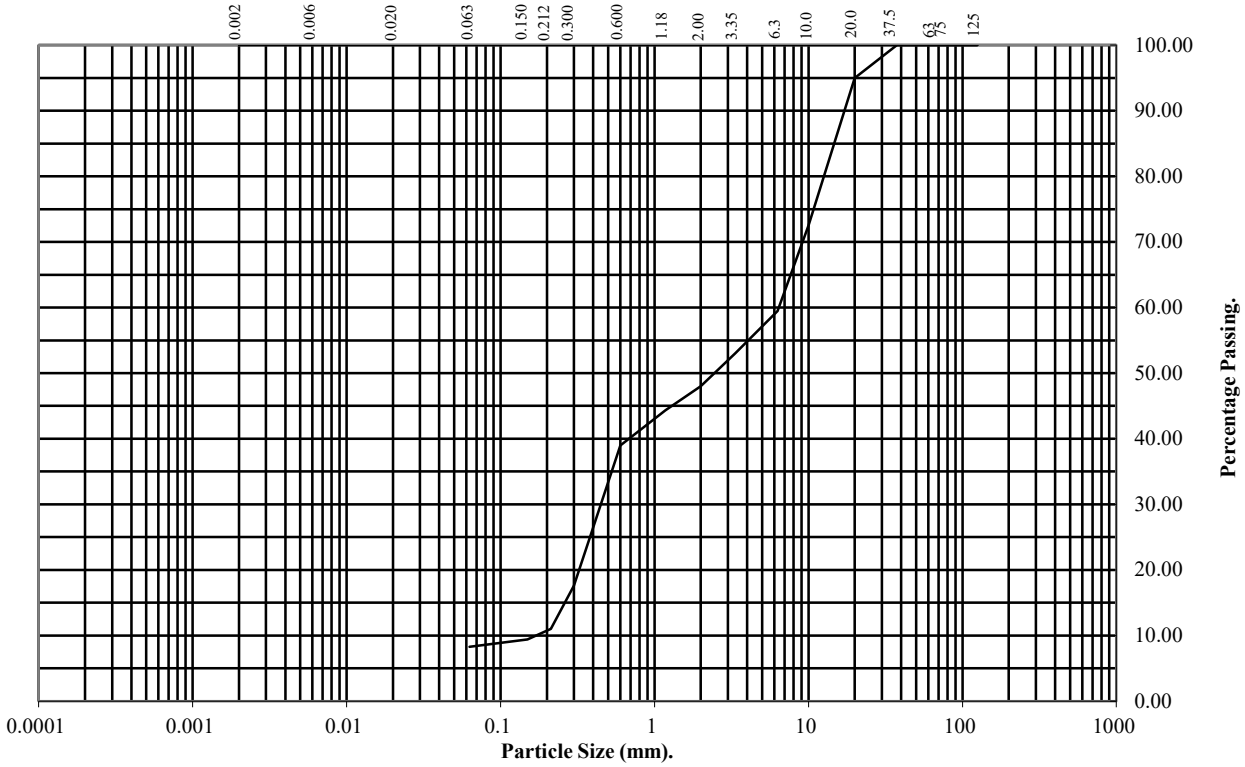
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH63**	**Top Depth (m):**	**1.00**
Sample Number:	**5**	**Base Depth(m):**	
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	95
10	73
6.3	59
3.35	53
2	48
1.18	44
0.6	39
0.3	18
0.212	11
0.15	9
0.063	8

Soil Fraction	Total Percentage
Cobbles	0
Gravel	52
Sand	40
Silt/Clay	8

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

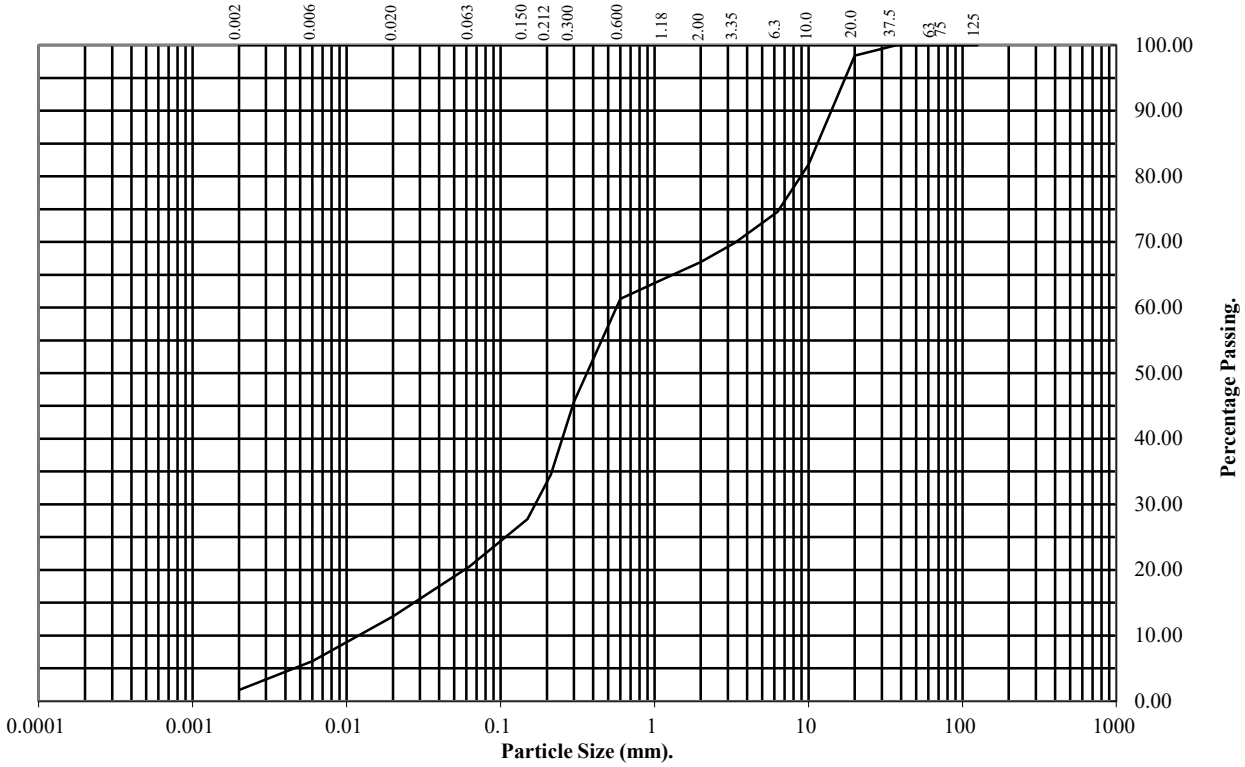
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: BH65 **Top Depth (m):** 1.00

Sample Number: 5 **Base Depth(m):**

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	98
10	82
6.3	75
3.35	70
2	67
1.18	64
0.6	61
0.3	46
0.212	35
0.15	28
0.063	21

Particle Diameter	Percentage Passing
0.02	13
0.006	6
0.002	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	33
Sand	46
Silt	19
Clay	2

Remarks:

See Summary of Soil Descriptions

2531

ANALYTICAL TEST REPORT

Contract no: 98043

Contract name: A46 Newark NNB

Client reference: PSL21/5123

Clients name: Professional Soils Laboratory

Clients address: 5/7 Hexthorpe Road
Doncaster
DN4 0AR

Samples received: 02 July 2021

Analysis started: 02 July 2021

Analysis completed: 08 July 2021

Report issued: 09 July 2021

Notes:
Opinions and interpretations expressed herein are outside the UKAS accreditation scope.
Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.
All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.
Methods, procedures and performance data are available on request.
Results reported herein relate only to the material supplied to the laboratory.
This report shall not be reproduced except in full, without prior written approval.
Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

Key:
U UKAS accredited test
M MCERTS & UKAS accredited test
$ Test carried out by an approved subcontractor
I/S Insufficient sample to carry out test
N/S Sample not suitable for testing

Approved by: [redacted]
Rachael Burton
Customer Support Squad Leader

Chemtech Environmental Limited

SOILS

Lab number			98043-1	98043-2
Sample id			BH63	BH63
Depth (m)			1.00	2.50
Date sampled			-	-
Test	**Method**	**Units**		
pH	CE004 [U]	units	7.7	7.5
Magnesium (2:1 water soluble)	CE061	mg/l Mg	12	11
Chloride (2:1 water soluble)	CE049 [U]	mg/l Cl	3.9	3.7
Nitrate (2:1 water soluble)	CE049 [U]	mg/l NO_3	2.6	6.2
Sulphate (2:1 water soluble)	CE061	mg/l SO_4	<10	29
Sulphate (total)	CE062	mg/kg SO_4	<100	520
Sulphur (total)	CE119	mg/kg S	<100	162
Sulphur (total)	CE119	% w/w S	<0.01	0.02

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE004	pH	Based on BS 1377, pH Meter	As received	U	-	units
CE061	Magnesium (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry		1	mg/l Mg
CE049	Chloride (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l Cl
CE049	Nitrate (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l NO_3
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry		10	mg/l SO_4
CE062	Sulphate (total)	Acid extraction, ICP-OES	Dry		100	mg/kg SO_4
CE119	Sulphur (total)	Acid extraction, ICP-OES	Dry		100	mg/kg S
CE119	Sulphur (total)	Acid extraction, ICP-OES	Dry		0.01	% w/w S

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
98043-1	BH63	1.00	Y	All (NSD)
98043-2	BH63	2.50	Y	All (NSD)

LABORATORY REPORT

4043

Contract Number: PSL21/5456

Report Date: 16 August 2021

Client's Reference: 784-B026948

Client Name: Tetra Tech
54 Hagley Road
Birmingham
B16 8PE

For the attention of: Nicholas Bool

Contract Title: A46 Newark NNB

Date Received: 6/7/2021
Date Commenced: 6/7/2021
Date Completed: 11/8/2021

Notes: Opinions and Interpretations are outside the UKAS Accreditation

Checked and Approved Signatories:

A Watkins (Director)	R Berriman (Quality Manager)	S Royle (Laboratory Manager)
[redacted]		
L Knight (Assistant Laboratory Manager)	S Eyre (Senior Technician)	T Watkins (Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AR
[redacted]

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH11	10	B	3.00		Reddish brown slightly gravelly very sandy CLAY.
BH11	15	D	5.50		Brown mottled grey slightly gravelly sandy CLAY.
BH11	12	D	4.00		Reddish brown slightly gravelly sandy CLAY.
BH11	17	D	8.00	8.10	Brown mottled grey slightly gravelly sandy CLAY.
BH32	15	B	4.50	5.50	Brown very gravelly slightly clayey very silty SAND.
BH33	18	B	7.50	8.00	Brown slightly gravelly sandy CLAY.
BH33	14	B	1.20	2.00	Brown very sandy silty GRAVEL.
BH34	13	D	5.40	5.50	Brown slightly gravelly slightly sandy CLAY.
BH34	17	D	12.00	12.10	Reddish brown slightly gravelly very sandy CLAY.
BH37	13	B	8.50	10.00	Brown sandy slightly silty GRAVEL.
BH37	8	B	2.50	3.50	Brown very sandy slightly silty GRAVEL.
BH37	9	D	4.20	4.30	Brown slightly gravelly sandy CLAY.
BH46	10	D	5.00	5.10	Brown mottled grey slightly sandy CLAY.
BH47	4	D	3.50	3.60	Dark brown slightly gravelly CLAY.
BH47	8	D	6.40	6.50	Brown slightly gravelly sandy CLAY.
BH49	7	D	4.00	4.10	Reddish brown weathered MUDSTONE.
BH54	5	B	1.50		Brown gravelly very sandy CLAY.
BH54	4	B	1.00		Brown gravelly very sandy CLAY.
BH54	7	B	3.50		Brown gravelly clayey silty SAND.

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH54	8	D	3.50		Brown gravelly silty SAND.
BH54	10	D	5.50		Reddish brown slightly gravelly sandy CLAY.
BH62	3	B	0.50		Brown slightly gravelly very sandy CLAY.
BH64	8	B	2.00		Brown gravelly very sandy CLAY.
BH66	6	B	2.00		Brown very sandy CLAY.
TP09	1	B	0.50		Brown slightly gravelly very sandy CLAY.
TP10	3	B	1.70	1.80	Brown slightly gravelly very sandy CLAY.
TP10	2	B	1.10		Brown slightly gravelly sandy CLAY.
TP32	3	B	2.50		Brown very gravelly slightly clayey silty SAND.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH11	10	B	3.00		19			36	18	18	72	Intermediate Plasticity CI
BH11	15	D	5.50		34			53	25	28	98	High Plasticity CH
BH11	12	D	4.00		22			47	22	25	93	Intermediate Plasticity CI
BH11	17	D	8.00	8.10	27			40	21	19	95	Intermediate Plasticity CI
BH32	15	B	4.50	5.50	7.8				NP			
BH33	18	B	7.50	8.00	28			54	25	29	91	High Plasticity CH
BH34	13	D	5.40	5.50	28			69	31	38	98	High Plasticity CH
BH34	17	D	12.00	12.10	17			32	17	15	95	Low Plasticity CL
BH37	8	B	2.50	3.50	4.3				NP			
BH37	9	D	4.20	4.30	31			45	21	24	97	Intermediate Plasticity CI
BH46	10	D	5.00	5.10	42			68	29	39	100	High Plasticity CH
BH47	4	D	3.50	3.60	40			84	35	49	97	Very High Plasticity CV
BH47	8	D	6.40	6.50	35			49	23	26	95	Intermediate Plasticity CI
BH49	7	D	4.00	4.10	12				NP			
BH54	5	B	1.50		11			28	13	15	70	Low Plasticity CL
BH54	8	D	3.50		9.4				NP			
BH54	10	D	5.50		32			42	22	20	98	Intermediate Plasticity CI
BH62	3	B	0.50		16			31	16	15	82	Low Plasticity CL
BH64	8	B	2.00		24			38	20	18	71	Intermediate Plasticity CI

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

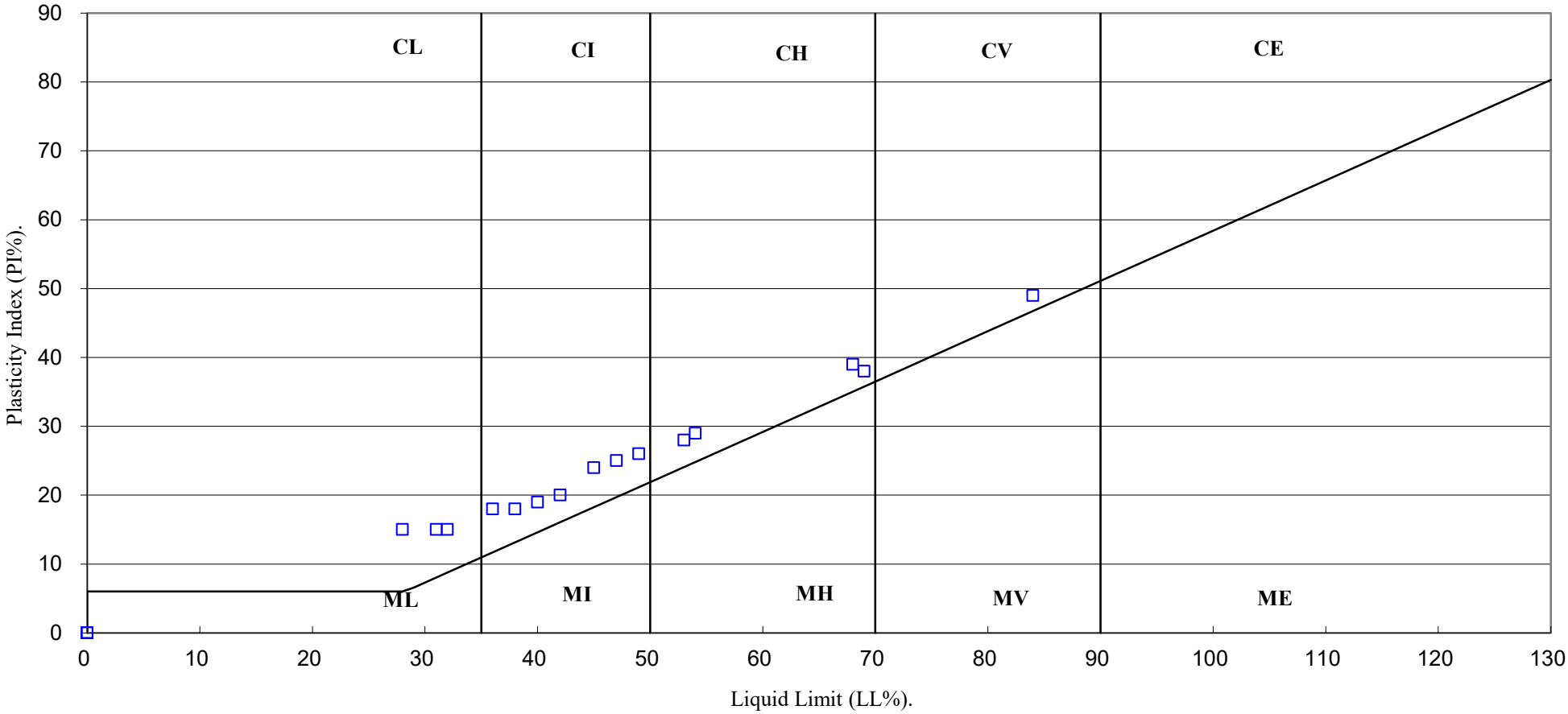
UKAS TESTING 4043

PSL Professional Soils Laboratory

A46 Newark NNB

Contract No:
PSL21/5456
Client Ref:
784-B026948

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL Professional Soils Laboratory	A46 Newark NNB	Contract No: PSL21/5456 Client Ref: 784-B026948

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH66	6	B	2.00		14			32	15	17	100	Low Plasticity CL
TP09	1	B	0.50		16			34	18	16	94	Low Plasticity CL
TP10	3	B	1.70	1.80	15			29	15	14	97	Low Plasticity CL
TP32	3	B	2.50		11				NP			

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL Professional Soils Laboratory

A46 Newark NNB

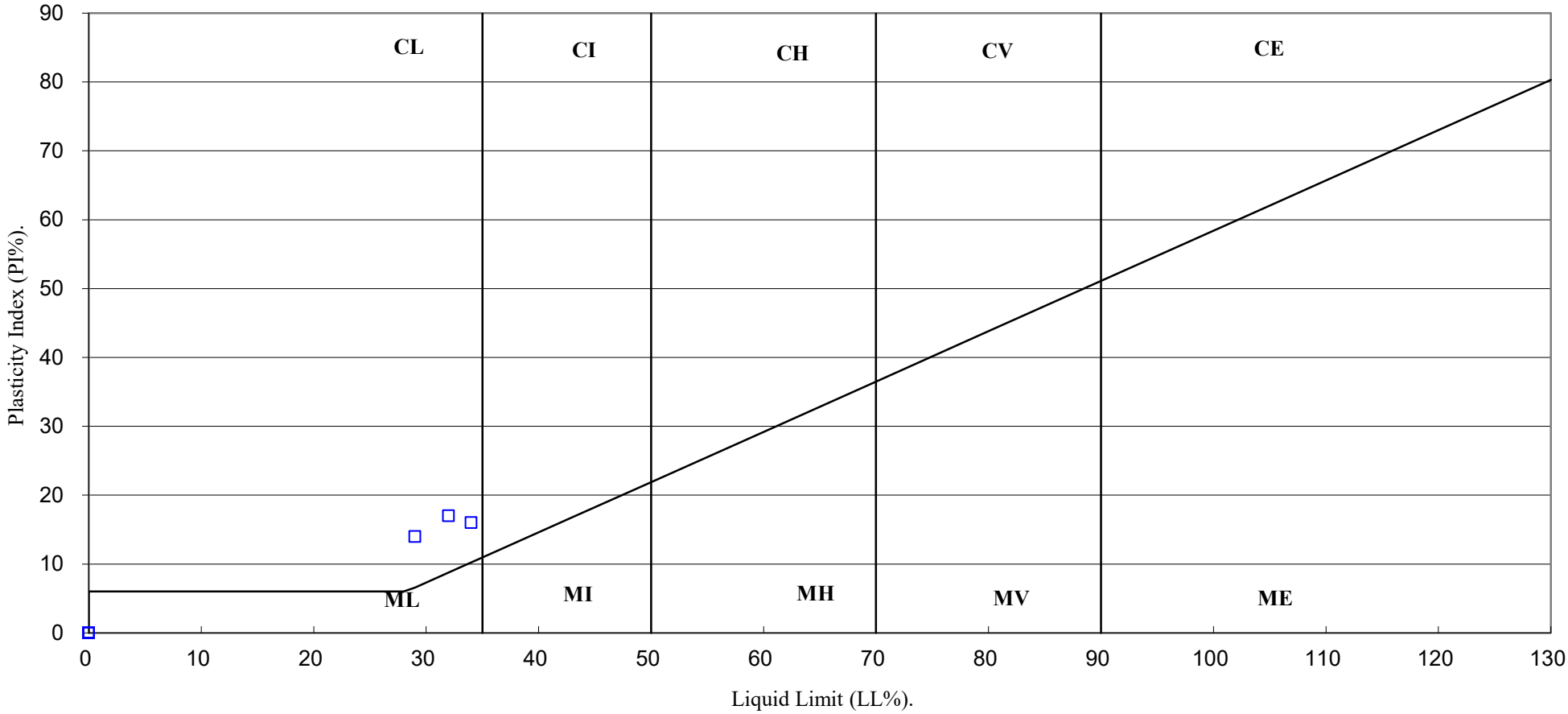
Contract No:

PSL21/5456

Client Ref:

784-B026948

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL Professional Soils Laboratory	A46 Newark NNB	Contract No: PSL21/5456 Client Ref: 784-B026948

PARTICLE SIZE DISTRIBUTION TEST

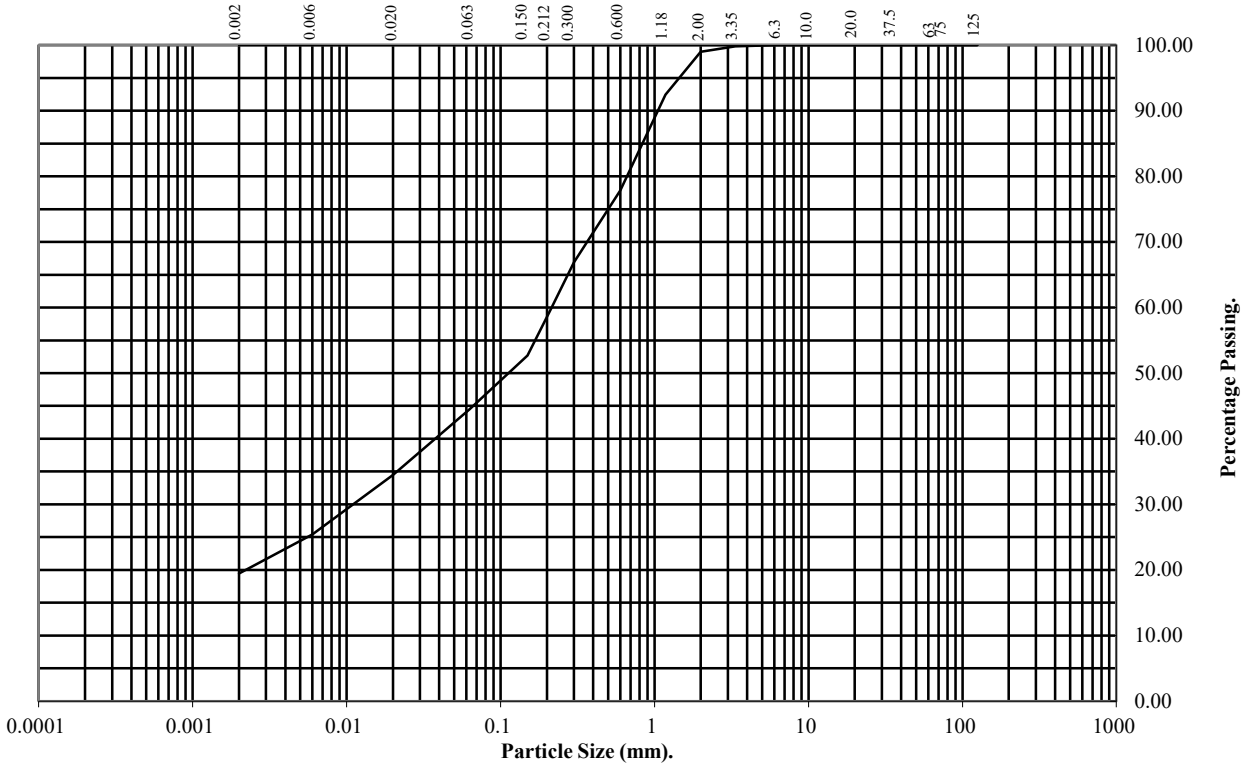
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: BH11 **Top Depth (m):** 3.00

Sample Number: 10 **Base Depth(m):**

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	99
1.18	92
0.6	78
0.3	67
0.212	60
0.15	53
0.063	44

Particle Diameter	Percentage Passing
0.02	34
0.006	25
0.002	19

Soil Fraction	Total Percentage
Cobbles	0
Gravel	1
Sand	55
Silt	25
Clay	19

Remarks:

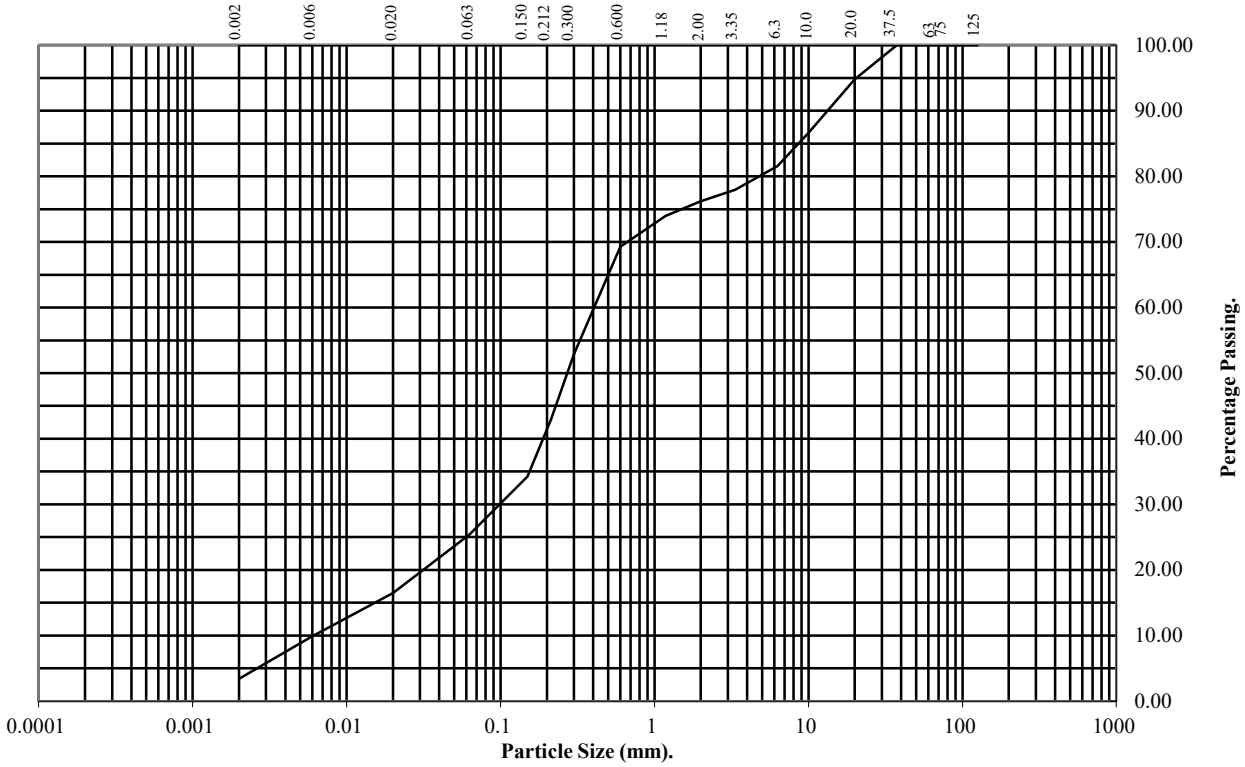
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH32**	**Top Depth (m):**	**4.50**
Sample Number:	**15**	**Base Depth(m):**	**5.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	95
10	87
6.3	82
3.35	78
2	76
1.18	74
0.6	69
0.3	53
0.212	43
0.15	34
0.063	25

Particle Diameter	Percentage Passing
0.02	16
0.006	10
0.002	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	24
Sand	51
Silt	22
Clay	3

Remarks:

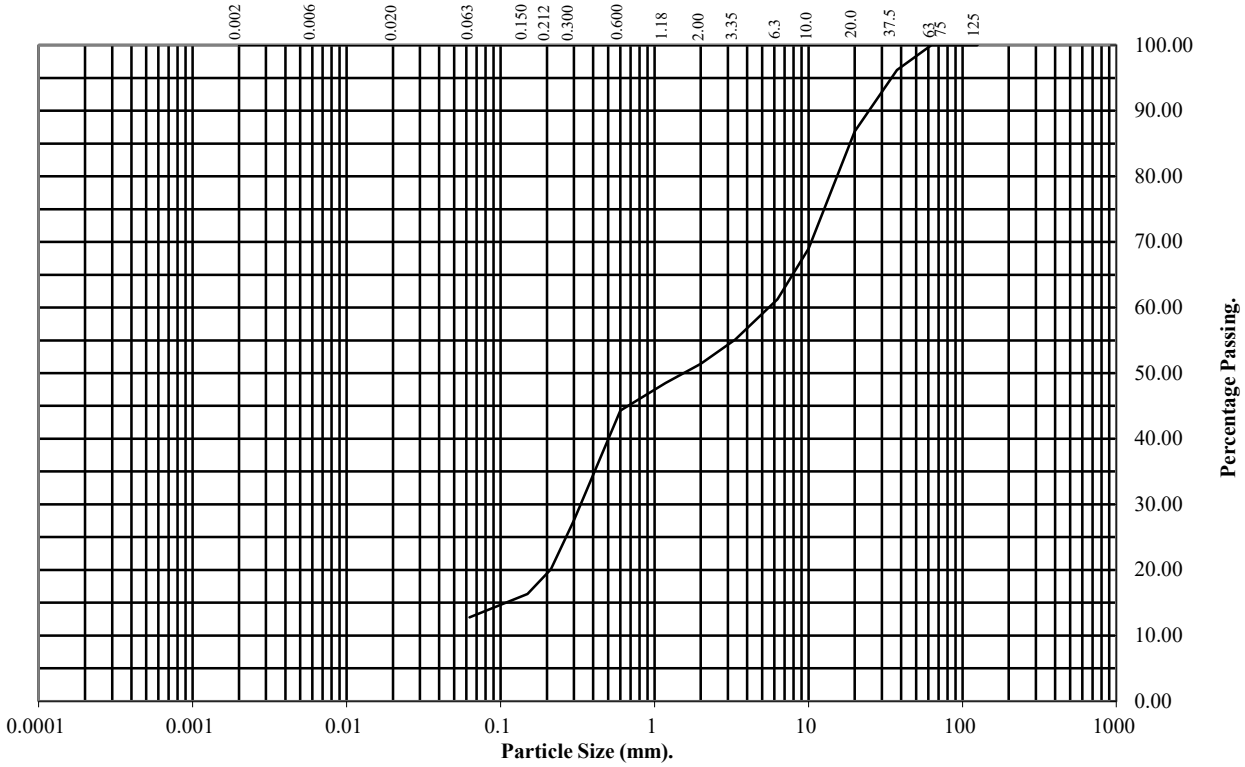
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH33**	**Top Depth (m):**	**1.20**
Sample Number:	**14**	**Base Depth(m):**	**2.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	96
20	87
10	69
6.3	61
3.35	55
2	51
1.18	48
0.6	44
0.3	28
0.212	20
0.15	16
0.063	13

Soil Fraction	Total Percentage
Cobbles	0
Gravel	49
Sand	38
Silt/Clay	13

Remarks:

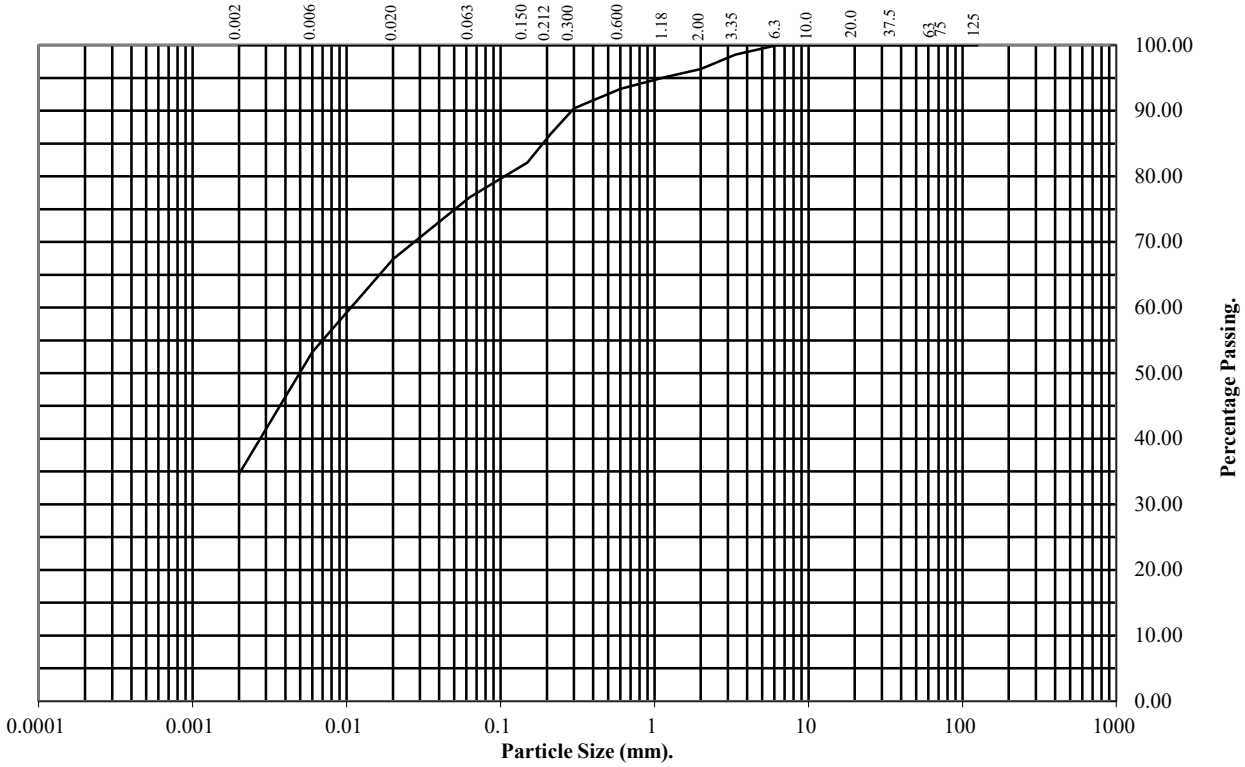
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH33**	**Top Depth (m):**	**7.50**
Sample Number:	**18**	**Base Depth(m):**	**8.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	99
2	96
1.18	95
0.6	93
0.3	90
0.212	87
0.15	82
0.063	77

Particle Diameter	Percentage Passing
0.02	67
0.006	53
0.002	35

Soil Fraction	Total Percentage
Cobbles	0
Gravel	4
Sand	19
Silt	42
Clay	35

Remarks:

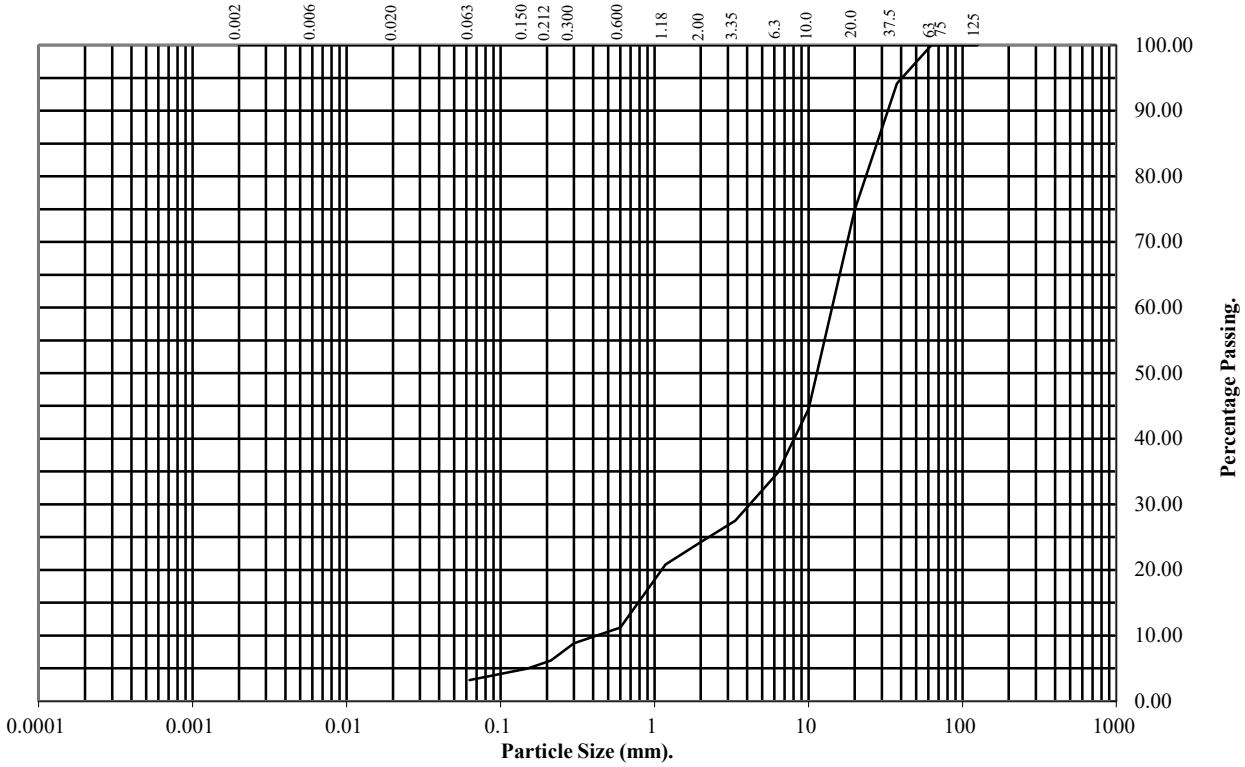
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH37**	**Top Depth (m):**	**2.50**
Sample Number:	**8**	**Base Depth(m):**	**3.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	94
20	75
10	45
6.3	35
3.35	27
2	24
1.18	21
0.6	11
0.3	9
0.212	6
0.15	5
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	76
Sand	21
Silt/Clay	3

Remarks:

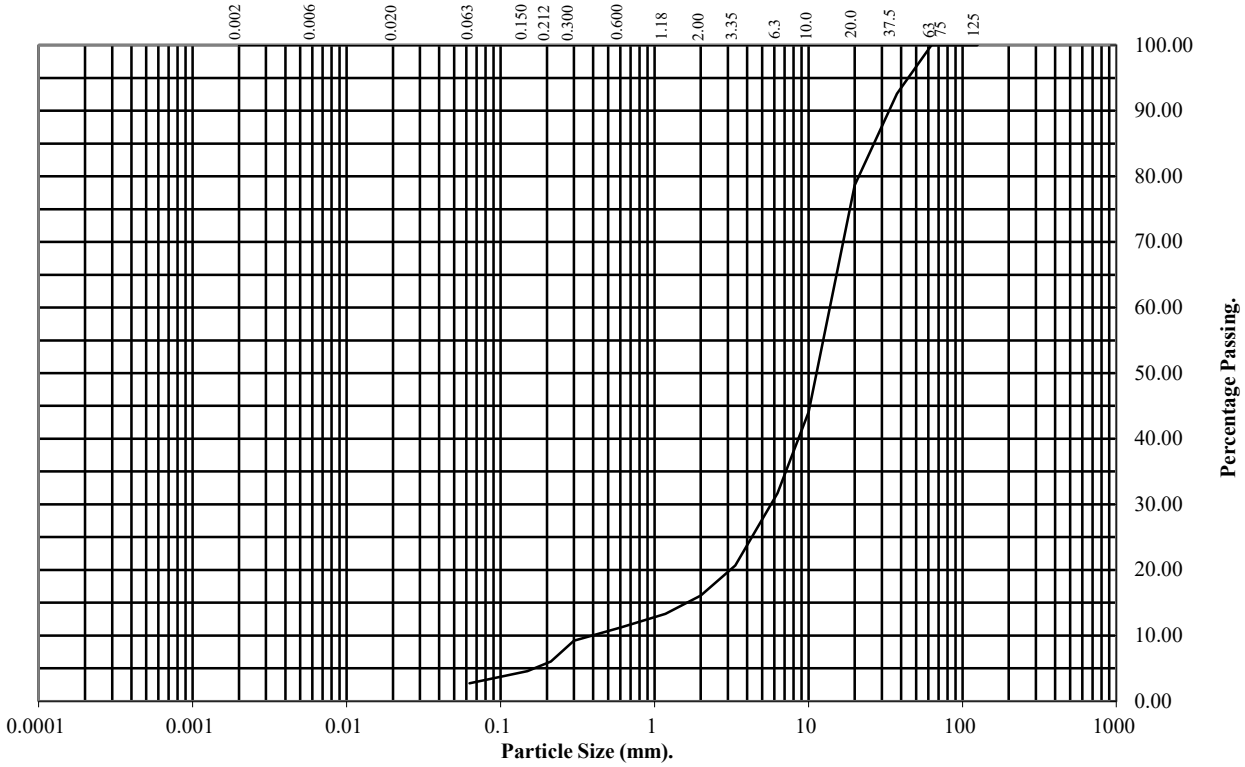
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH37**	**Top Depth (m):**	**8.50**
Sample Number:	**13**	**Base Depth(m):**	**10.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	93
20	79
10	44
6.3	32
3.35	21
2	16
1.18	13
0.6	11
0.3	9
0.212	6
0.15	5
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	84
Sand	13
Silt/Clay	3

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

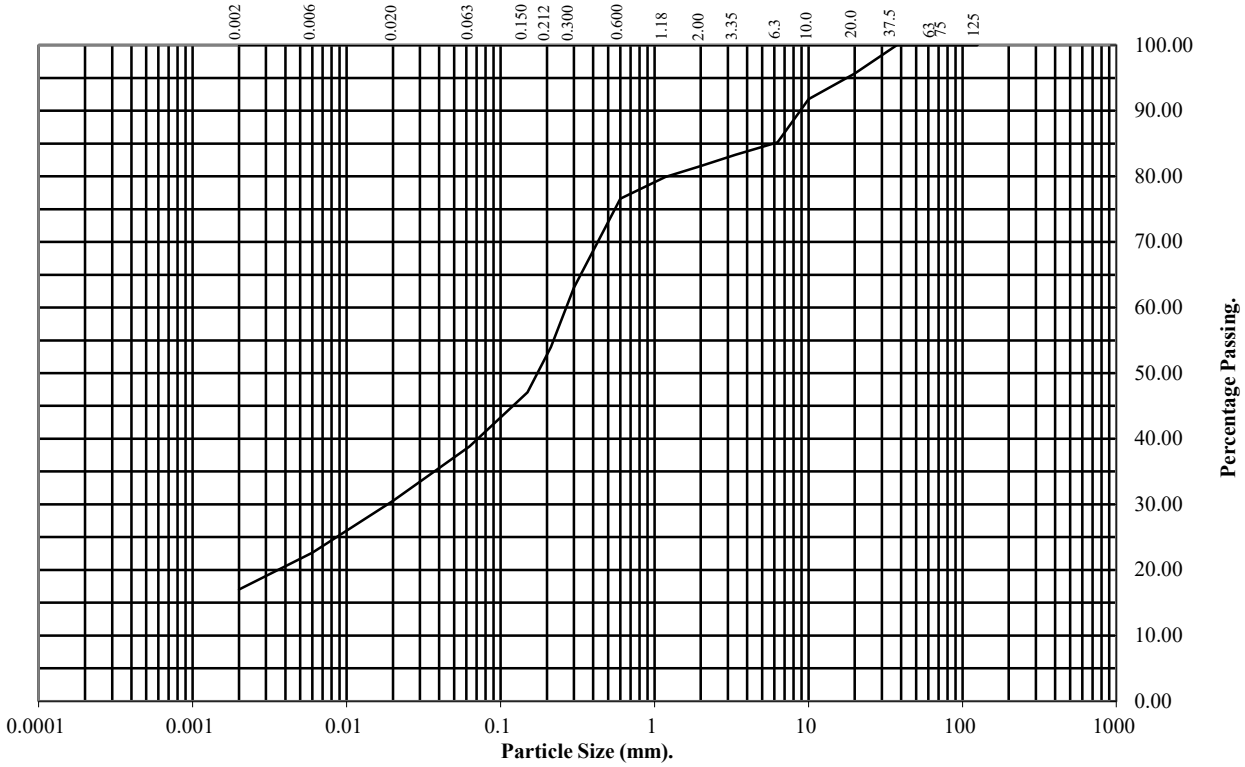
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: BH54 **Top Depth (m):** 1.50

Sample Number: 5 **Base Depth(m):**

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	96
10	92
6.3	85
3.35	83
2	82
1.18	80
0.6	77
0.3	63
0.212	54
0.15	47
0.063	39

Particle Diameter	Percentage Passing
0.02	31
0.006	23
0.002	17

Soil Fraction	Total Percentage
Cobbles	0
Gravel	18
Sand	43
Silt	22
Clay	17

Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

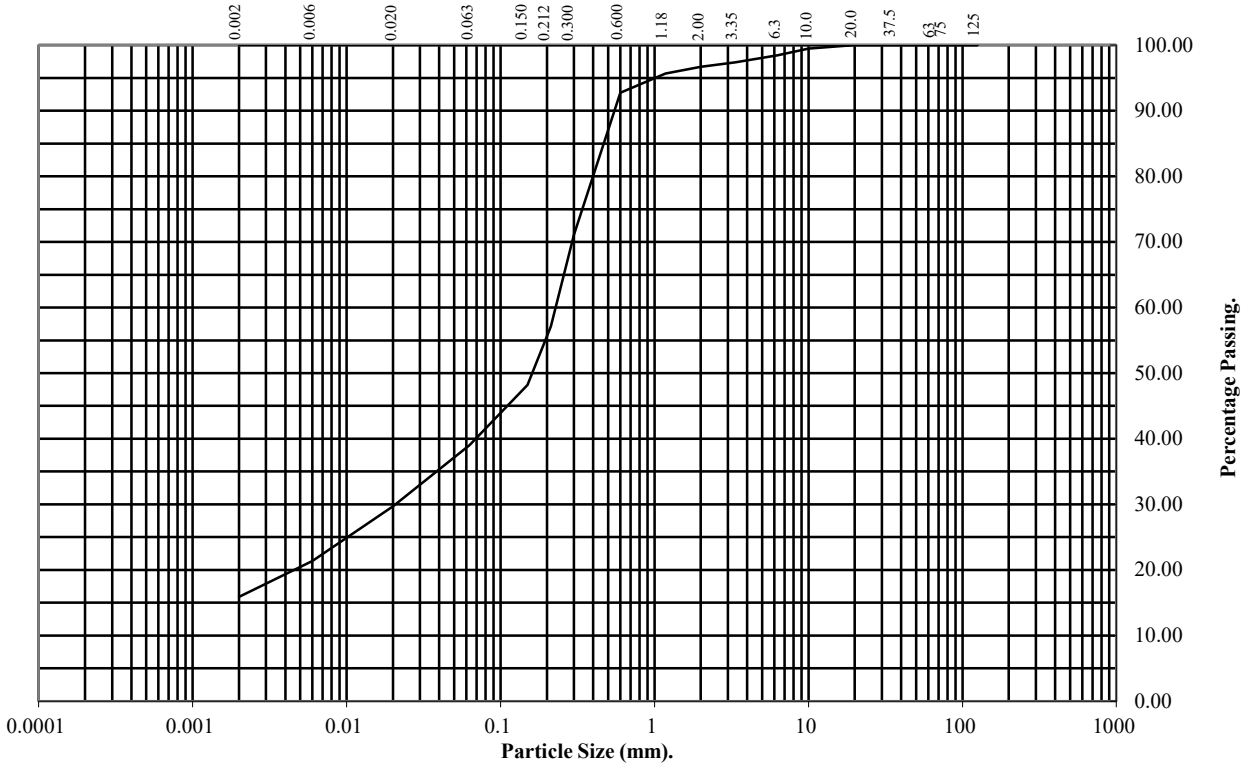
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: BH62 **Top Depth (m):** 0.50

Sample Number: 3 **Base Depth(m):**

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	98
3.35	97
2	97
1.18	96
0.6	93
0.3	71
0.212	57
0.15	48
0.063	39

Particle Diameter	Percentage Passing
0.02	30
0.006	21
0.002	16

Soil Fraction	Total Percentage
Cobbles	0
Gravel	3
Sand	58
Silt	23
Clay	16

Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

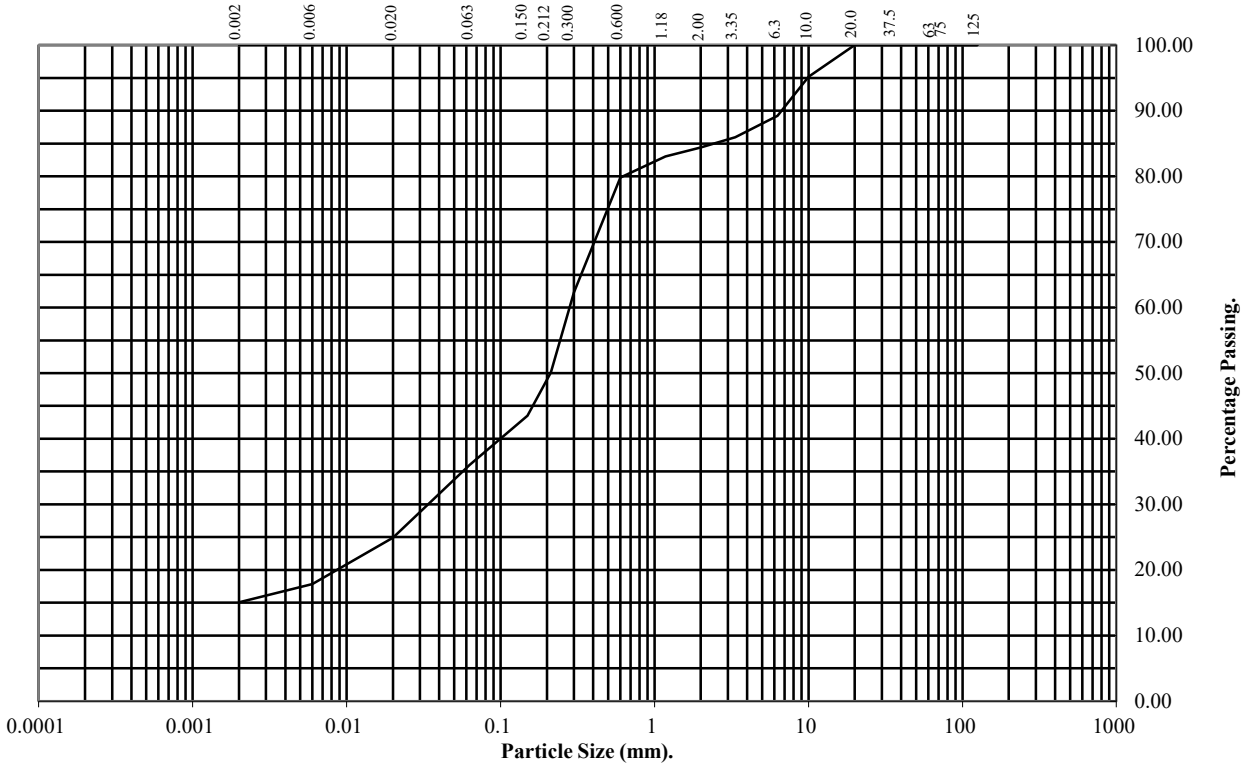
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: BH64 **Top Depth (m):** 2.00

Sample Number: 8 **Base Depth(m):**

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	95
6.3	89
3.35	86
2	84
1.18	83
0.6	80
0.3	62
0.212	50
0.15	44
0.063	36

Particle Diameter	Percentage Passing
0.02	25
0.006	18
0.002	15

Soil Fraction	Total Percentage
Cobbles	0
Gravel	16
Sand	48
Silt	21
Clay	15

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043	PSL Professional Soils Laboratory	A46 Newark NNB	Contract No: PSL21/5456
			Client Ref: 784-B026948

PARTICLE SIZE DISTRIBUTION TEST

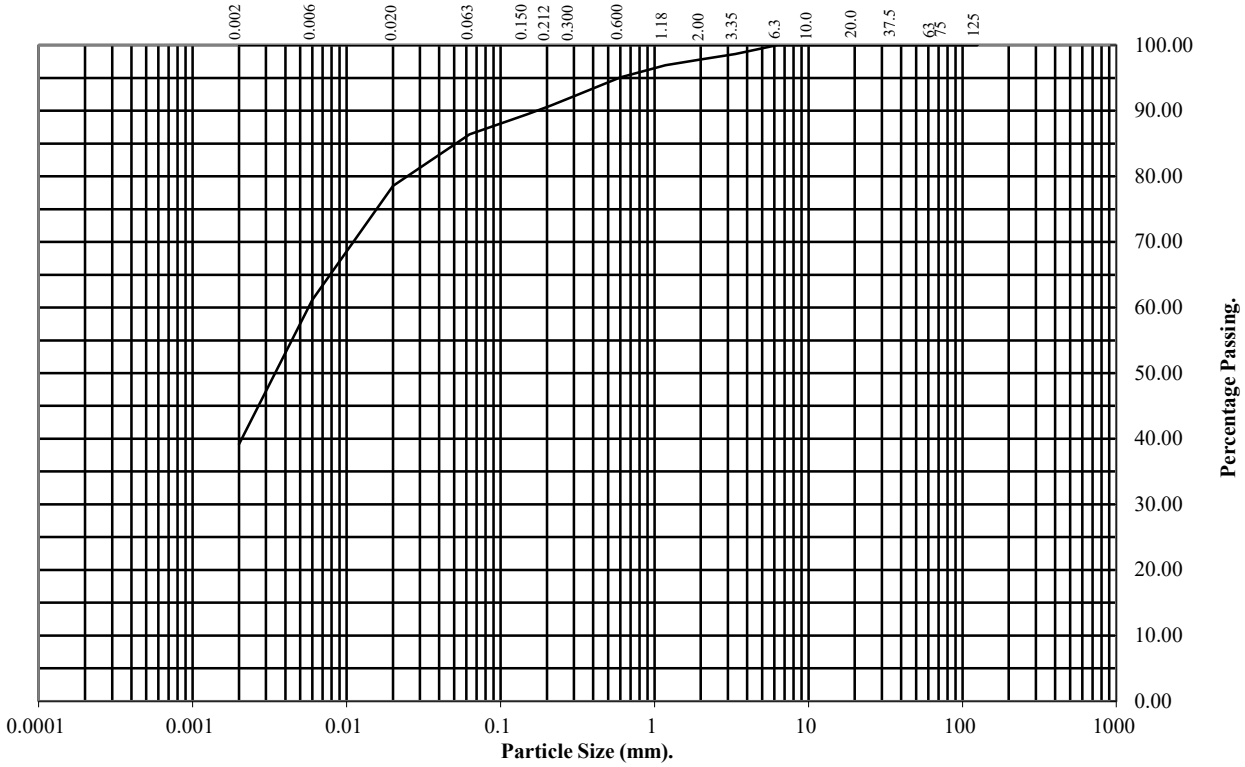
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: TP10 **Top Depth (m):** 1.10

Sample Number: 2 **Base Depth(m):**

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	99
2	98
1.18	97
0.6	95
0.3	92
0.212	91
0.15	90
0.063	86

Particle Diameter	Percentage Passing
0.02	79
0.006	61
0.002	39

Soil Fraction	Total Percentage
Cobbles	0
Gravel	2
Sand	12
Silt	47
Clay	39

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

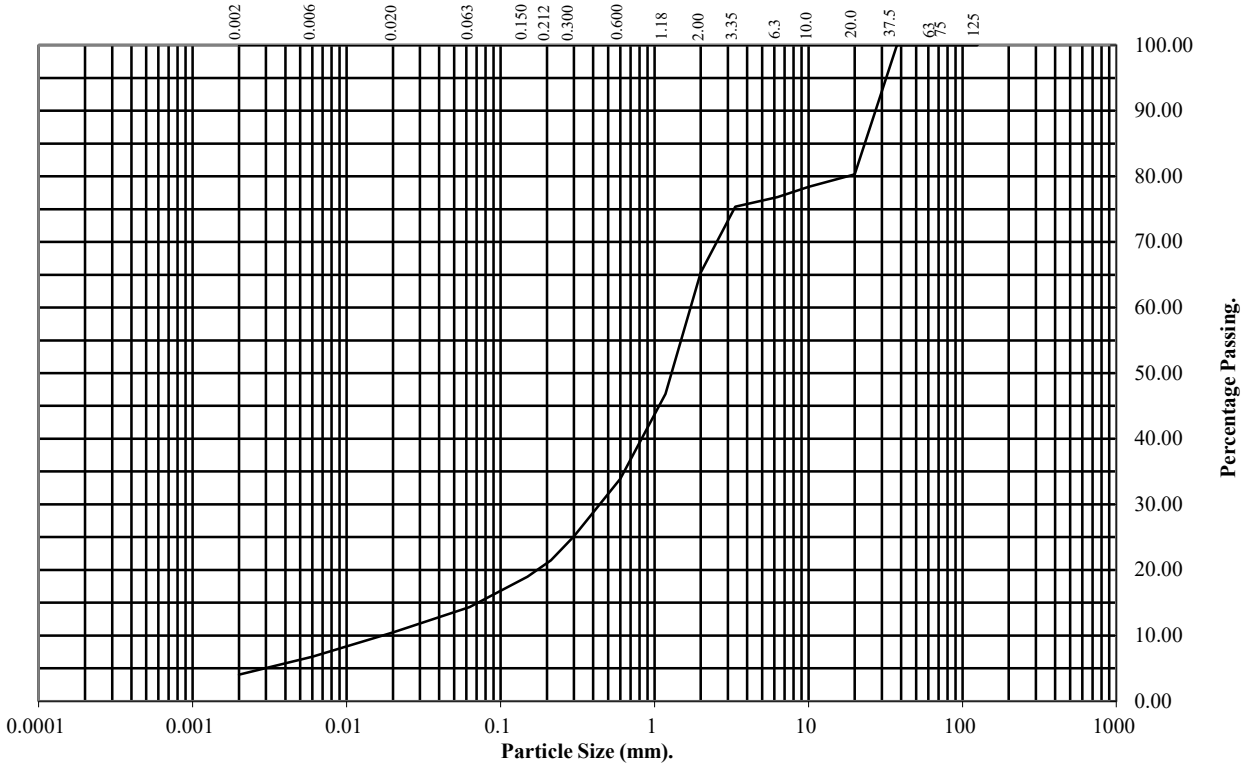
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: TP32 **Top Depth (m):** 2.50

Sample Number: 3 **Base Depth(m):**

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	80
10	78
6.3	77
3.35	75
2	65
1.18	47
0.6	34
0.3	25
0.212	21
0.15	19
0.063	14

Particle Diameter	Percentage Passing
0.02	10
0.006	7
0.002	4

Soil Fraction	Total Percentage
Cobbles	0
Gravel	35
Sand	51
Silt	10
Clay	4

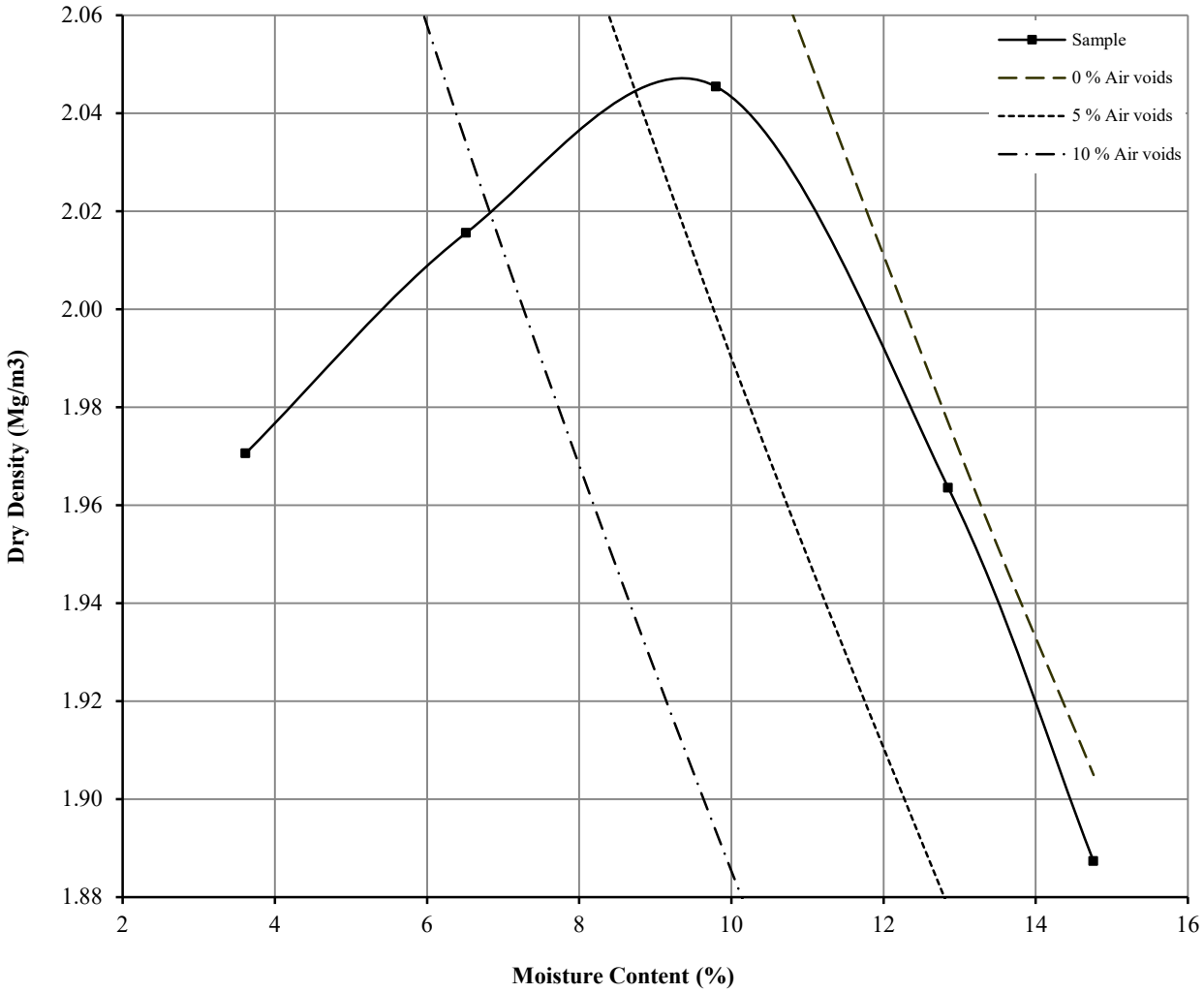
Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043	PSL Professional Soils Laboratory	A46 Newark NNB	Contract No: PSL21/5456 Client Ref: 784-B026948

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**BH54**	**Top Depth (m) :**	**1.00**
Sample Number:	**4**	**Base Depth (m) :**	
Sample Type:	**B**		

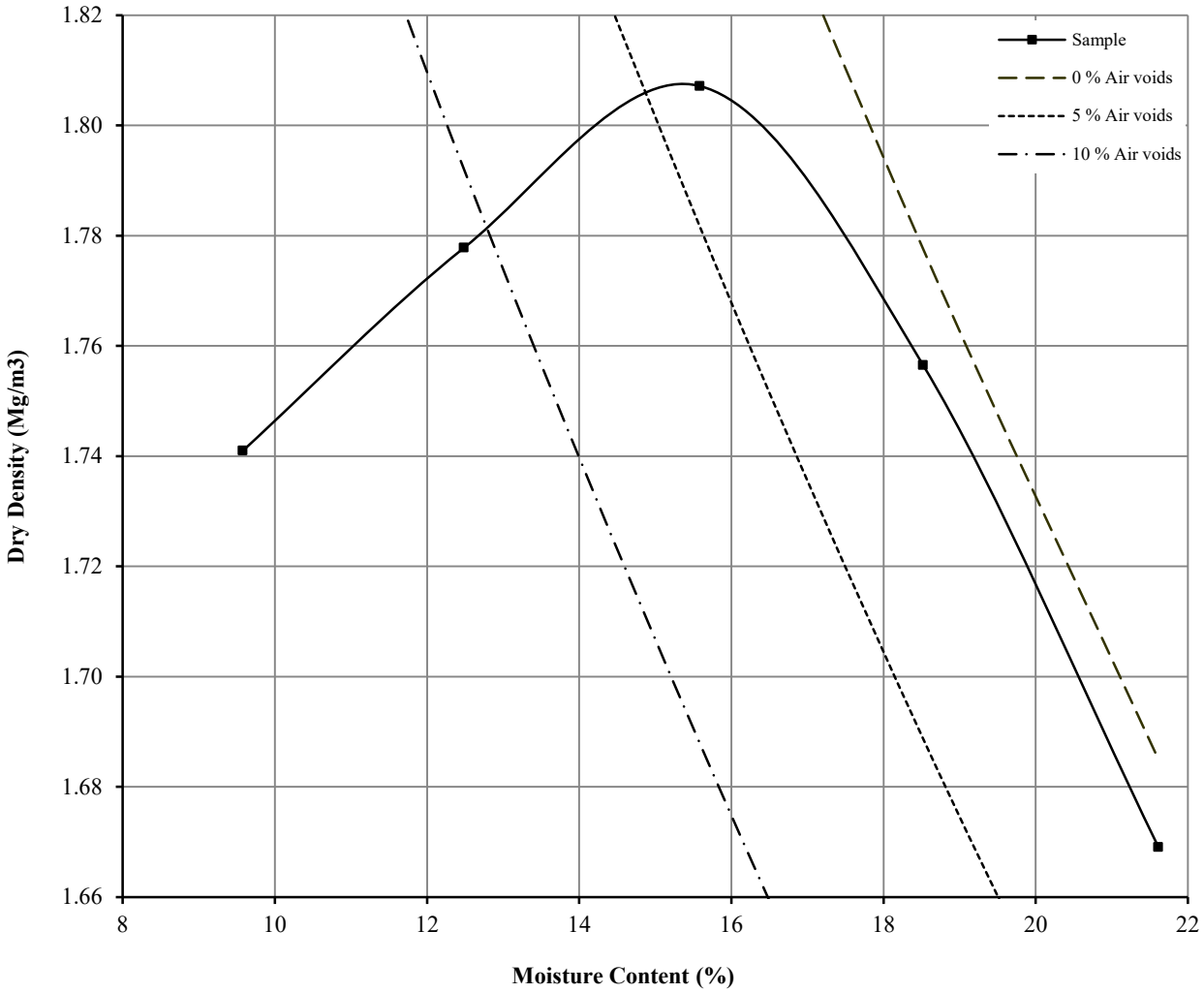


Initial Moisture Content:		9.8	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.65	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		2.05	Material Retained on 20.0 mm Test Sieve (%):		4
Optimum Moisture Content (%):		10			
Remarks See summary of soil descriptions					

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**TP09**	**Top Depth (m) :**	**0.50**
Sample Number:	**1**	**Base Depth (m) :**	
Sample Type:	**B**		



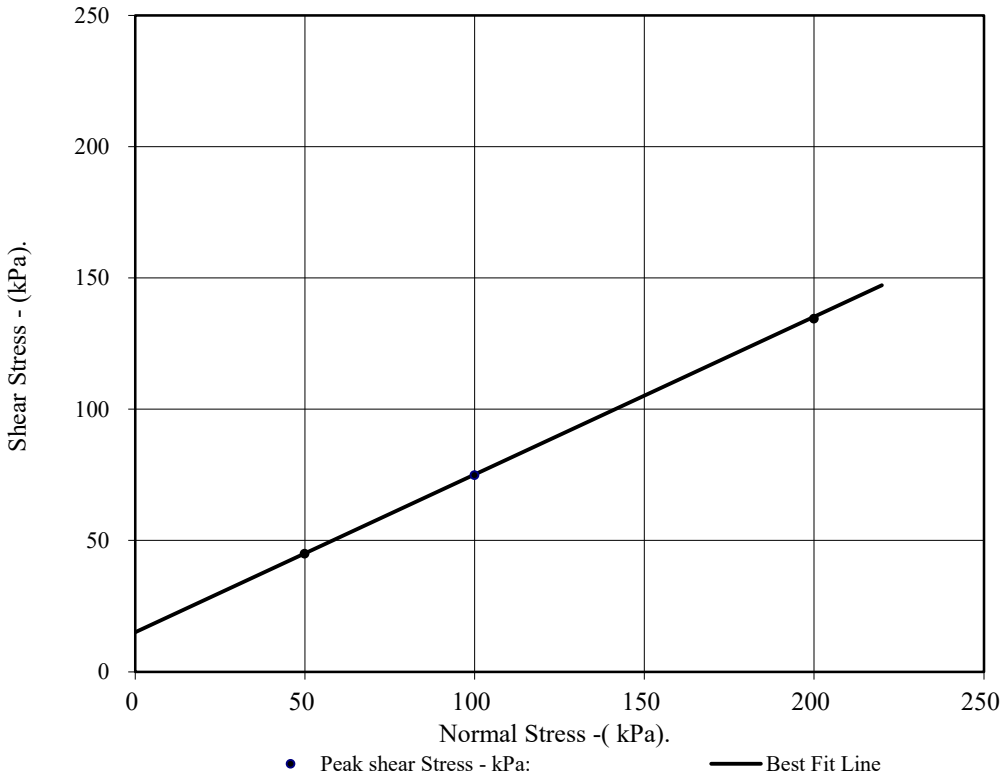
Initial Moisture Content:		16	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.65	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.81	Material Retained on 20.0 mm Test Sieve (%):		3
Optimum Moisture Content (%):		16			
Remarks See summary of soil descriptions					

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH54**		Top Depth:	**3.50**	
Sample Number:	**7**		Base Depth:		
Sample Conditions:	Submerged		Sample Type	**B**	
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**		
Sample Preparation:	Material tested passing 2mm sieve Remoulded using 2.5kg effort				
Sample Description:	**See summary of soil descriptions**				

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	20.05	20.05	20.05
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	20	20	20
Bulk Density - Mg/m3:	2.05	2.05	2.05
Dry Density - Mg/m3:	1.71	1.71	1.71
Voids Ratio:	0.554	0.551	0.553
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	19.27	18.77	18.39
Shearing Stage			
Rate of Strain (mm/min)	0.091	0.091	0.091
Displacement at peak shear stress (mm)	4.00	4.00	4.00
Peak shear Stress - kPa:	45	75	134
Final Consolidated Conditions			
Moisture Content - %:	28	27	26
Bulk Density - Mg/m3:	2.13	2.19	2.23
Dry Density - Mg/m3:	1.67	1.72	1.76
Peak			
Angle of Shearing Resistance:(~~θ~~)	**31**		
Effective Cohesion - kPa:	**15**		

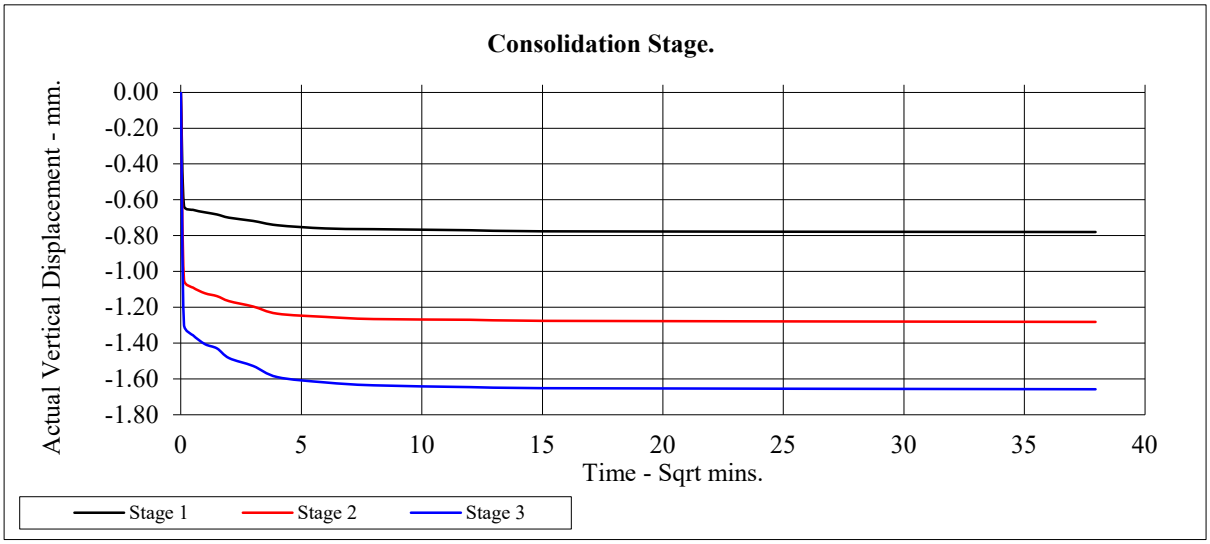


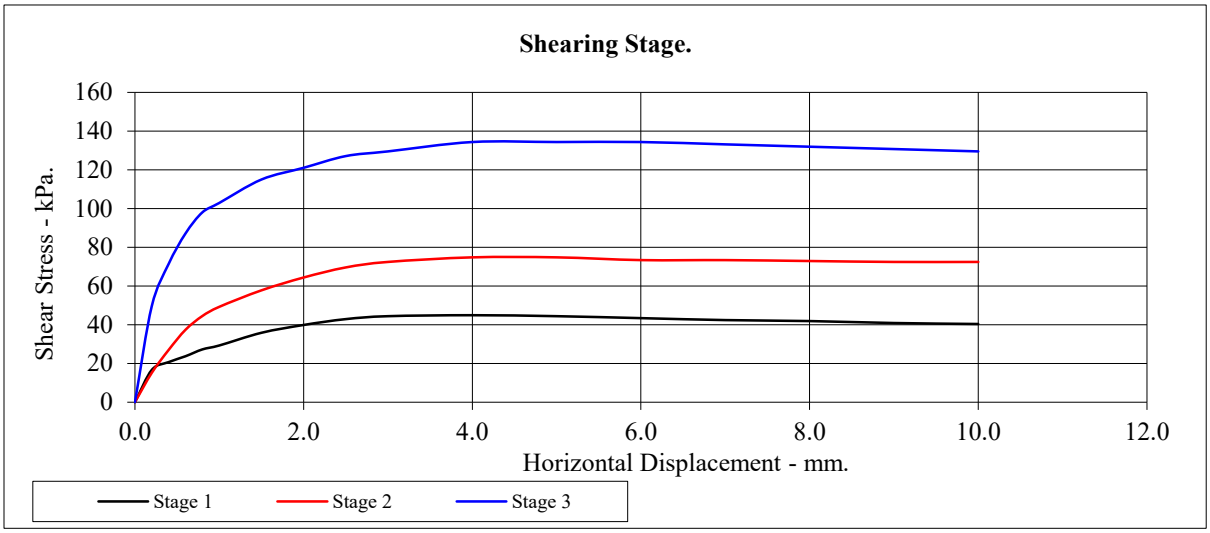
UKAS TESTING 4043	PSL Professional Soils Laboratory	**A46 Newark NNB**	**Contract No:** PSL21/5456 **Client Ref:** 784-B026948

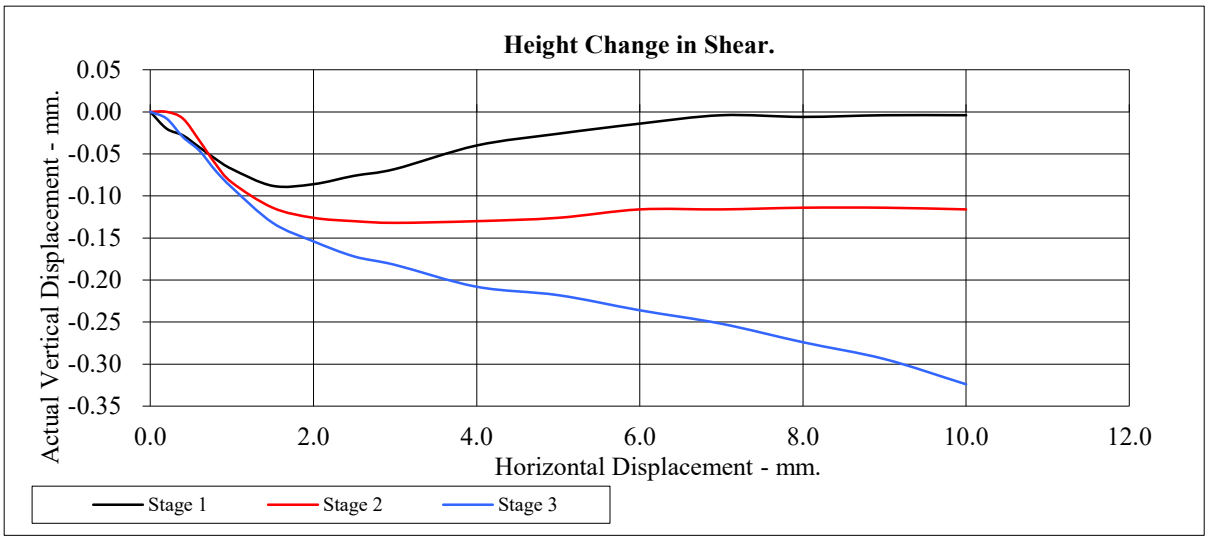
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH54**	Top Depth:	**3.50**
Sample Number:	**7**	Base Depth:	







DETERMINATION OF UNCONFINED COMPRESSIVE STRENGTH

ISRM Suggested Methods, pp 111 –116, 1981.

Hole Number	Sample Number	Sample Type	Top Depth (m)	Base Depth (m)	Sample Diameter (mm)	Sample Length (mm)	Height Ratio	Initial Mass (g)	Bulk Density (Mg/m)	Moisture Content (%)	Dry Density (Mg/m)	Load Failure (kN)	UCS (MPa)	Failure Mode	Date Tested	Remarks
BH49	12	C	9.40	9.55	84	150	1.8	2038	2.45	11	2.21	15.5	2.8	Brittle	09/08/21	

PSL Professional Soils Laboratory	A46 Newark NNB	Contract No:
		PSL21/5456
		Client Ref:
		784-B026948

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		Area	D_e^2	D_e	Failure Load (P)		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH11	23.45	27	A	Perp	84	26	2184	2780.76	52.73	-	0.80	0.29	1.024	0.29	Valid	
BH11	11.00	19	A	Perp	105	42	4410	5614.99	74.93	-	1.91	0.34	1.200	0.41	Valid	
BH11	16.75	23	A	Perp	84	59	4956	6310.18	79.44	-	0.51	0.08	1.232	0.10	Valid	
BH11	12.00	20	A	Perp	104	67	6968	8871.93	94.19	-	2.41	0.27	1.330	0.36	Valid	
BH47	9.70	10	A	Perp	85	27	2295	2922.08	54.06	-	0.90	0.31	1.036	0.32	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular

UKAS TESTING 4043

PSL Professional Soils Laboratory

A46 Newark NNB

Contract No:
PSL21/5456
Client Ref:
784-B026948

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		D_e^2	D_e	Failure Load		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	L	D		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH11	23.45	27	D	Par	-	84	7056	84.00	-	0.24	0.034	1.263	0.04	Valid	
BH11	11.00	19	D	Par	-	105	11025	105.00	-	2.79	0.253	1.396	0.35	Valid	
BH11	16.75	23	D	Par	-	84	7056	84.00	-	0.54	0.077	1.263	0.10	Valid	
BH11	12.00	20	D	Par	-	104	10816	104.00	-	1.00	0.092	1.390	0.13	Valid	
BH47	9.70	10	D	Par	-	85	7225	85.00	-	0.62	0.086	1.270	0.11	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

UKAS TESTING 4043	PSL Professional Soils Laboratory	A46 Newark NNB	Contract No: PSL21/5456 Client Ref: 784-B026948

2531

ANALYTICAL TEST REPORT

Contract no: 99147

Contract name: A46 Newark NNB

Client reference: PSL21/5456

Clients name: Professional Soils Laboratory

Clients address: 5/7 Hexthorpe Road
Doncaster
DN4 0AR

Samples received: 05 August 2021

Analysis started: 05 August 2021

Analysis completed: 11 August 2021

Report issued: 11 August 2021

Notes:
Opinions and interpretations expressed herein are outside the UKAS accreditation scope.
Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.
All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.
Methods, procedures and performance data are available on request.
Results reported herein relate only to the material supplied to the laboratory.
This report shall not be reproduced except in full, without prior written approval.
Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

Key:
U UKAS accredited test
M MCERTS & UKAS accredited test
$ Test carried out by an approved subcontractor
I/S Insufficient sample to carry out test
N/S Sample not suitable for testing

Approved by: [redacted]
Rachael Burton
Customer Support Squad Leader

Chemtech Environmental Limited

SOILS

Lab number			99147-1	99147-2	99147-3	99147-4	99147-5	99147-6
Sample id			BH11	BH11	BH33	BH37	BH37	BH47
Depth (m)			10.30-10.40	19.00-19.30	8.00-9.00	4.70-4.80	8.50-10.00	4.20-4.30
Date sampled			01/06/2021	01/06/2021	03/06/2021	01/06/2021	01/06/2021	03/06/2021
Test	**Method**	**Units**						
pH	CE004 [U]	units	7.9	8.3	-	7.5	7.4	-
Magnesium (2:1 water soluble)	CE061	mg/l Mg	82	54	-	6.9	25	-
Chloride (2:1 water soluble)	CE049 [U]	mg/l Cl	15	107	-	70	13	-
Nitrate (2:1 water soluble)	CE049 [U]	mg/l NO_3	398	21	-	2.5	<1	-
Sulphate (2:1 water soluble)	CE061	mg/l SO_4	1548	3141	-	120	525	-
Sulphate (total)	CE062	mg/kg SO_4	4227	100511	-	421	1194	-
Sulphur (total)	CE119	mg/kg S	1418	35184	-	1684	486	-
Sulphur (total)	CE119	% w/w S	0.14	3.52	-	0.17	0.05	-
Total Organic Carbon (TOC)	CE197	% w/w C	-	-	2.0	-	-	1.4
Estimate of OMC (calculated from TOC)	CE197	% w/w	-	-	3.5	-	-	2.4

Chemtech Environmental Limited

SOILS

Lab number			99147-7	99147-8
Sample id			BH49	BH66
Depth (m)			7.40-7.70	3.00
Date sampled			01/06/2021	02/06/2021
Test	**Method**	**Units**		
pH	CE004 [U]	units	7.9	8.2
Magnesium (2:1 water soluble)	CE061	mg/l Mg	46	9.9
Chloride (2:1 water soluble)	CE049 [U]	mg/l Cl	30	18
Nitrate (2:1 water soluble)	CE049 [U]	mg/l NO_3	<1	6.0
Sulphate (2:1 water soluble)	CE061	mg/l SO_4	2750	92
Sulphate (total)	CE062	mg/kg SO_4	200712	639
Sulphur (total)	CE119	mg/kg S	67412	3405
Sulphur (total)	CE119	% w/w S	6.74	0.34
Total Organic Carbon (TOC)	CE197	% w/w C	-	-
Estimate of OMC (calculated from TOC)	CE197	% w/w	-	-

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE004	pH	Based on BS 1377, pH Meter	As received	U	-	units
CE061	Magnesium (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry		1	mg/l Mg
CE049	Chloride (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l Cl
CE049	Nitrate (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l NO_3
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry		10	mg/l SO_4
CE062	Sulphate (total)	Acid extraction, ICP-OES	Dry		100	mg/kg SO_4
CE119	Sulphur (total)	Acid extraction, ICP-OES	Dry		100	mg/kg S
CE119	Sulphur (total)	Acid extraction, ICP-OES	Dry		0.01	% w/w S
CE197	Total Organic Carbon (TOC)	Carbon Analyser	Dry		0.1	% w/w C
CE197	Estimate of OMC (calculated from TOC)	Calculation from Total Organic Carbon	Dry		0.1	% w/w

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
99147-1	BH11	10.30-10.40	Y	All (EHT)
99147-2	BH11	19.00-19.30	Y	All (EHT)
99147-3	BH33	8.00-9.00	Y	All (EHT)
99147-4	BH37	4.70-4.80	Y	All (EHT)
99147-5	BH37	8.50-10.00	Y	All (EHT)
99147-6	BH47	4.20-4.30	Y	All (EHT)
99147-7	BH49	7.40-7.70	Y	All (EHT)
99147-8	BH66	3.00	Y	All (EHT)

LABORATORY REPORT

4043

Contract Number: PSL21/5725

Report Date: 30 September 2021

Client's Reference: 784-B026948

Client Name: Tetra Tech
54 Hagley Road
Birmingham
B16 8PE

For the attention of: Nicholas Bool

Contract Title: A46 Newark NNB

Date Received: 16/7/2021
Date Commenced: 16/7/2021
Date Completed: 29/9/2021

Notes: Opinions and Interpretations are outside the UKAS Accreditation

Checked and Approved Signatories:

A Watkins (Director)

R Berriman (Quality Manager)

S Royle (Laboratory Manager)

[redacted]

L Knight (Assistant Laboratory Manager)

(Senior Technician)

T Watkins (Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AR
[redacted]

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH06	4	B	1.00		Brown slightly gravelly slightly sandy CLAY.
BH06	7	B	2.50		Brown gravelly slightly clayey silty SAND.
BH07	4	D	7.20	7.30	Reddish brown sandy CLAY.
BH28	1	D	8.90	9.00	Reddish brown very sandy CLAY.
BH29	9	B	2.50	3.50	Brown very sandy slightly clayey silty GRAVEL.
BH29	15	D	7.50	7.60	Brown slightly sandy CLAY.
BH30	11	B	4.50	5.50	Brown very sandy clayey GRAVEL.
BH30	18	B	9.00	9.70	Brown sandy silty GRAVEL.
BH30	25	B	12.50	13.50	Brown very sandy slightly clayey GRAVEL.
BH30	26	D	15.50	15.60	Reddish brown very sandy CLAY.
BH59	1	B	0.00	0.50	Dark brown gravelly sandy very silty CLAY.
BH59	5	B	1.00		Brown slightly gravelly very silty CLAY.
BH59	10	B	6.00		Brown very sandy GRAVEL.
BH60	4	B	1.00		Brown very gravelly very sandy CLAY.
BH60	8	B	2.50		Brown very sandy GRAVEL.
TP01	2	B	1.40	1.60	Brown very sandy GRAVEL.
TP02	1	B	0.80	1.00	Brown slightly gravelly sandy CLAY.
TP03	2	B	1.10	1.20	Brown slightly gravelly SAND.
TP04	2	B	1.50	1.70	Brown slightly gravelly very sandy CLAY with some organic material.

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
TP11	2	D	1.00		Brown slightly gravelly slightly sandy CLAY.
TP11	2	B	1.50	1.70	Brown very gravelly clayey silty SAND.
TP20	3	D	0.70		Brown slightly sandy CLAY.
TP27	3	B	2.00	2.20	Brown slightly gravelly slightly sandy CLAY.
TP27	4	B	2.80	3.00	Dark brown slightly gravelly sandy CLAY.
TP31	2	B	1.20	1.40	Brown very gravelly clayey silty SAND.
TP33	1	D	0.50		Reddish brown slightly sandy CLAY.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH06	4	B	1.00		33			52	26	26	93	High Plasticity CH
BH06	7	B	2.50		20				NP			
BH07	4	D	7.20	7.30	30			41	25	16	100	Intermediate Plasticity CI
BH28	1	D	8.90	9.00	17			32	18	14	98	Low Plasticity CL
BH29	15	D	7.50	7.60	29			67	30	37	100	High Plasticity CH
BH30	25	B	12.50	13.50	13				NP			
BH30	26	D	15.50	15.60	23			34	20	14	99	Low Plasticity CL
BH59	5	B	1.00		43			80	36	44	95	Very High Plasticity CV
BH60	4	B	1.00		21			35	19	16	54	Intermediate Plasticity CI
TP01	2	B	1.40	1.60	14				NP			
TP02	1	B	0.80	1.00	24			36	18	18	98	Intermediate Plasticity CI
TP03	2	B	1.10	1.20	7.8				NP			
TP04	2	B	1.50	1.70	35			63	29	34	92	High Plasticity CH
TP11	2	D	1.00		25			56	26	30	97	High Plasticity CH
TP20	3	D	0.70		30			62	30	32	100	High Plasticity CH
TP27	3	B	2.00	2.20	32			67	31	36	96	High Plasticity CH
TP31	2	B	1.20	1.40	9.2				NP			
TP33	1	D	0.50		28			64	27	37	100	High Plasticity CH

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL Professional Soils Laboratory

A46 Newark NNB

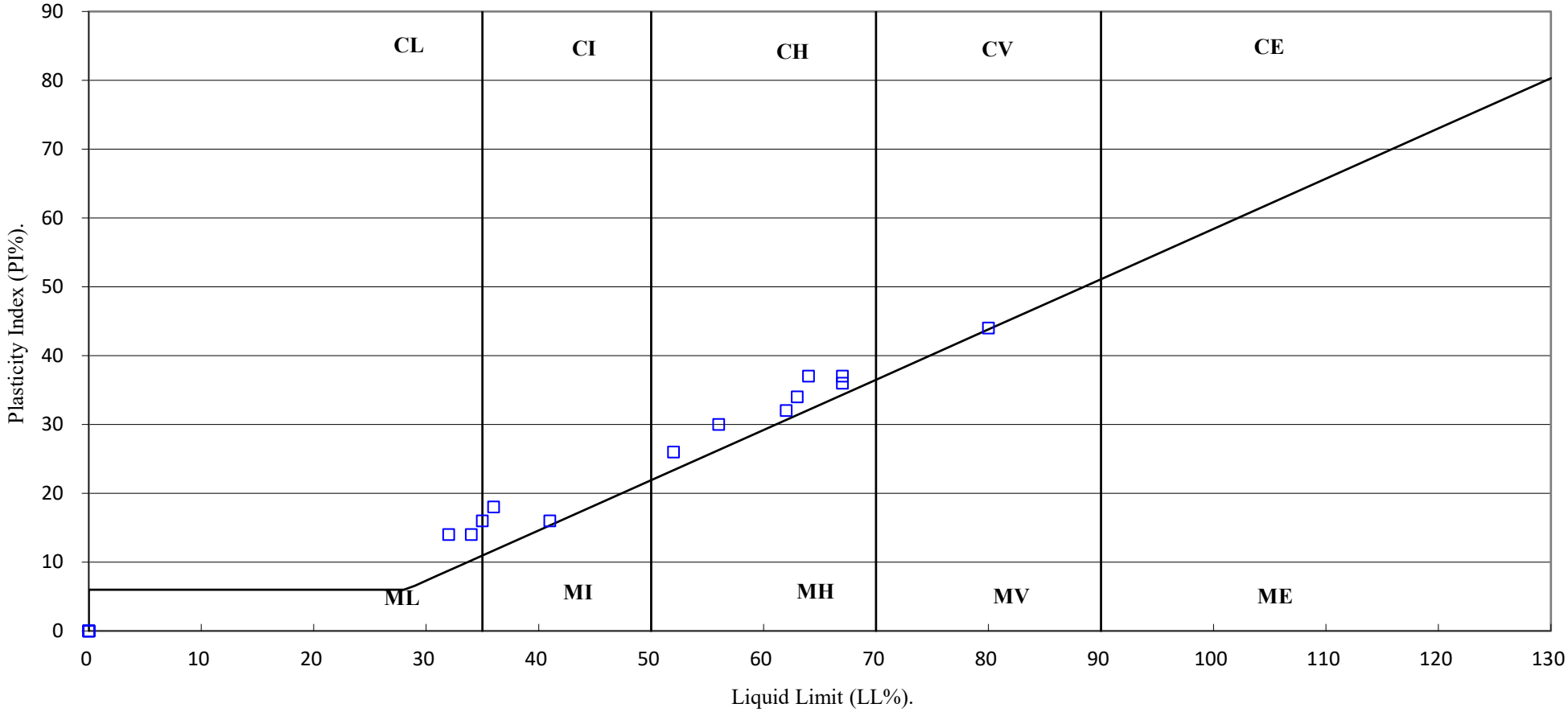
Contract No:

PSL21/5725

Client Ref:

784-B026948

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



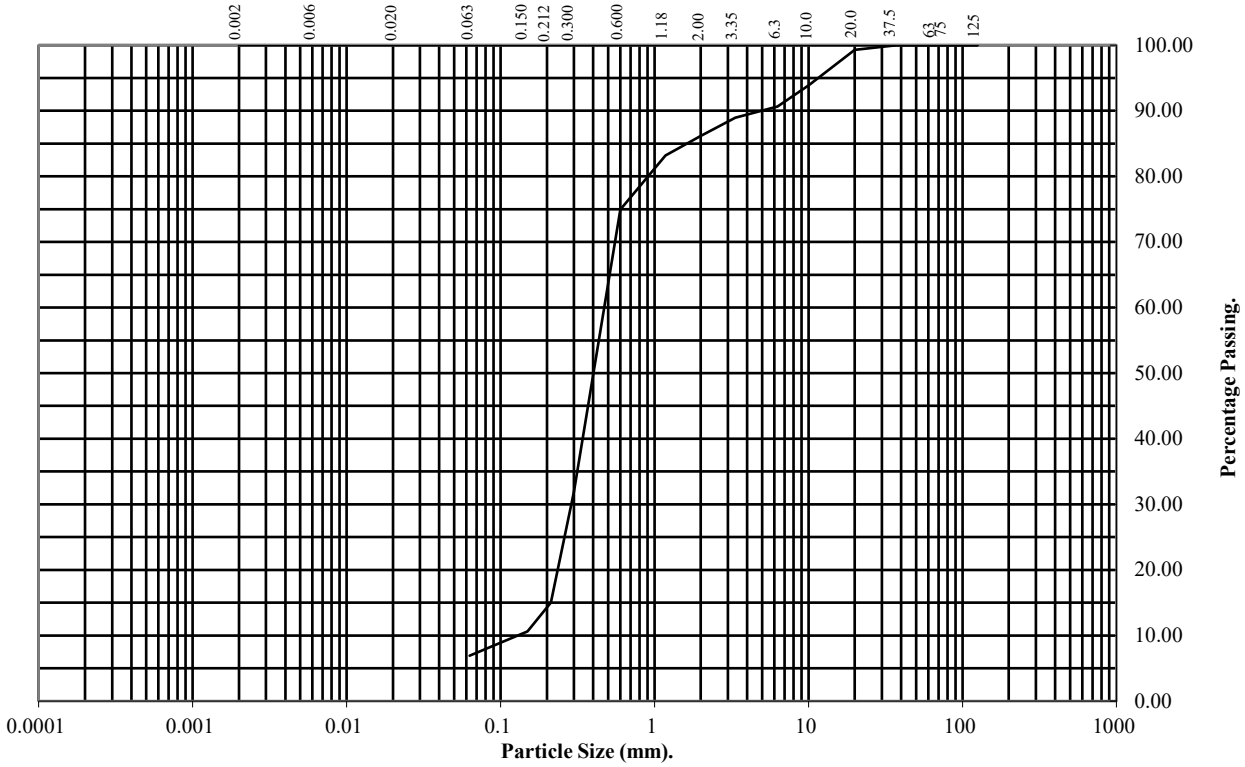
UKAS TESTING 4043	PSL Professional Soils Laboratory	A46 Newark NNB	Contract No: PSL21/5725 Client Ref: 784-B026948

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH06**	**Top Depth (m):**	**2.50**
Sample Number:	**7**	**Base Depth(m):**	
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	99
10	94
6.3	91
3.35	89
2	86
1.18	83
0.6	75
0.3	32
0.212	15
0.15	11
0.063	7

Soil Fraction	Total Percentage
Cobbles	0
Gravel	14
Sand	79
Silt/Clay	7

Remarks:

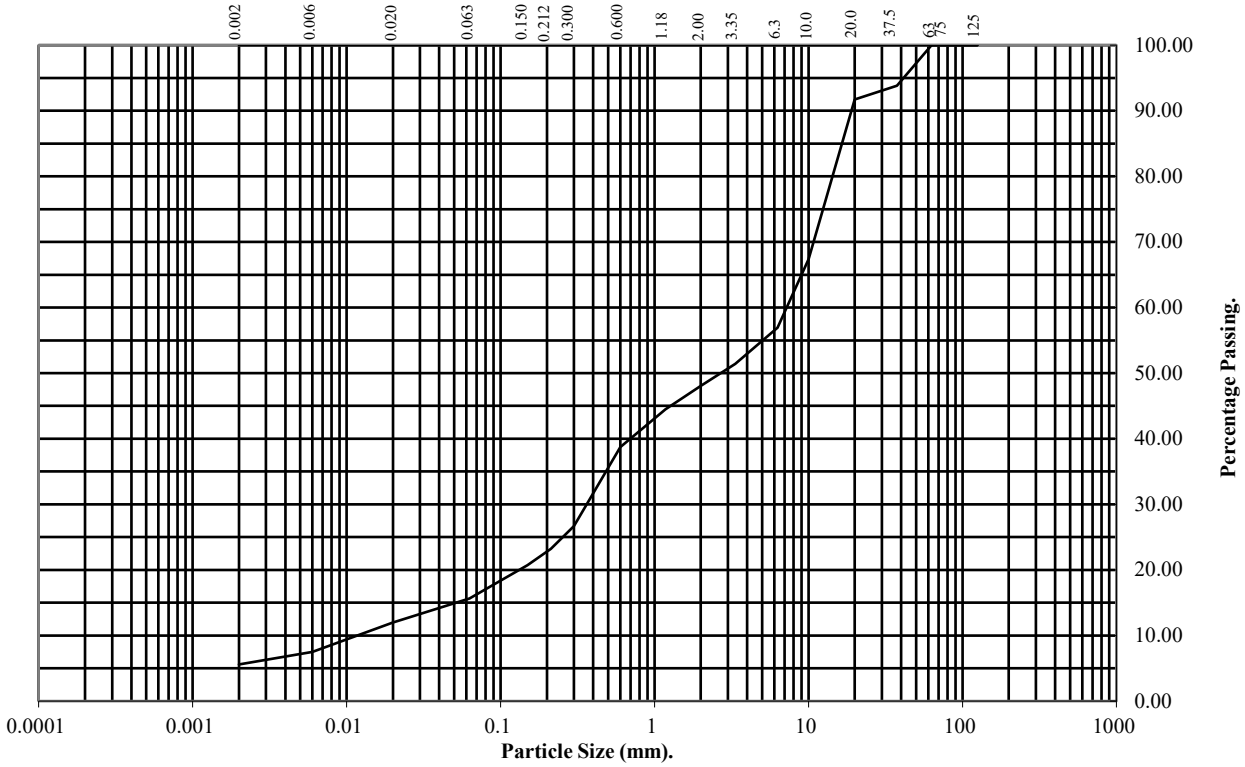
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH29**	**Top Depth (m):**	**2.50**
Sample Number:	**9**	**Base Depth(m):**	**3.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	94
20	92
10	67
6.3	57
3.35	51
2	48
1.18	44
0.6	39
0.3	27
0.212	23
0.15	21
0.063	16

Particle Diameter	Percentage Passing
0.02	12
0.006	8
0.002	6

Soil Fraction	Total Percentage
Cobbles	0
Gravel	52
Sand	32
Silt	10
Clay	6

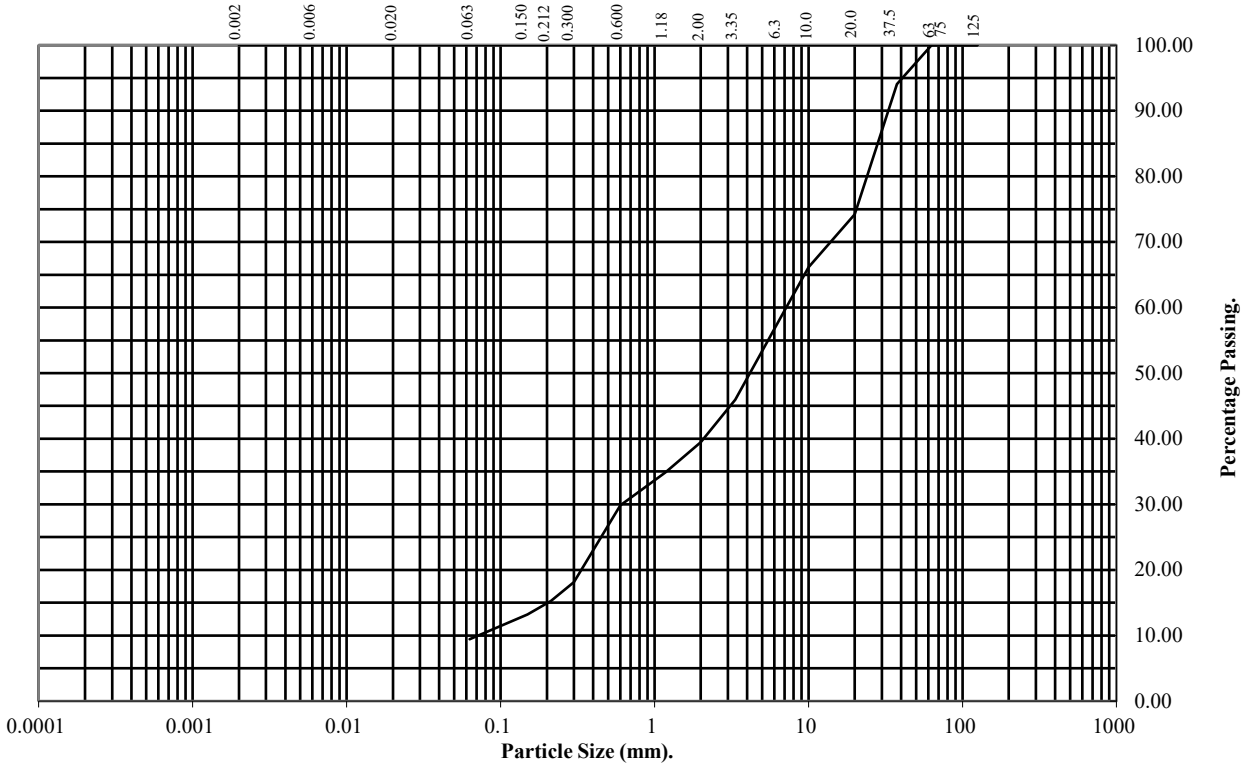
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH30**	**Top Depth (m):**	**4.50**
Sample Number:	**11**	**Base Depth(m):**	**5.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	94
20	74
10	66
6.3	58
3.35	46
2	39
1.18	35
0.6	30
0.3	18
0.212	15
0.15	13
0.063	9

Soil Fraction	Total Percentage
Cobbles	0
Gravel	61
Sand	30
Silt/Clay	9

Remarks:

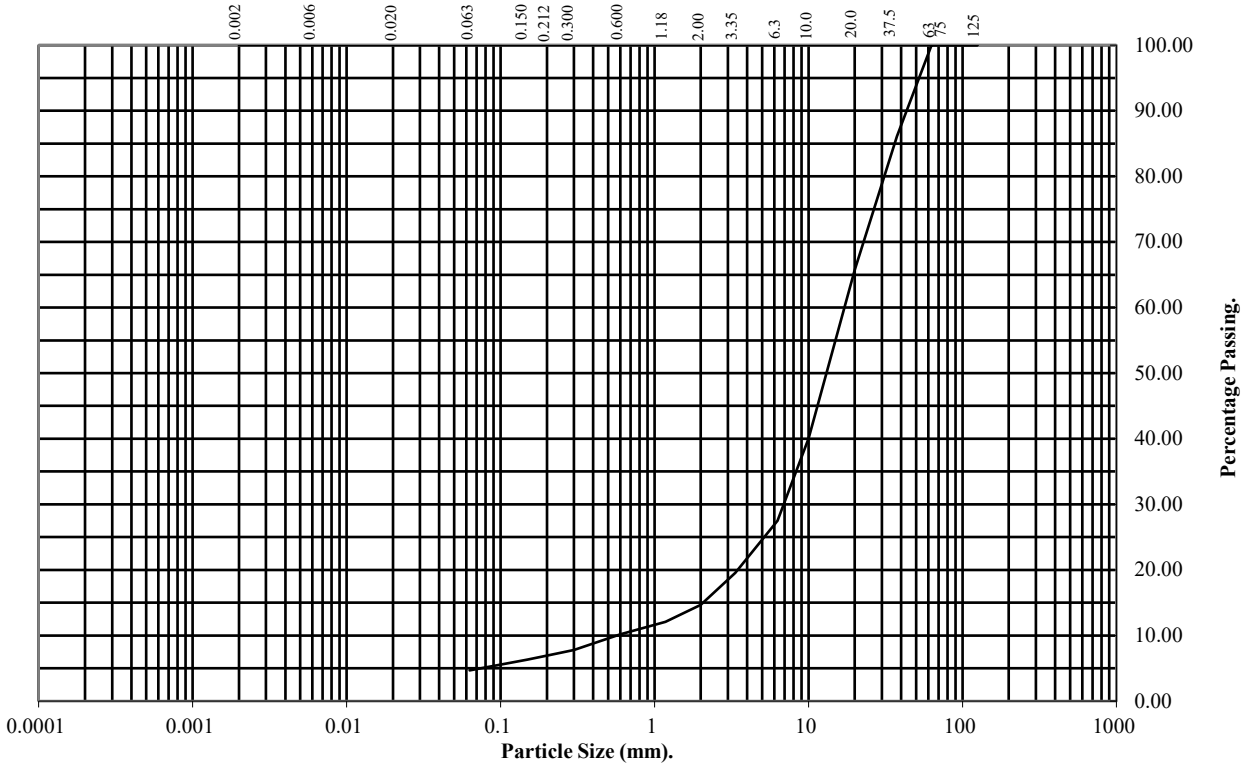
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH30**	**Top Depth (m):**	**9.00**
Sample Number:	**18**	**Base Depth(m):**	**9.70**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	86
20	66
10	40
6.3	27
3.35	20
2	15
1.18	12
0.6	10
0.3	8
0.212	7
0.15	6
0.063	5

Soil Fraction	Total Percentage
Cobbles	0
Gravel	85
Sand	10
Silt/Clay	5

Remarks:

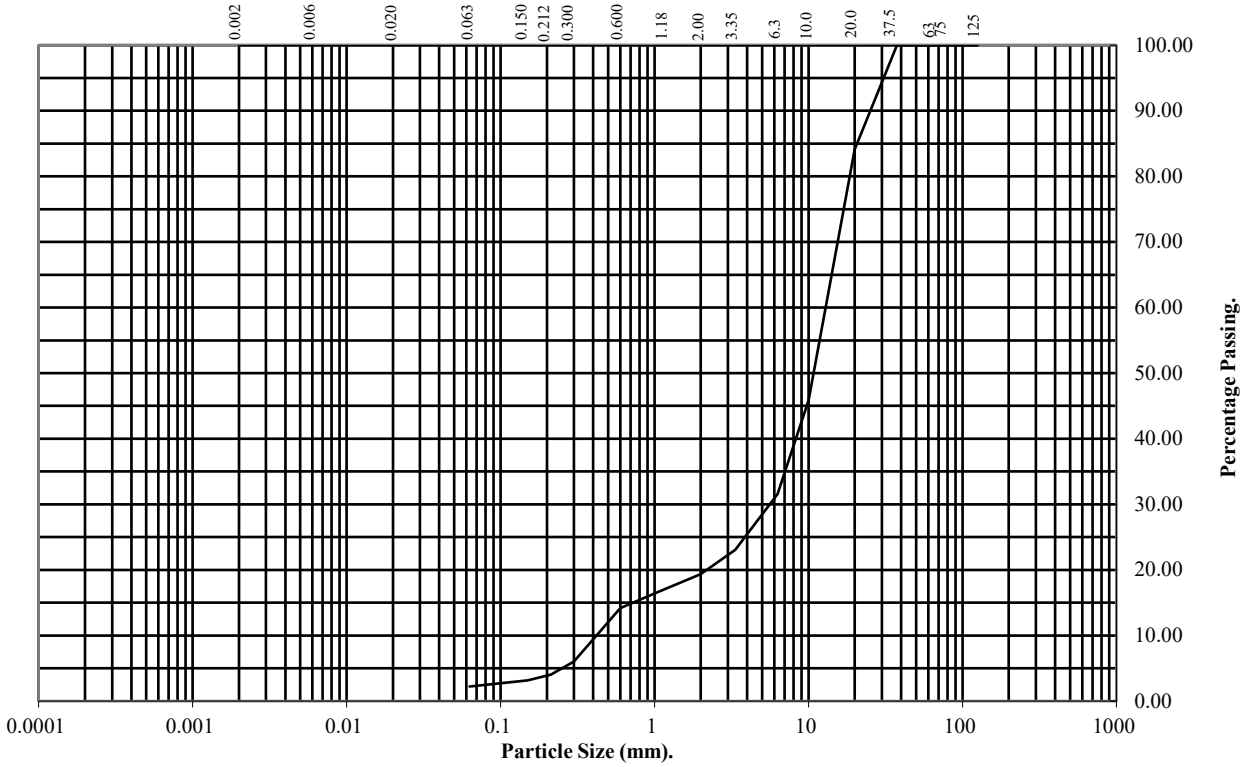
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH30**	**Top Depth (m):**	**12.50**
Sample Number:	**25**	**Base Depth(m):**	**13.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	84
10	46
6.3	32
3.35	23
2	19
1.18	17
0.6	14
0.3	6
0.212	4
0.15	3
0.063	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	81
Sand	17
Silt/Clay	2

Remarks:

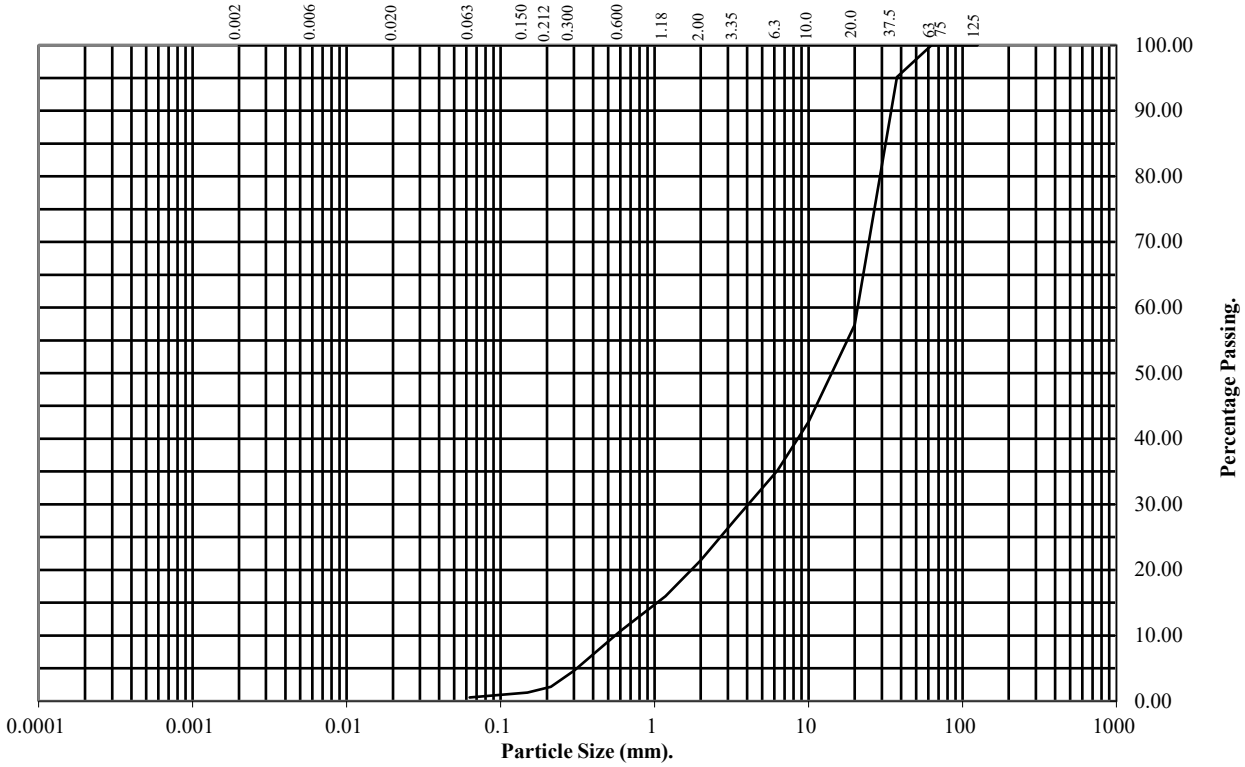
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH59**	**Top Depth (m):**	**6.00**
Sample Number:	**10**	**Base Depth(m):**	
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	95
20	57
10	43
6.3	35
3.35	28
2	21
1.18	16
0.6	11
0.3	5
0.212	2
0.15	1
0.063	1

Soil Fraction	Total Percentage
Cobbles	0
Gravel	79
Sand	20
Silt/Clay	1

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

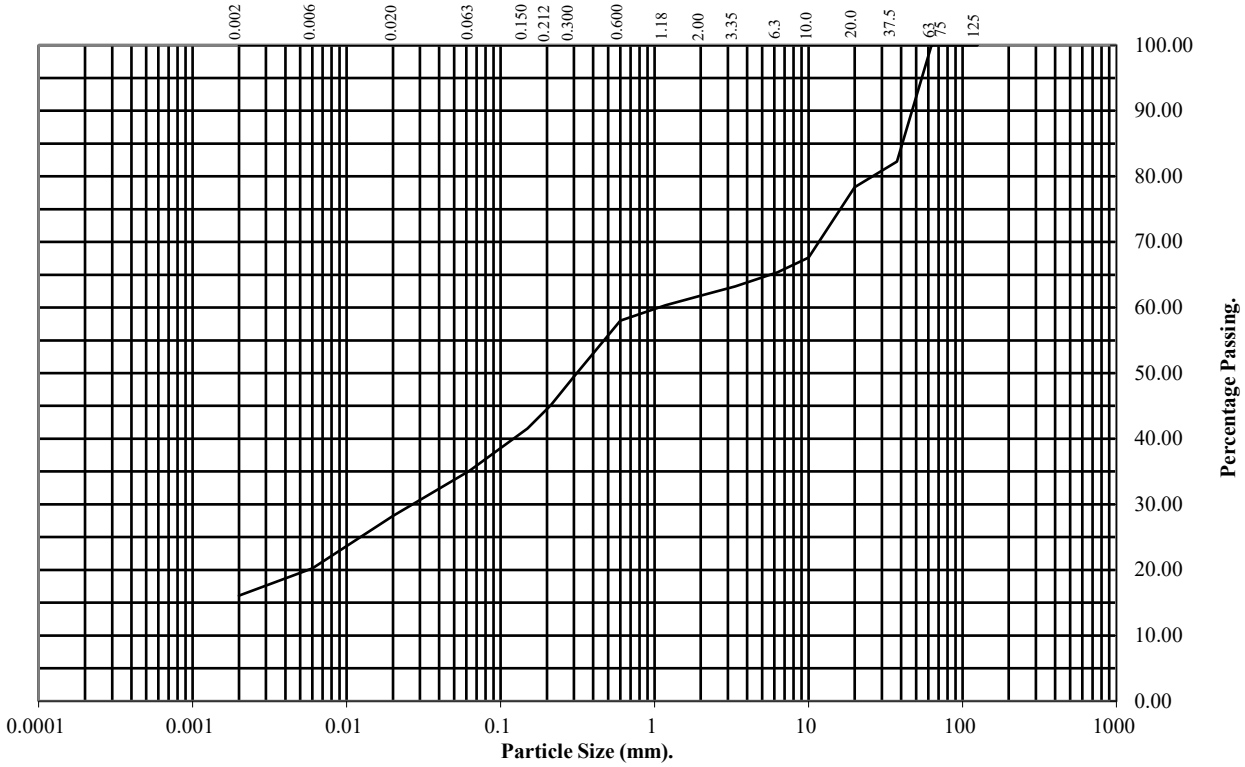
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: BH60 **Top Depth (m):** 1.00

Sample Number: 4 **Base Depth(m):**

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	82
20	78
10	68
6.3	65
3.35	63
2	62
1.18	60
0.6	58
0.3	49
0.212	45
0.15	42
0.063	35

Particle Diameter	Percentage Passing
0.02	28
0.006	20
0.002	16

Soil Fraction	Total Percentage
Cobbles	0
Gravel	38
Sand	27
Silt	19
Clay	16

Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

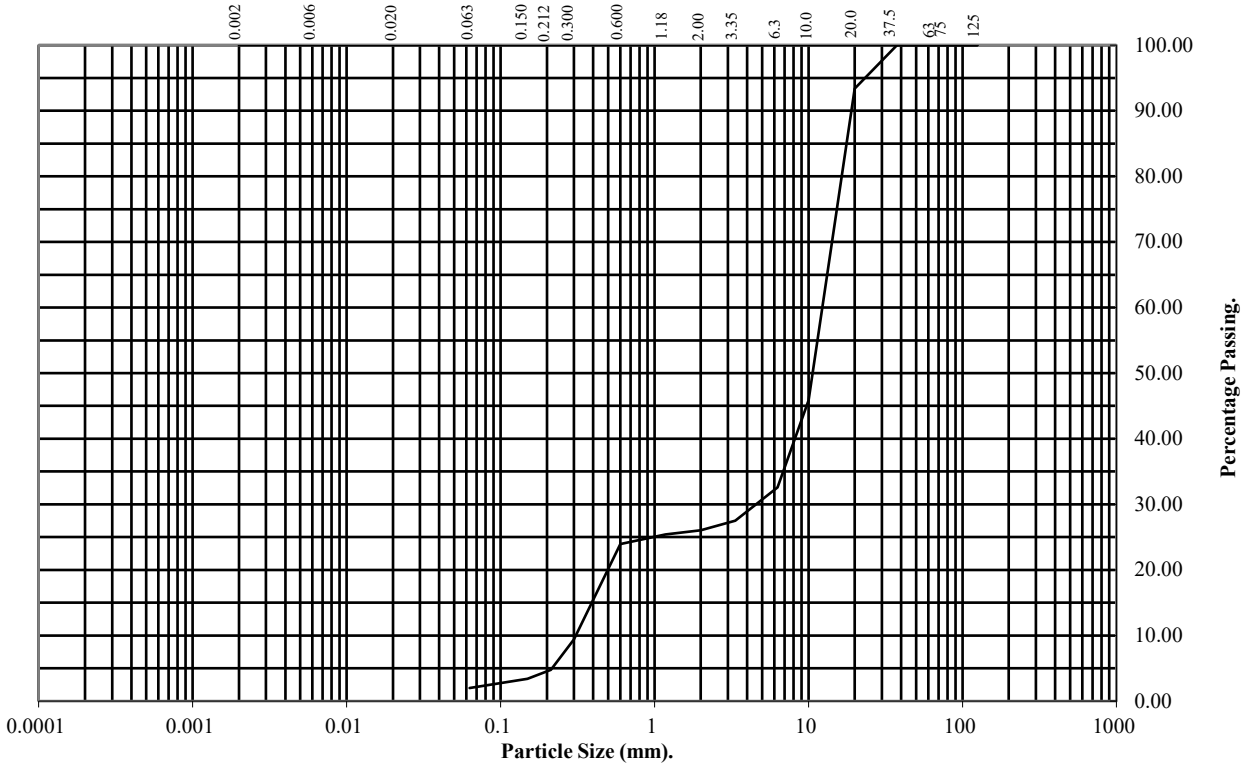
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: BH60 **Top Depth (m):** 2.50

Sample Number: 8 **Base Depth(m):**

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	93
10	46
6.3	33
3.35	28
2	26
1.18	25
0.6	24
0.3	9
0.212	5
0.15	3
0.063	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	74
Sand	24
Silt/Clay	2

Remarks:

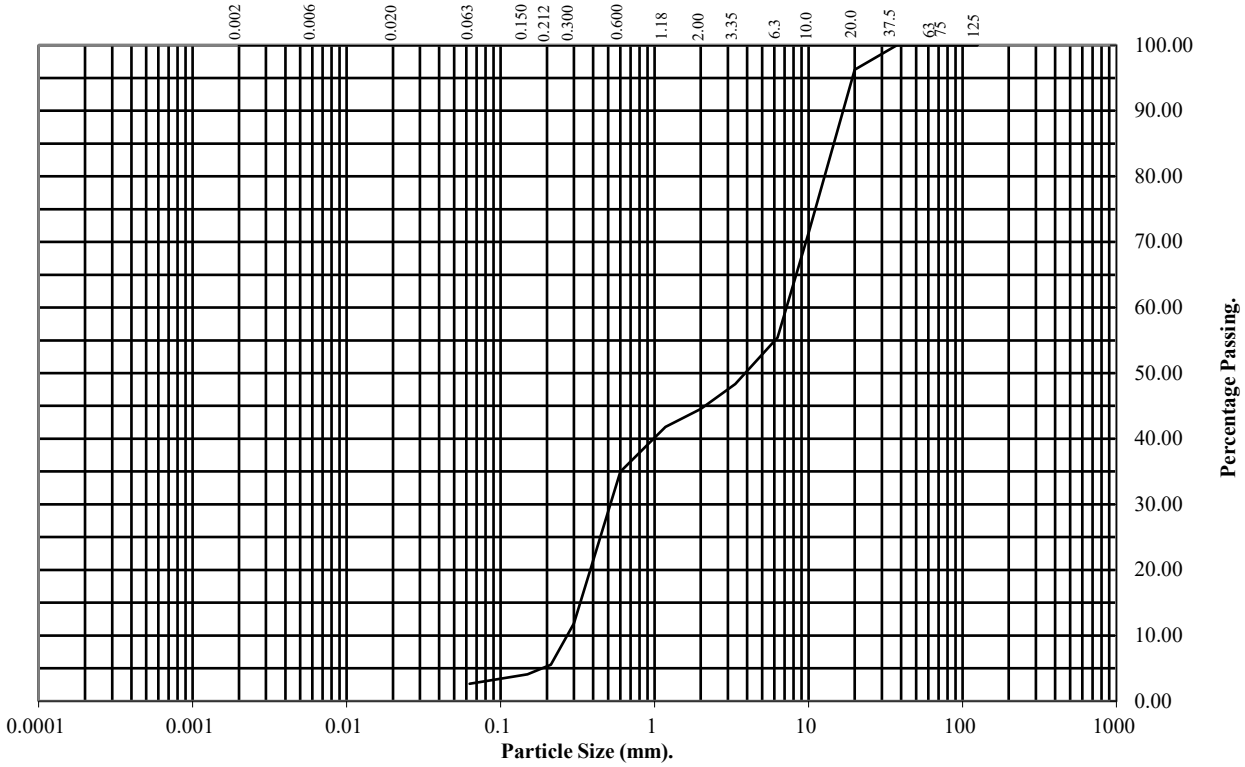
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**TP01**	**Top Depth (m):**	**1.40**
Sample Number:	**2**	**Base Depth(m):**	**1.60**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	96
10	71
6.3	55
3.35	48
2	45
1.18	42
0.6	35
0.3	12
0.212	6
0.15	4
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	55
Sand	42
Silt/Clay	3

Remarks:

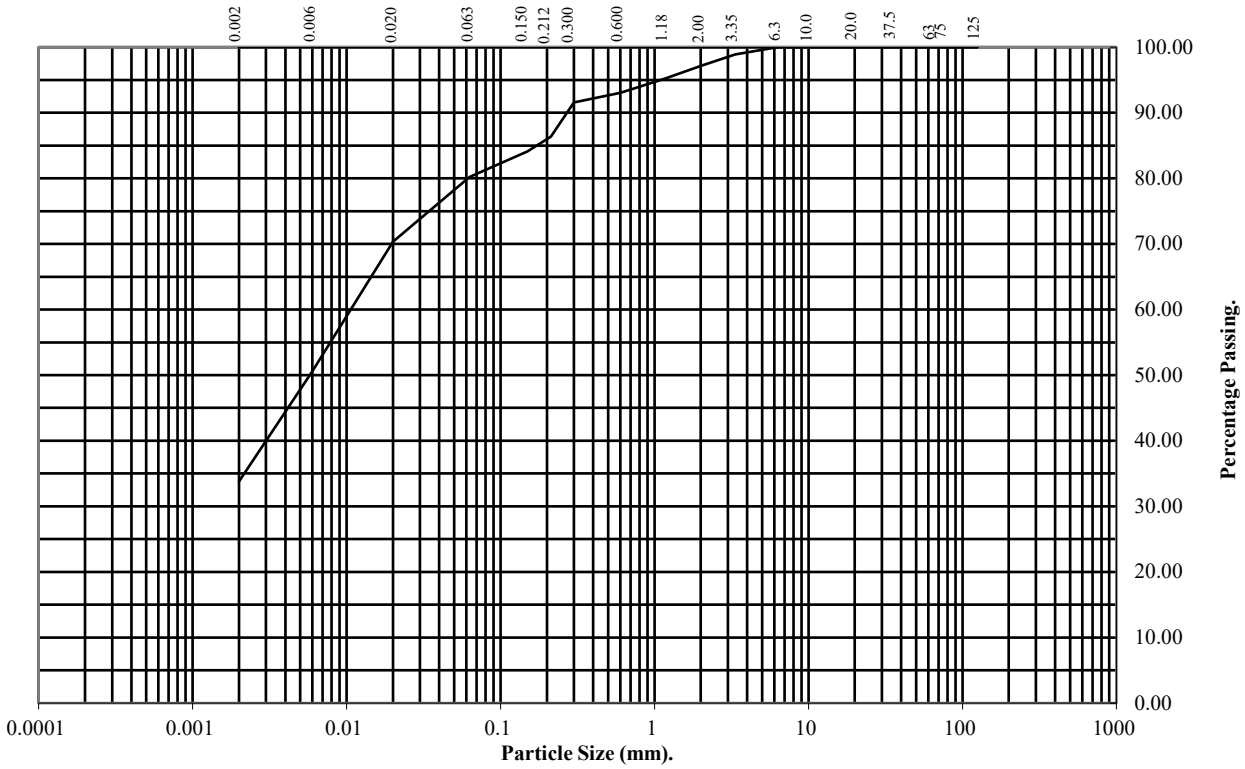
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**TP04**	**Top Depth (m):**	**1.50**
Sample Number:	**2**	**Base Depth(m):**	**1.70**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	99
2	97
1.18	95
0.6	93
0.3	92
0.212	86
0.15	84
0.063	80

Particle Diameter	Percentage Passing
0.02	70
0.006	51
0.002	34

Soil Fraction	Total Percentage
Cobbles	0
Gravel	3
Sand	17
Silt	46
Clay	34

Remarks:

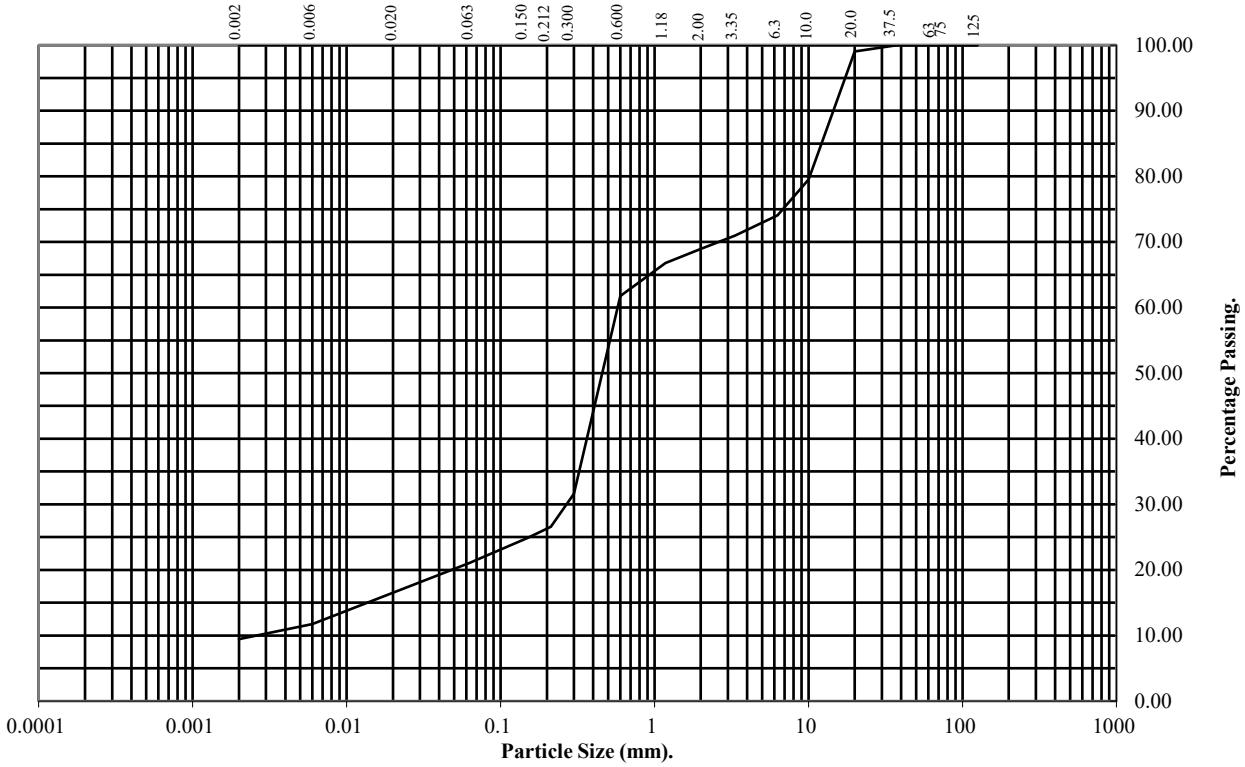
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**TP11**	**Top Depth (m):**	**1.50**
Sample Number:	**2**	**Base Depth(m):**	**1.70**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	99
10	80
6.3	74
3.35	71
2	69
1.18	67
0.6	62
0.3	32
0.212	27
0.15	25
0.063	21

Particle Diameter	Percentage Passing
0.02	17
0.006	12
0.002	9

Soil Fraction	Total Percentage
Cobbles	0
Gravel	31
Sand	48
Silt	12
Clay	9

Remarks:

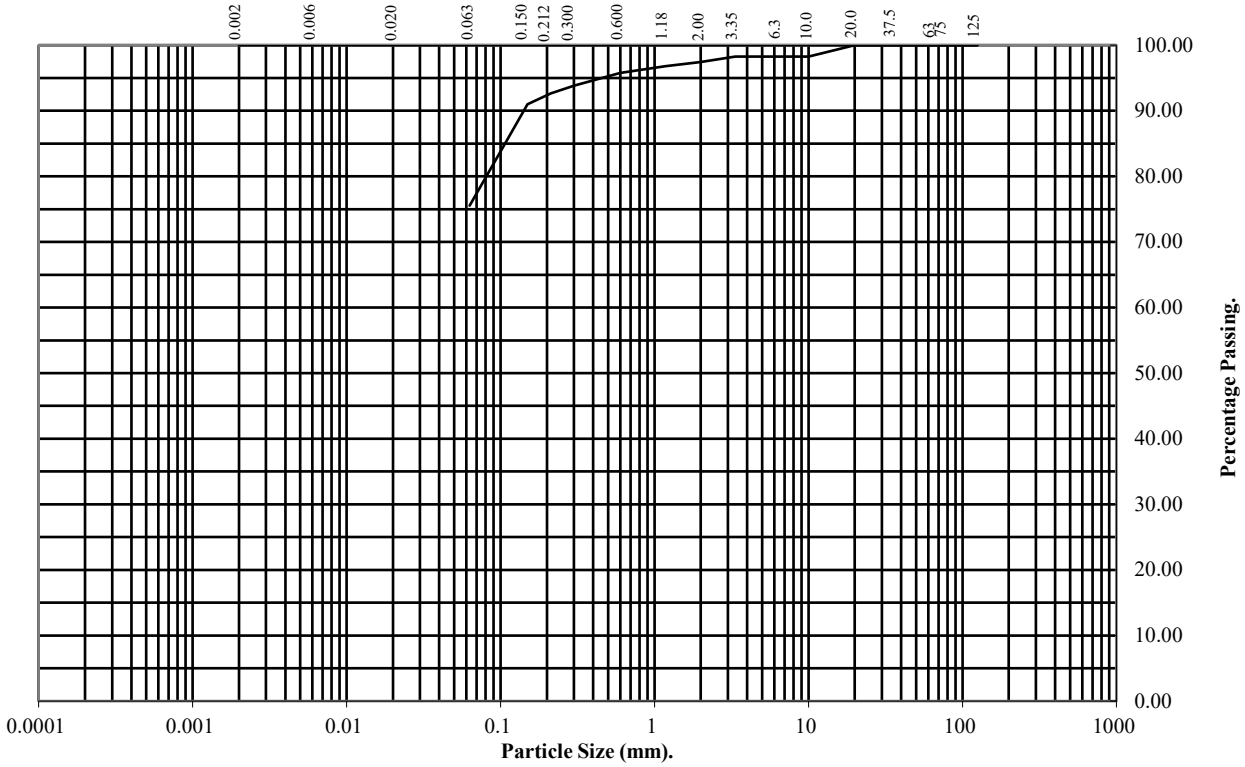
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**TP27**	**Top Depth (m):**	**2.80**
Sample Number:	**4**	**Base Depth(m):**	**3.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	98
6.3	98
3.35	98
2	97
1.18	97
0.6	96
0.3	94
0.212	93
0.15	91
0.063	76

Soil Fraction	Total Percentage
Cobbles	0
Gravel	3
Sand	21
Silt/Clay	76

Remarks:

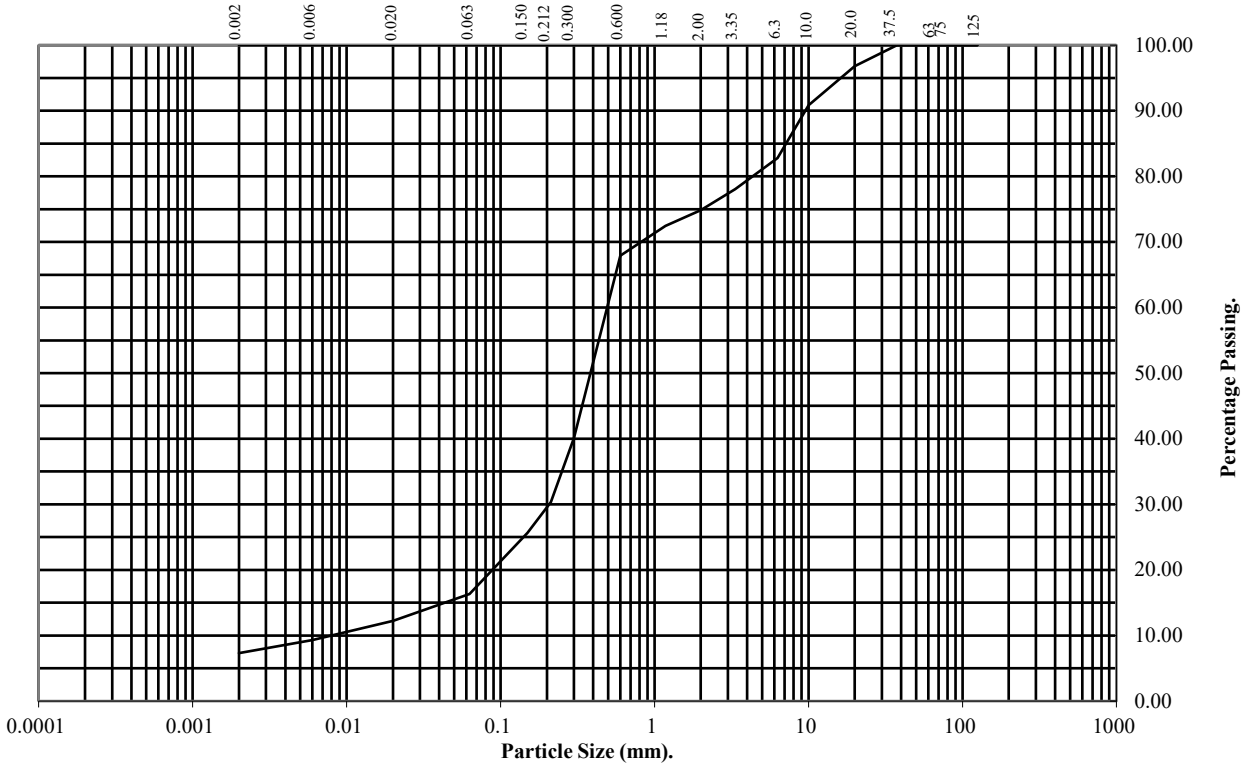
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**TP31**	**Top Depth (m):**	**1.20**
Sample Number:	**2**	**Base Depth(m):**	**1.40**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	97
10	91
6.3	83
3.35	78
2	75
1.18	72
0.6	68
0.3	40
0.212	30
0.15	26
0.063	16

Particle Diameter	Percentage Passing
0.02	12
0.006	9
0.002	7

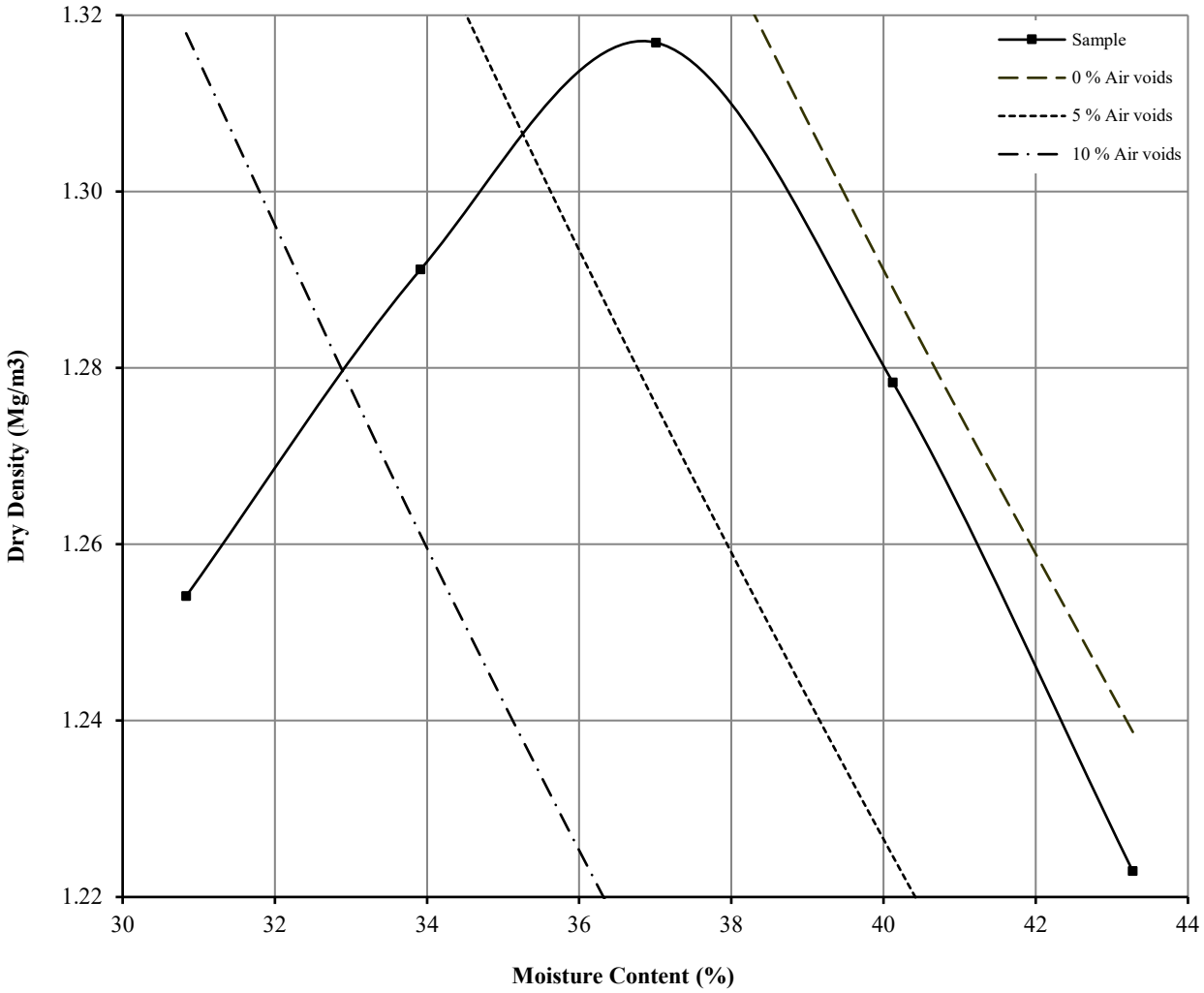
Soil Fraction	Total Percentage
Cobbles	0
Gravel	25
Sand	59
Silt	9
Clay	7

Remarks:
See Summary of Soil Descriptions

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.3 : 1990

Hole Number:	**BH59**	**Top Depth (m) :**	**1.00**
Sample Number:	**5**	**Base Depth (m) :**	
Sample Type:	**B**		



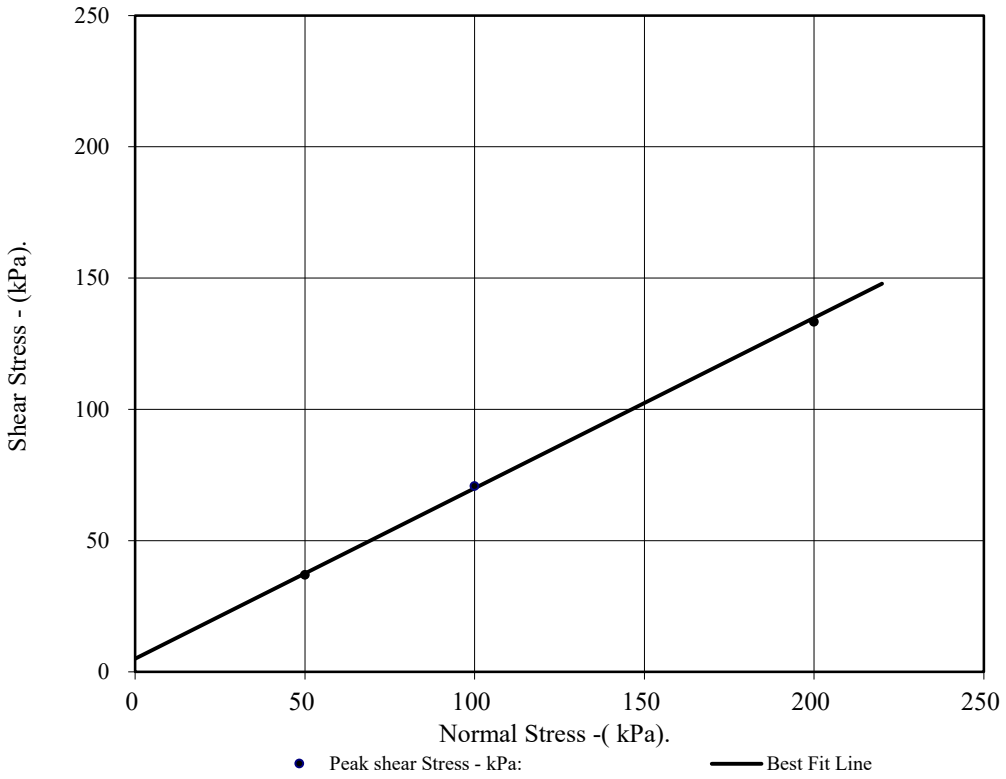
Initial Moisture Content:		43	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.67	Assumed	Material Retained on 37.5 mm Test Sieve (%):		0
Maximum Dry Density (Mg/m3):		1.32	Material Retained on 20.0 mm Test Sieve (%):		0
Optimum Moisture Content (%):		37			
Remarks See summary of soil descriptions					

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH59**		Top Depth:	**0.00**
Sample Number:	**1**		Base Depth:	**0.50**
Sample Conditions:	Submerged		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 2mm sieve Remoulded using 2.5kg effort.			
Sample Description:	**See summary of soil descriptions.**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	20.05	20.05	20.05
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	17	17	17
Bulk Density - Mg/m3:	1.96	1.96	1.96
Dry Density - Mg/m3:	1.67	1.67	1.67
Voids Ratio:	0.590	0.590	0.590
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	19.27	18.67	17.26
Shearing Stage			
Rate of Strain - mm/min	0.044	0.044	0.044
Displacement at peak shear stress - mm	9.01	7.81	9.60
Peak shear Stress - kPa:	37	71	133
Final Consolidated Conditions			
Moisture Content - %:	25	23	21
Bulk Density - Mg/m3:	2.04	2.10	2.27
Dry Density - Mg/m3:	1.63	1.71	1.87
Peak			
Angle of Shearing Resistance:(~~θ~~)	**33**		
Effective Cohesion - kPa:	**5**		



UKAS TESTING 4043

PSL Professional Soils Laboratory

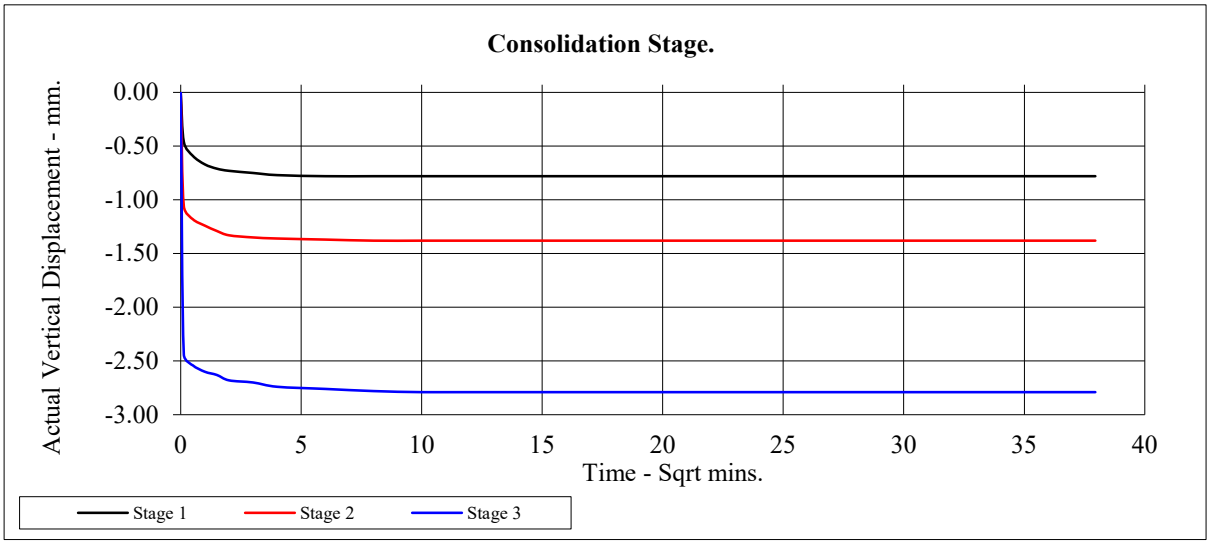
A46 Newark NNB

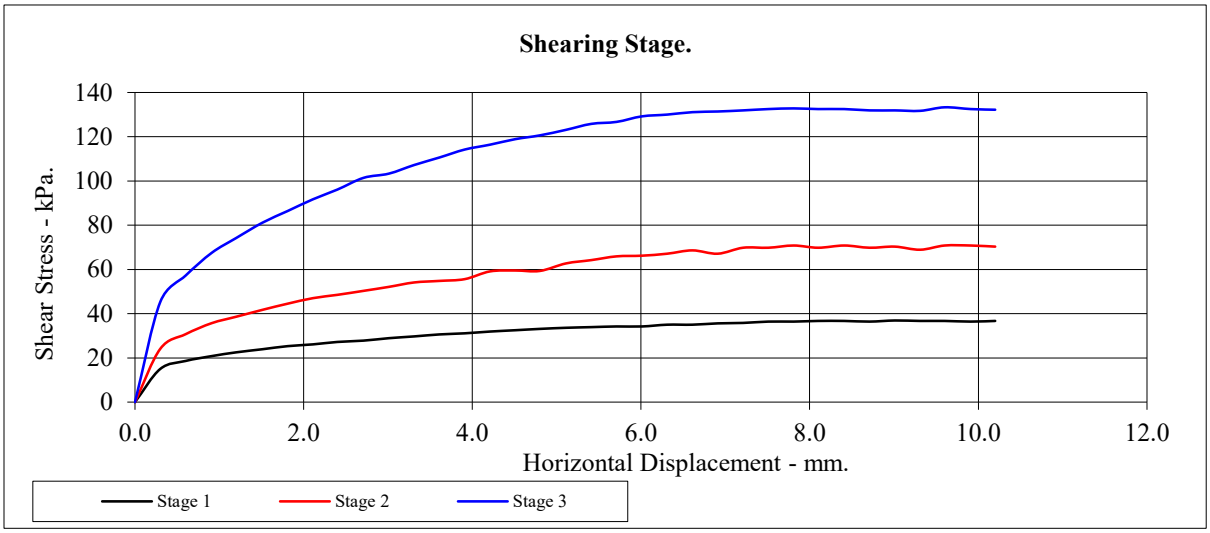
Contract No:
PSL21/5725
Client Ref:
784-B026948

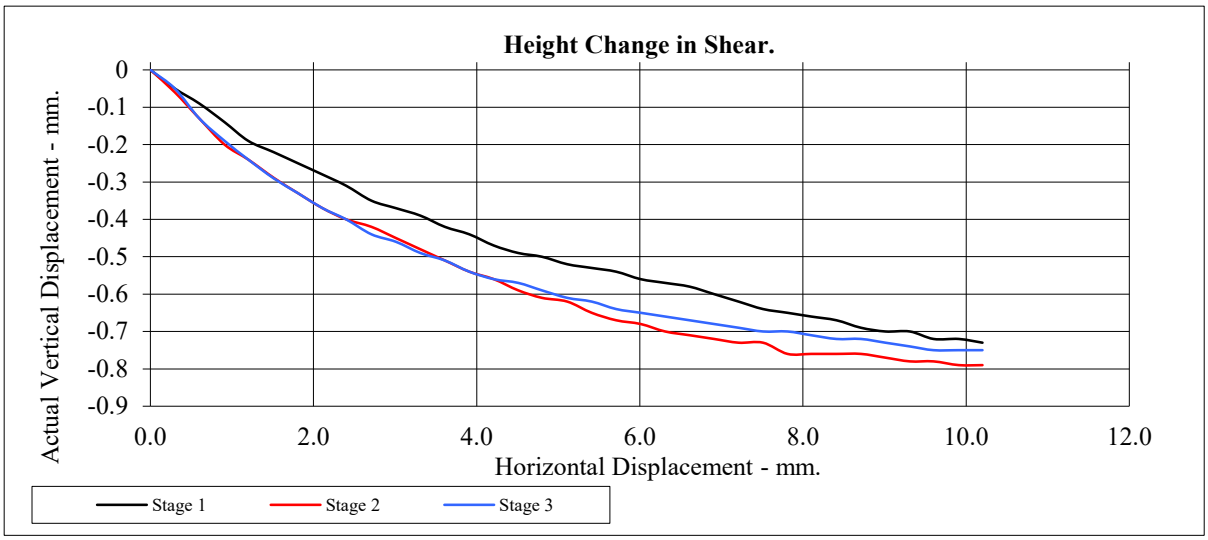
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH59**	Top Depth:	**0.00**
Sample Number:	**1**	Base Depth:	**0.50**







DETERMINATION OF UNCONFINED COMPRESSIVE STRENGTH

ISRM Suggested Methods, pp 111 –116, 1981.

Hole Number	Sample Number	Sample Type	Top Depth (m)	Base Depth (m)	Sample Diameter (mm)	Sample Length (mm)	Height Ratio	Initial Mass (g)	Bulk Density (Mg/m)	Moisture Content (%)	Dry Density (Mg/m)	Load Failure (kN)	UCS (MPa)	Failure Mode	Date Tested	Remarks
BH07	9	C	16.45	16.85	85	172	2.0	2219	2.27	1.8	2.23	10.6	1.9	Brittle	24/09/21	

PSL Professional Soils Laboratory	A46 Newark NNB	Contract No:
		PSL21/5725
		Client Ref:
		784-B026948

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		Area	D_e^2	D_e	Failure Load (P)		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH07	10.10	6	A	Perp	85	60	5100	6493.52	80.58	-	1.59	0.24	1.240	0.30	Valid	
BH07	18.95	10	A	Perp	81	67	5427	6909.87	83.13	-	0.46	0.07	1.257	0.08	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular

UKAS TESTING 4043

PSL Professional Soils Laboratory

A46 Newark NNB

Contract No:

PSL21/5725

Client Ref:

784-B026948

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		D_e^2	D_e	Failure Load		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	L	D		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH07	10.10	6	D	Par	-	85	7225	85.00	-	1.80	0.249	1.270	0.32	Valid	
BH07	18.95	10	D	Par	-	81	6561	81.00	-	0.42	0.064	1.242	0.08	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

UKAS TESTING 4043	PSL Professional Soils Laboratory	A46 Newark NNB	Contract No: PSL21/5725 Client Ref: 784-B026948

2531

ANALYTICAL TEST REPORT

Contract no: 100634

Contract name: A46 Newark NNB

Client reference: PSL21/5725

Clients name: Professional Soils Laboratory

Clients address: 5/7 Hexthorpe Road
Doncaster
DN4 0AR

Samples received: 21 September 2021

Analysis started: 21 September 2021

Analysis completed: 28 September 2021

Report issued: 28 September 2021

Notes:
Opinions and interpretations expressed herein are outside the UKAS accreditation scope.
Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.
All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.
Methods, procedures and performance data are available on request.
Results reported herein relate only to the material supplied to the laboratory.
This report shall not be reproduced except in full, without prior written approval.
Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

Key:
U UKAS accredited test
M MCERTS & UKAS accredited test
$ Test carried out by an approved subcontractor
I/S Insufficient sample to carry out test
N/S Sample not suitable for testing

Approved by: [redacted]

Rachael Burton
Customer Support Squad Leader

Chemtech Environmental Limited

SOILS

Lab number			100634-1	100634-2	100634-3	100634-4
Sample id			BH07	BH07	BH29	TP05
Depth (m)			10.10-10.40	22.75-22.95	8.50-8.60	1.60
Date sampled			10/06/2021	10/06/2021	09/06/2021	04/06/2021
Test	**Method**	**Units**				
pH	CE004 [U]	units	7.4	8.1	-	-
Magnesium (2:1 water soluble)	CE061	mg/l Mg	20	41	-	-
Chloride (2:1 water soluble)	CE049 [U]	mg/l Cl	3.1	224	-	-
Nitrate (2:1 water soluble)	CE049 [U]	mg/l NO_3	<1	1.8	-	-
Sulphate (2:1 water soluble)	CE061	mg/l SO_4	1549	2705	-	-
Sulphate (total)	CE062	mg/kg SO_4	366981	68044	-	-
Sulphur (total)	CE119	mg/kg S	169083	32251	-	-
Sulphur (total)	CE119	% w/w S	16.91	3.23	-	-
Total Organic Carbon (TOC)	CE197	% w/w C	-	-	0.8	1.7
Estimate of OMC (calculated from TOC)	CE197	% w/w	-	-	1.4	2.9

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE004	pH	Based on BS 1377, pH Meter	As received	U	-	units
CE061	Magnesium (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry		1	mg/l Mg
CE049	Chloride (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l Cl
CE049	Nitrate (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l NO_3
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry		10	mg/l SO_4
CE062	Sulphate (total)	Acid extraction, ICP-OES	Dry		100	mg/kg SO_4
CE119	Sulphur (total)	Acid extraction, ICP-OES	Dry		100	mg/kg S
CE119	Sulphur (total)	Acid extraction, ICP-OES	Dry		0.01	% w/w S
CE197	Total Organic Carbon (TOC)	Carbon Analyser	Dry		0.1	% w/w C
CE197	Estimate of OMC (calculated from TOC)	Calculation from Total Organic Carbon	Dry		0.1	% w/w

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
100634-1	BH07	10.10-10.40	Y	All (EHT)
100634-2	BH07	22.75-22.95	Y	All (EHT)

LABORATORY REPORT

4043

Contract Number: PSL21/5752

Report Date: 29 September 2021

Client's Reference: 784-B026948

Client Name: Tetra Tech
54 Hagley Road
Birmingham
B16 8PE

For the attention of: Nicholas Bool

Contract Title: A46 Newark NNB

Date Received: 16/7/2021
Date Commenced: 16/7/2021
Date Completed: 29/9/2021

Notes: Opinions and Interpretations are outside the UKAS Accreditation

Checked and Approved Signatories:

A Watkins (Director)	R Berriman (Quality Manager)	S Royle (Laboratory Manager)
[redacted]		
L Knight (Assistant Laboratory Manager)	S Eyre (Senior Technician)	T Watkins (Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AR
[redacted]

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH12	5	B	1.50		Brown gravelly very sandy CLAY.
BH12	8	B	4.50		Brown very sandy slightly silty GRAVEL.
BH12	9	D	6.00	6.45	Reddish brown sandy very silty CLAY.
BH24	14	B	2.00	3.00	Brown very sandy silty GRAVEL.
BH24	20	B	4.00	5.00	Brown very sandy silty GRAVEL.
BH24	23	B	5.50	6.00	Brown very sandy slightly clayey silty GRAVEL.
BH25	10	B	2.00	3.00	Brown very sandy slightly silty GRAVEL.
BH25	16	B	4.40	4.80	Brown very sandy slightly clayey silty GRAVEL.
BH25	15	D	4.50	4.60	Brown very sandy slightly clayey silty GRAVEL.
BH25	19	B	5.00	6.00	Brown very gravelly clayey silty SAND.
BH25	22	B	6.00	6.50	Brown gravelly very sandy CLAY.
BH25	21	D	6.30	6.40	Brown slightly gravelly very sandy CLAY.
BH25	28	B	8.00	9.50	Brown sandy slightly silty GRAVEL.
BH25	30	D	11.50	11.60	Brown mottled grey slightly gravelly very sandy CLAY.
BH26	10	B	2.00	3.00	Brown very sandy silty GRAVEL.
BH26	12	D	3.60	3.70	Brown very sandy slightly clayey silty GRAVEL.
BH26	16	B	4.40	4.80	Brown very gravelly sandy CLAY.
BH26	15	D	4.50	4.60	Brown mottled grey gravelly slightly sandy CLAY.
BH26	22	B	6.00	6.50	Brown slightly sandy slightly silty SAND.

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH26	28	B	8.00	9.50	Brown very gravelly very clayey SAND.
BH26	30	D	11.50	11.60	Brown slightly gravelly very sandy CLAY.
BH27	9	B	2.00	3.00	Brown very sandy slightly clayey GRAVEL.
BH27	14	B	5.40	5.90	Brown slightly gravelly very sandy CLAY.
BH27	15	B	6.50	7.30	Brown very sandy slightly clayey GRAVEL.
BH27	16	D	7.70	7.80	Reddish brown very sandy CLAY.
BH27	18	D	9.50	9.60	Reddish brown very sandy CLAY.
BH57	1	D	1.00		Brown slightly gravelly slightly sandy CLAY.
BH57	2	B	1.50	1.70	Brown gravelly sandy CLAY.
BH57	4	B	3.20	3.50	Brown very gravelly slightly clayey SAND.
BH58	4	B	1.00		Brown very gravelly sandy CLAY.
BH58	6	B	1.50		Brown slightly gravelly very clayey SAND.
BH58	9	B	3.50		Brown slightly sandy GRAVEL.
BH58	11	B	6.00		Brown very sandy silty GRAVEL.
BH58	12	B	7.50		Reddish brown very sandy clayey silty GRAVEL.
BH58	14	D	8.20	8.65	Reddish brown very gravelly sandy CLAY.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH12	8	B	4.50		3.9				NP			
BH12	9	D	6.00	6.45	27			39	22	17	100	Intermediate Plasticity CI
BH25	15	D	4.50	4.60	10				NP			
BH25	21	D	6.30	6.40	18			28	15	13	97	Low Plasticity CL
BH25	30	D	11.50	11.60	13			32	17	15	93	Low Plasticity CL
BH26	12	D	3.60	3.70	3.4				NP			
BH26	15	D	4.50	4.60	27			64	28	36	80	High Plasticity CH
BH26	28	B	8.00	9.50	16			34	17	17	47	Low Plasticity CL
BH26	30	D	11.50	11.60	16			37	19	18	94	Intermediate Plasticity CI
BH27	14	B	5.40	5.90	21			33	18	15	95	Low Plasticity CL
BH27	15	B	6.50	7.30	3.4				NP			
BH27	16	D	7.70	7.80	19			30	16	14	100	Low Plasticity CL
BH27	18	D	9.50	9.60	19			35	18	17	100	Intermediate Plasticity CI
BH57	1	D	1.00		34			66	29	37	95	High Plasticity CH
BH58	4	B	1.00		12			53	25	28	74	High Plasticity CH
BH58	14	D	8.20	8.65	14			41	23	18	67	Intermediate Plasticity CI

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL Professional Soils Laboratory

A46 Newark NNB

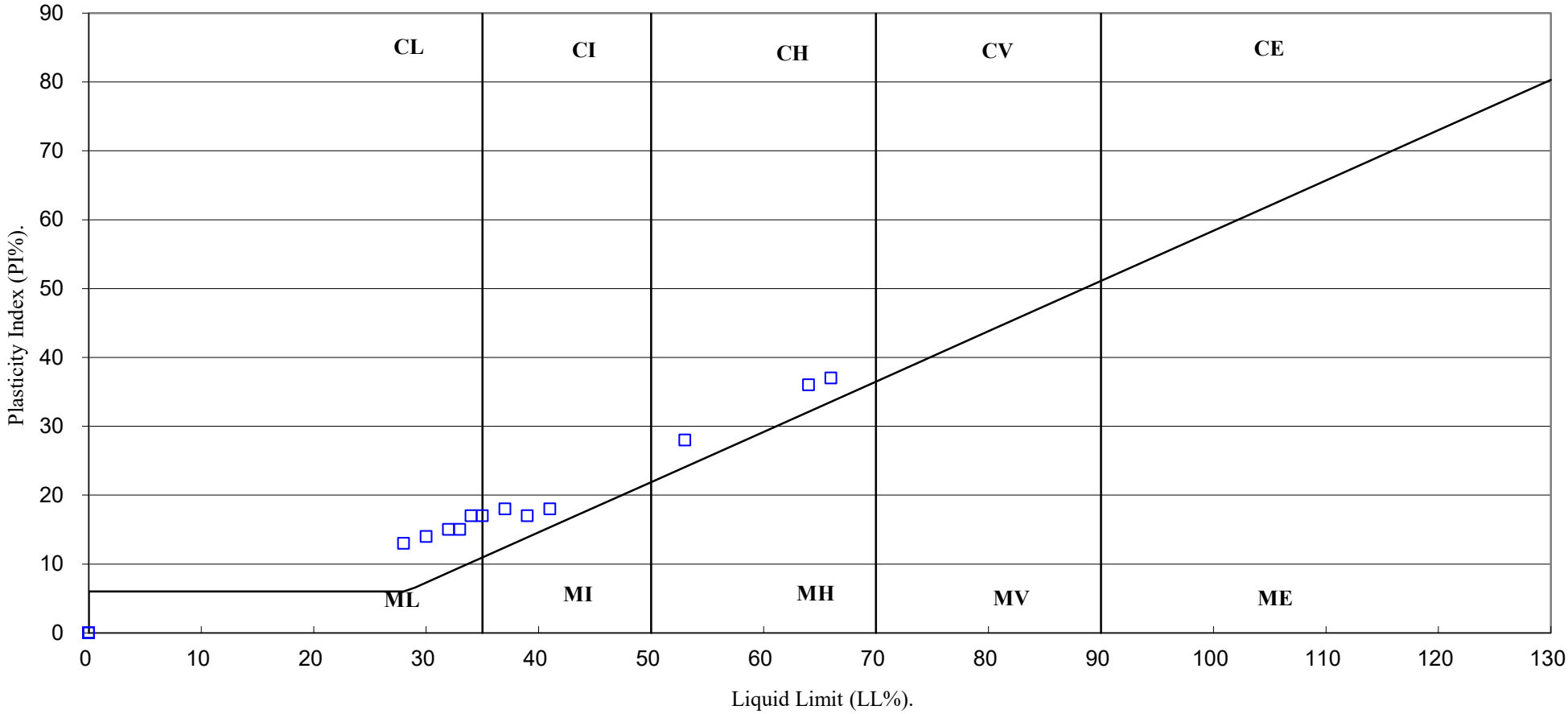
Contract No:

PSL21/5752

Client Ref:

784-B026948

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



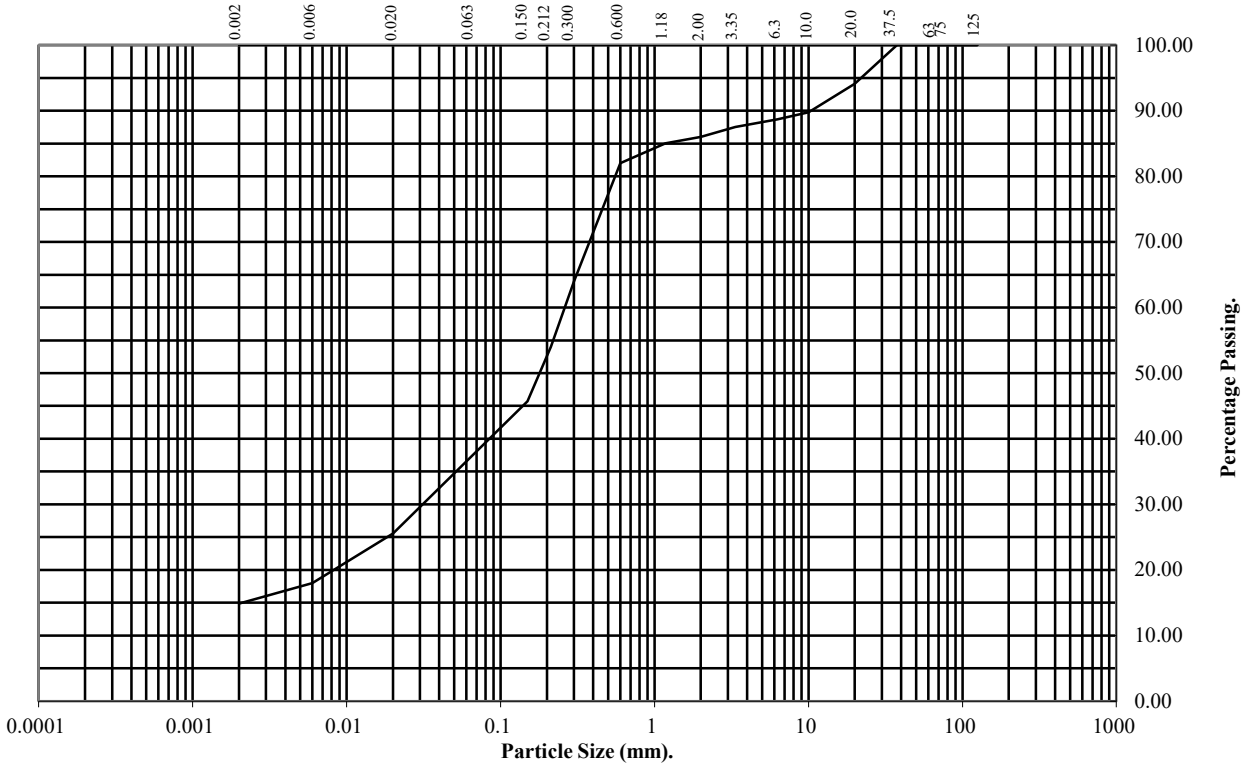
UKAS TESTING 4043	PSL Professional Soils Laboratory	A46 Newark NNB	Contract No: PSL21/5752 Client Ref: 784-B026948

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH12**	**Top Depth (m):**	**1.50**
Sample Number:	**5**	**Base Depth(m):**	
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	94
10	90
6.3	89
3.35	88
2	86
1.18	85
0.6	82
0.3	64
0.212	54
0.15	46
0.063	37

Particle Diameter	Percentage Passing
0.02	26
0.006	18
0.002	15

Soil Fraction	Total Percentage
Cobbles	0
Gravel	14
Sand	49
Silt	22
Clay	15

Remarks:

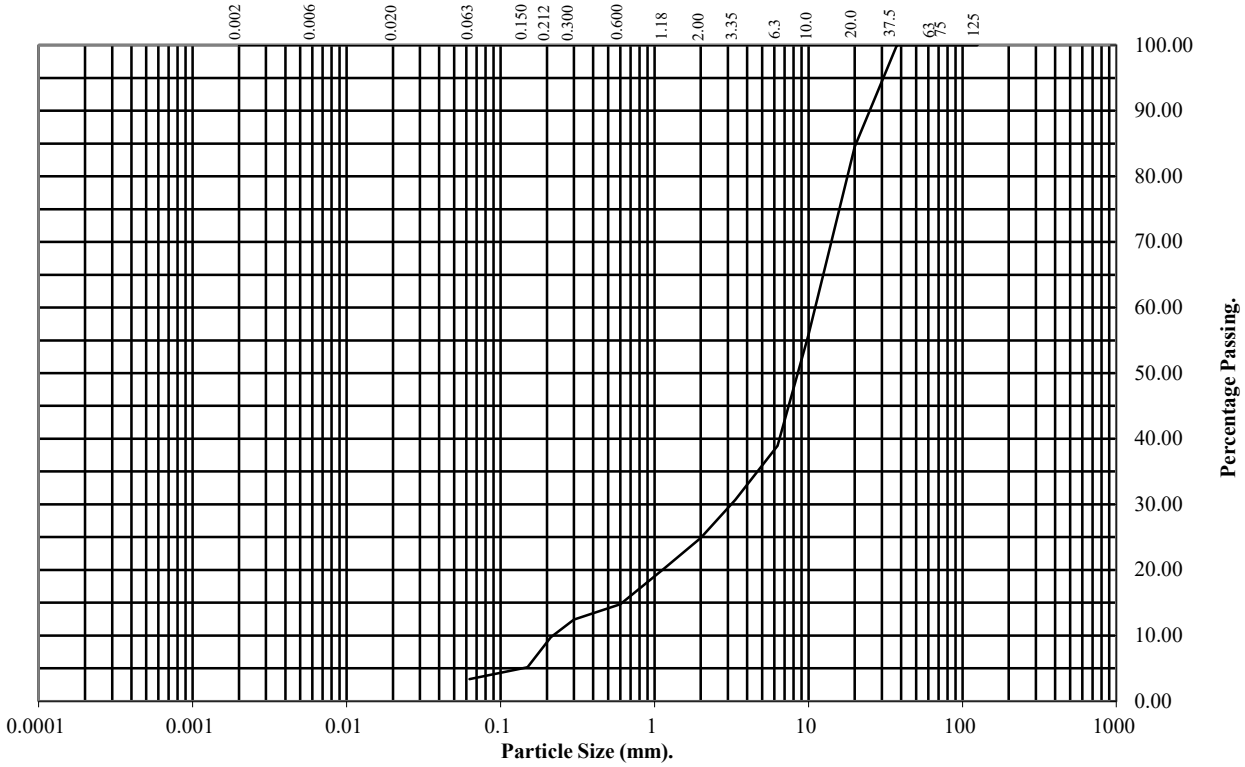
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH12**	**Top Depth (m):**	**4.50**
Sample Number:	**8**	**Base Depth(m):**	
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	84
10	56
6.3	39
3.35	31
2	25
1.18	20
0.6	15
0.3	12
0.212	10
0.15	5
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	75
Sand	22
Silt/Clay	3

Remarks:

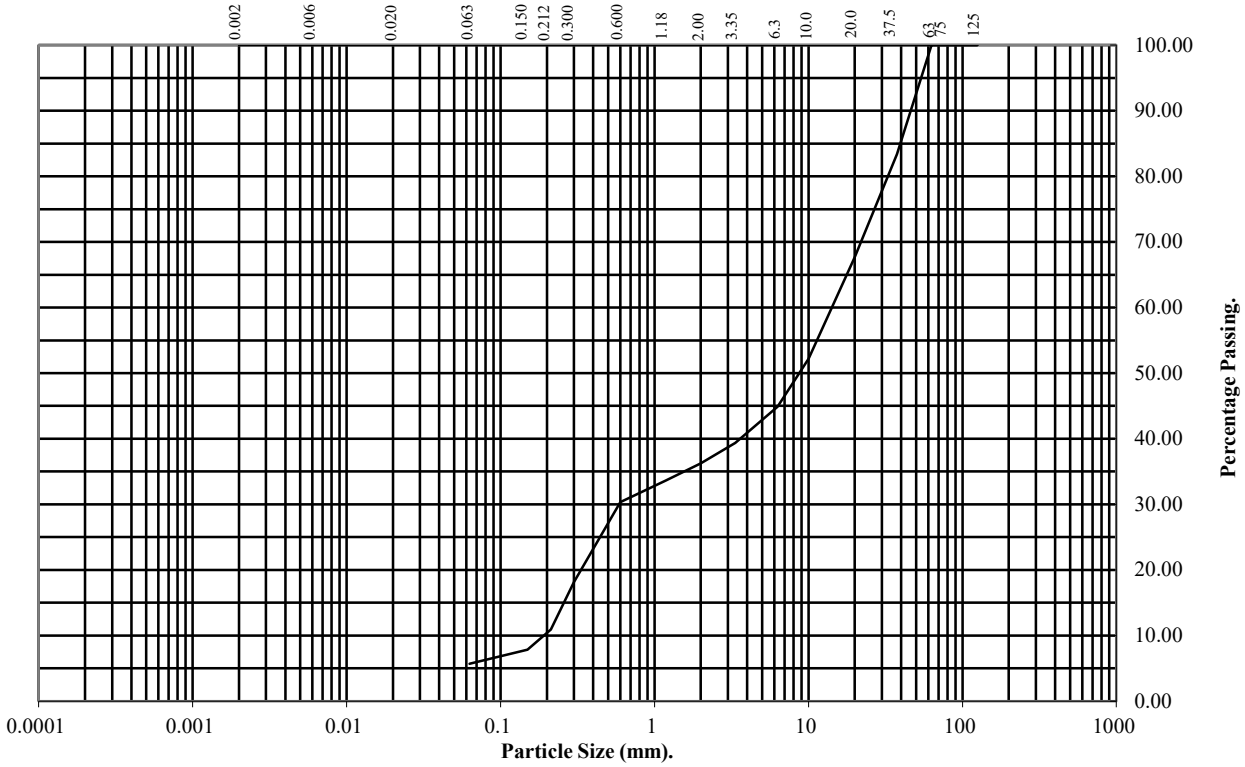
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH24**	**Top Depth (m):**	**2.00**
Sample Number:	**14**	**Base Depth(m):**	**3.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	83
20	68
10	52
6.3	45
3.35	39
2	36
1.18	34
0.6	30
0.3	18
0.212	11
0.15	8
0.063	6

Soil Fraction	Total Percentage
Cobbles	0
Gravel	64
Sand	30
Silt/Clay	6

Remarks:

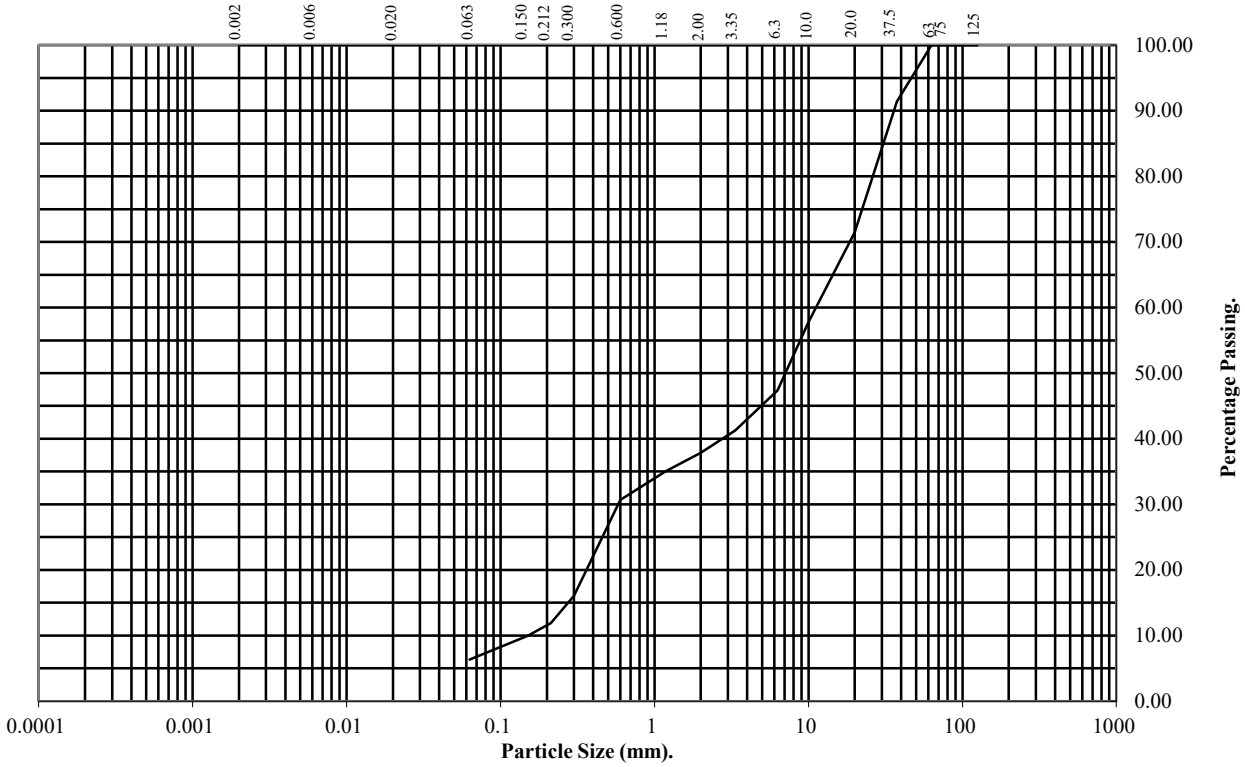
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH24**	**Top Depth (m):**	**4.00**
Sample Number:	**20**	**Base Depth(m):**	**5.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	91
20	71
10	58
6.3	47
3.35	41
2	38
1.18	35
0.6	31
0.3	16
0.212	12
0.15	10
0.063	6

Soil Fraction	Total Percentage
Cobbles	0
Gravel	62
Sand	32
Silt/Clay	6

Remarks:

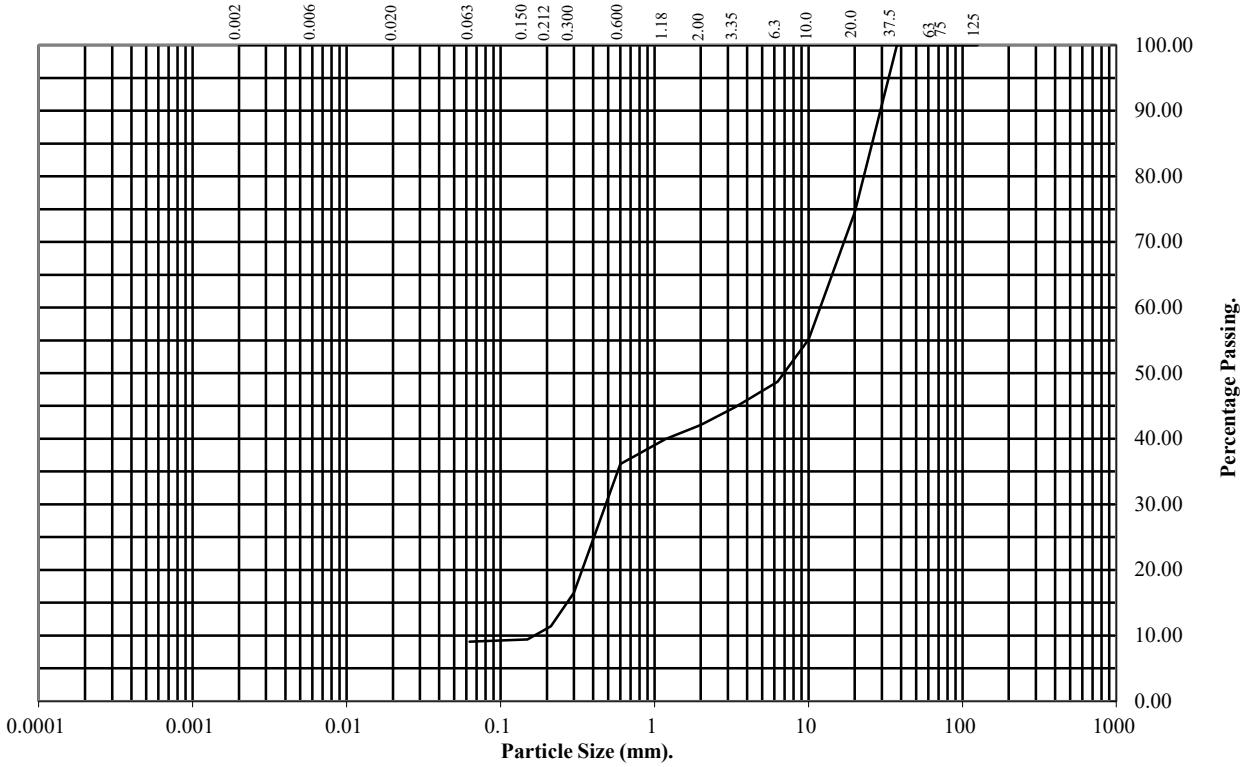
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH24**	**Top Depth (m):**	**5.50**
Sample Number:	**23**	**Base Depth(m):**	**6.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	75
10	55
6.3	49
3.35	45
2	42
1.18	40
0.6	36
0.3	17
0.212	11
0.15	9
0.063	9

Soil Fraction	Total Percentage
Cobbles	0
Gravel	58
Sand	33
Silt/Clay	9

Remarks:

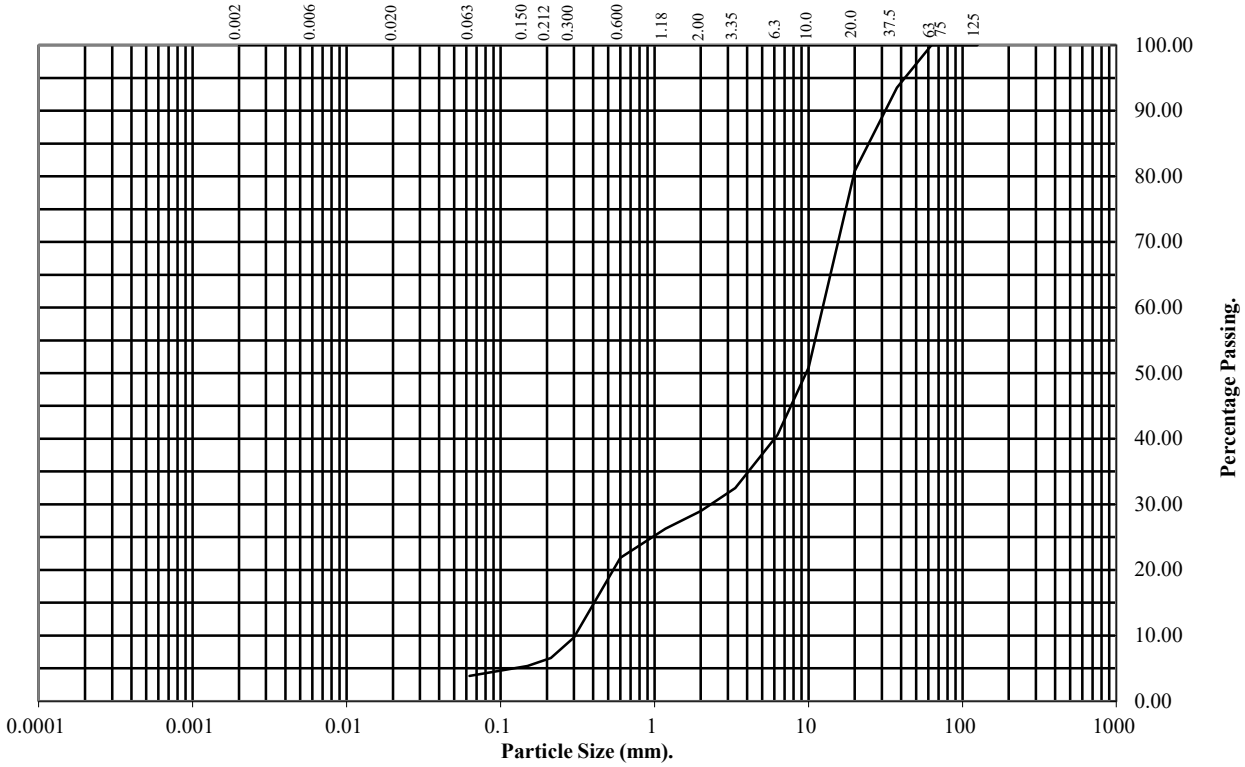
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH25**	**Top Depth (m):**	**2.00**
Sample Number:	**10**	**Base Depth(m):**	**3.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	94
20	81
10	51
6.3	41
3.35	33
2	29
1.18	26
0.6	22
0.3	10
0.212	7
0.15	5
0.063	4

Soil Fraction	Total Percentage
Cobbles	0
Gravel	71
Sand	25
Silt/Clay	4

Remarks:

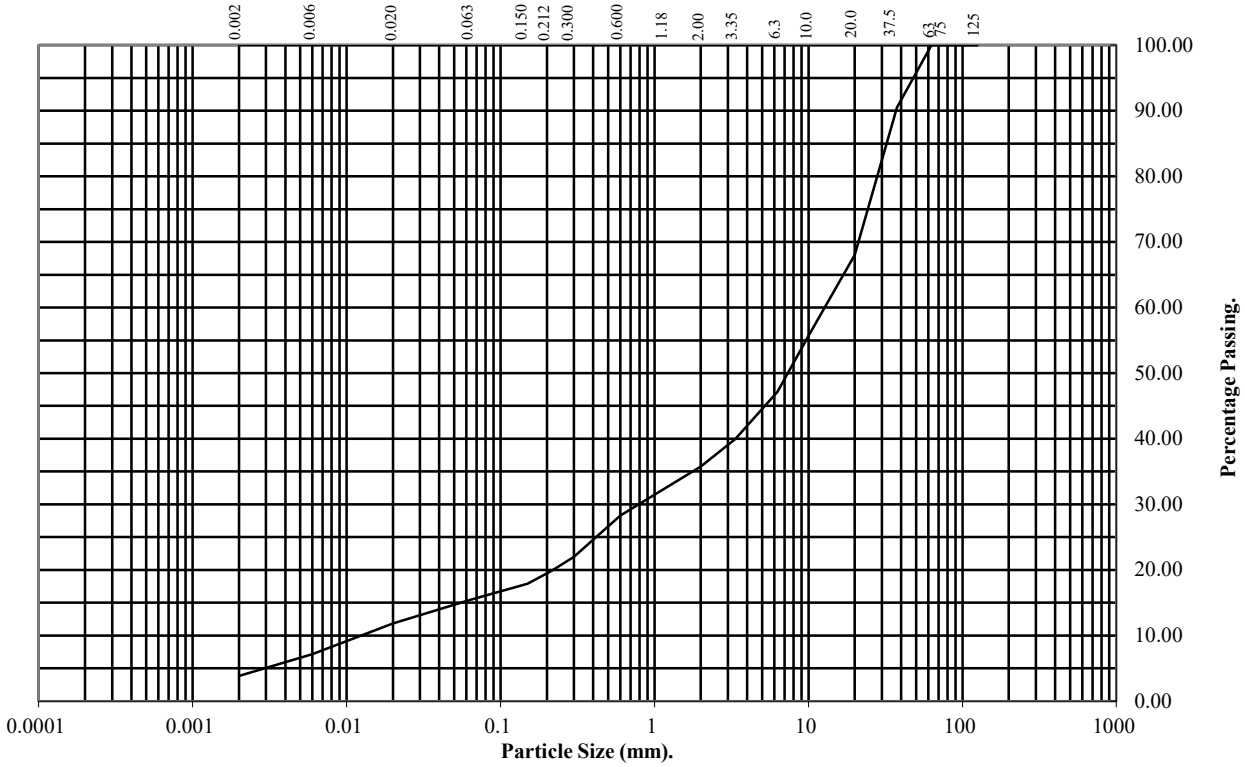
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH25**	**Top Depth (m):**	**4.40**
Sample Number:	**16**	**Base Depth(m):**	**4.80**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	91
20	68
10	56
6.3	47
3.35	40
2	36
1.18	32
0.6	28
0.3	22
0.212	20
0.15	18
0.063	15

Particle Diameter	Percentage Passing
0.02	12
0.006	7
0.002	4

Soil Fraction	Total Percentage
Cobbles	0
Gravel	64
Sand	21
Silt	11
Clay	4

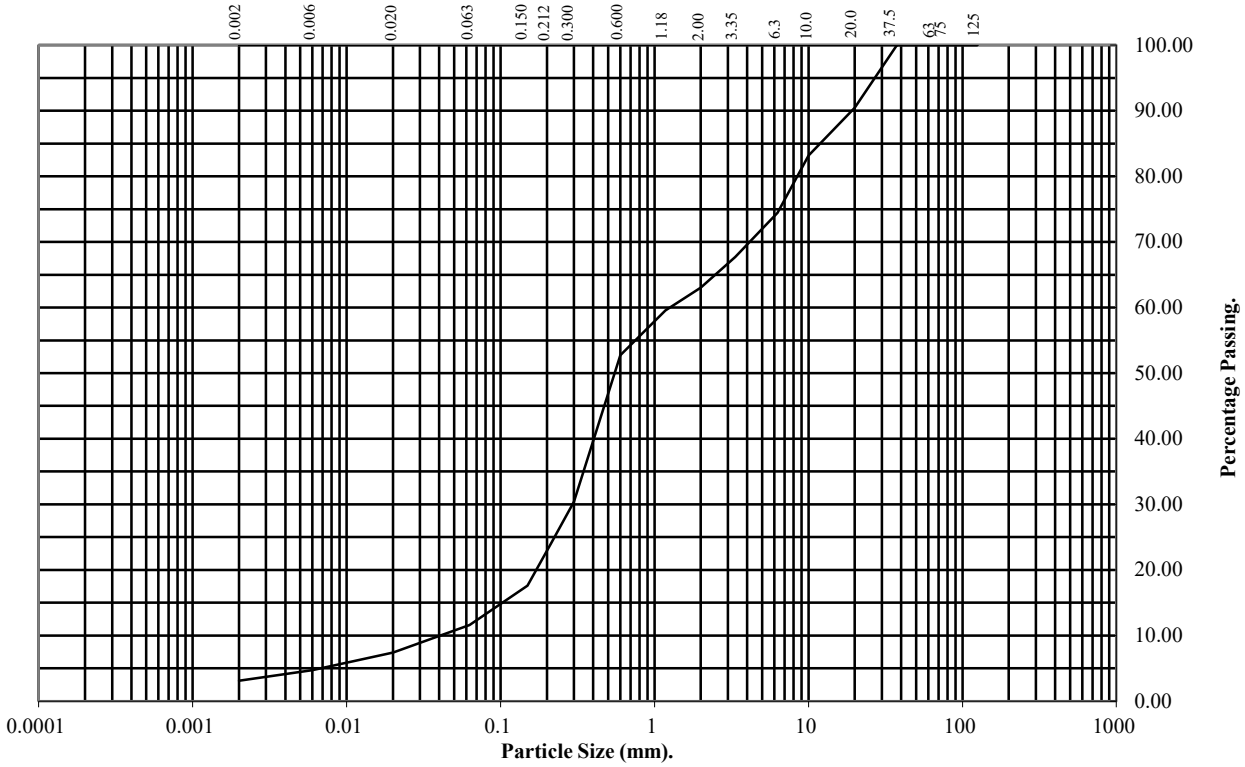
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH25**	**Top Depth (m):**	**5.00**
Sample Number:	**19**	**Base Depth(m):**	**6.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	90
10	83
6.3	74
3.35	68
2	63
1.18	60
0.6	53
0.3	30
0.212	24
0.15	18
0.063	12

Particle Diameter	Percentage Passing
0.02	7
0.006	5
0.002	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	37
Sand	51
Silt	9
Clay	3

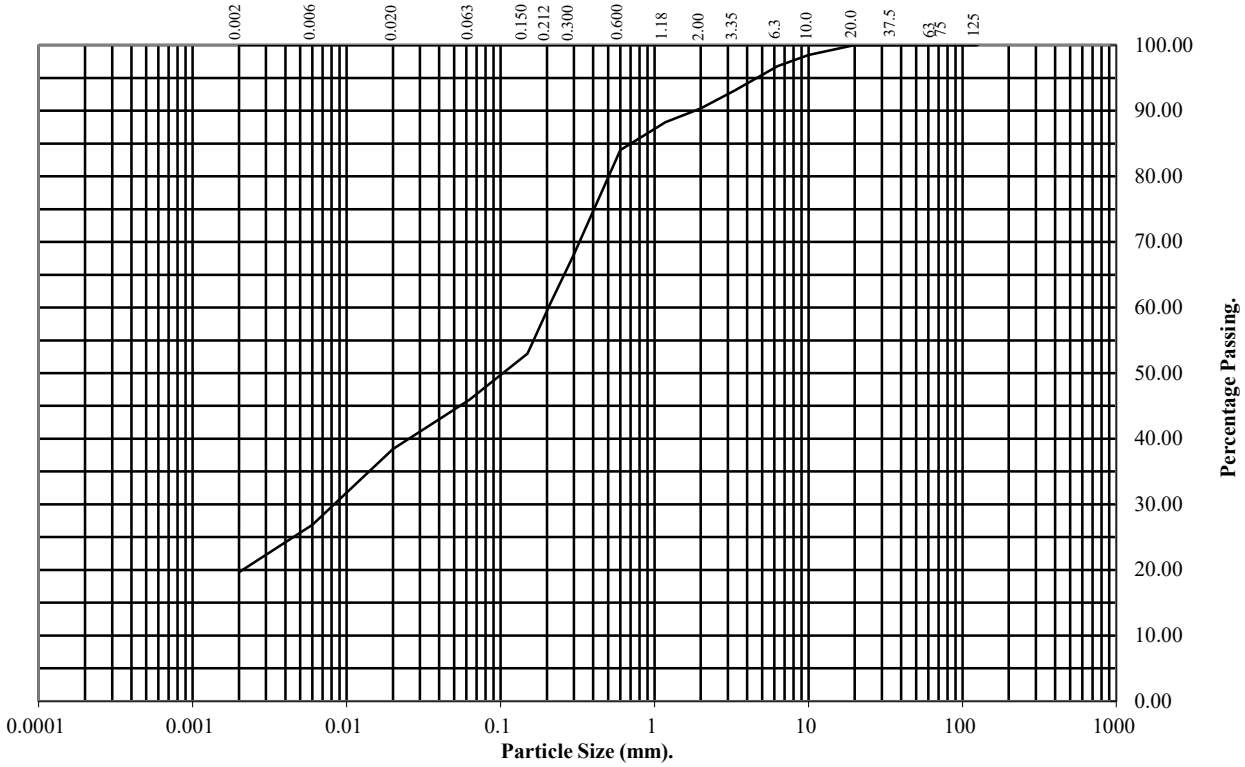
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH25**	**Top Depth (m):**	**6.00**
Sample Number:	**22**	**Base Depth(m):**	**6.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	99
6.3	97
3.35	93
2	90
1.18	88
0.6	84
0.3	68
0.212	61
0.15	53
0.063	46

Particle Diameter	Percentage Passing
0.02	38
0.006	27
0.002	20

Soil Fraction	Total Percentage
Cobbles	0
Gravel	10
Sand	44
Silt	26
Clay	20

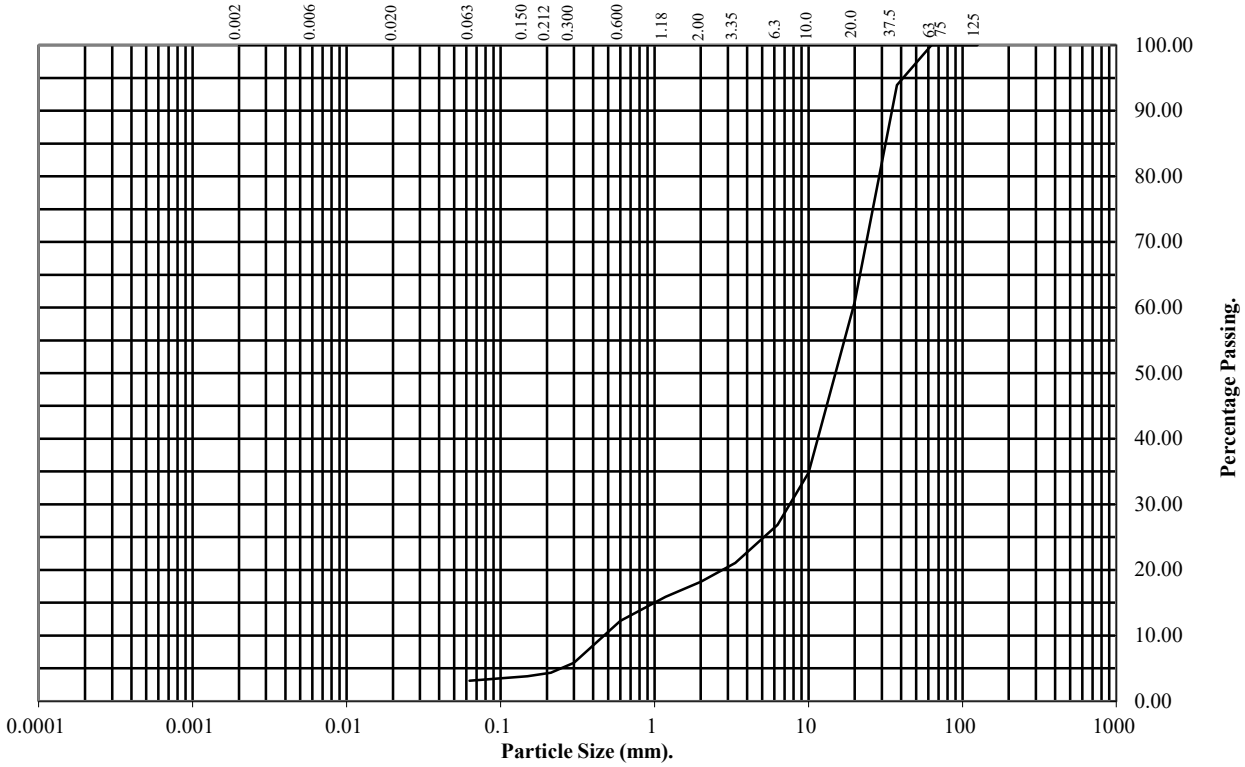
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH25**	**Top Depth (m):**	**8.00**
Sample Number:	**28**	**Base Depth(m):**	**9.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	94
20	61
10	35
6.3	27
3.35	21
2	18
1.18	16
0.6	12
0.3	6
0.212	4
0.15	4
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	82
Sand	15
Silt/Clay	3

Remarks:

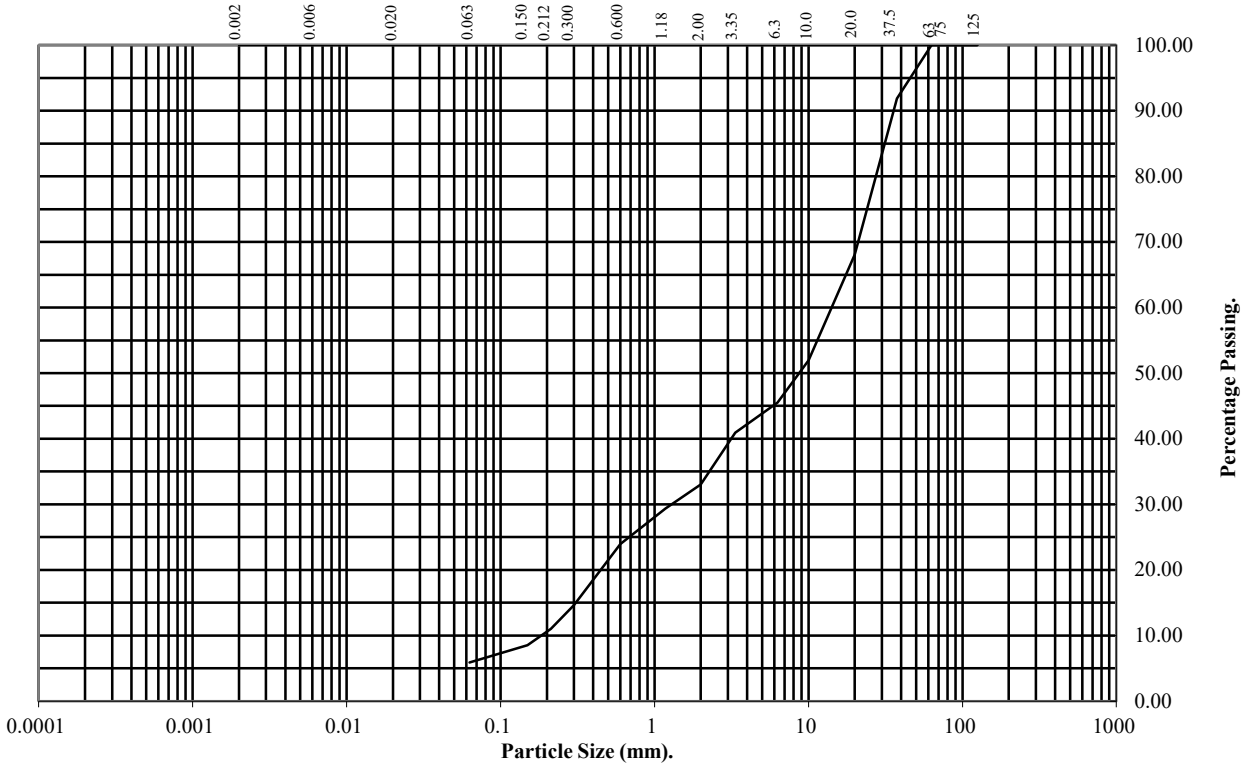
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH26**	**Top Depth (m):**	**2.00**
Sample Number:	**10**	**Base Depth(m):**	**3.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	92
20	68
10	52
6.3	46
3.35	41
2	33
1.18	29
0.6	24
0.3	15
0.212	11
0.15	9
0.063	6

Soil Fraction	Total Percentage
Cobbles	0
Gravel	67
Sand	27
Silt/Clay	6

Remarks:

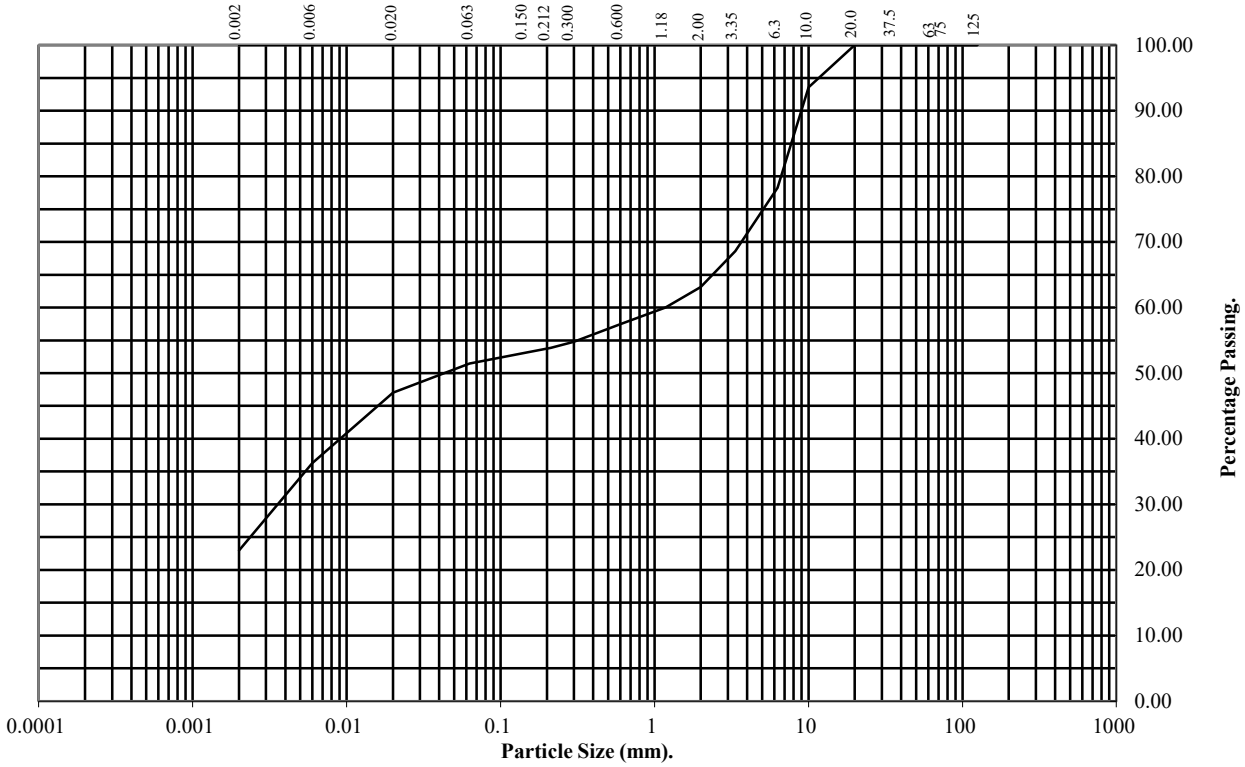
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH26**	**Top Depth (m):**	**4.40**
Sample Number:	**16**	**Base Depth(m):**	**4.80**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	94
6.3	78
3.35	69
2	63
1.18	60
0.6	57
0.3	55
0.212	54
0.15	53
0.063	51

Particle Diameter	Percentage Passing
0.02	47
0.006	36
0.002	23

Soil Fraction	Total Percentage
Cobbles	0
Gravel	37
Sand	12
Silt	28
Clay	23

Remarks:

See Summary of Soil Descriptions

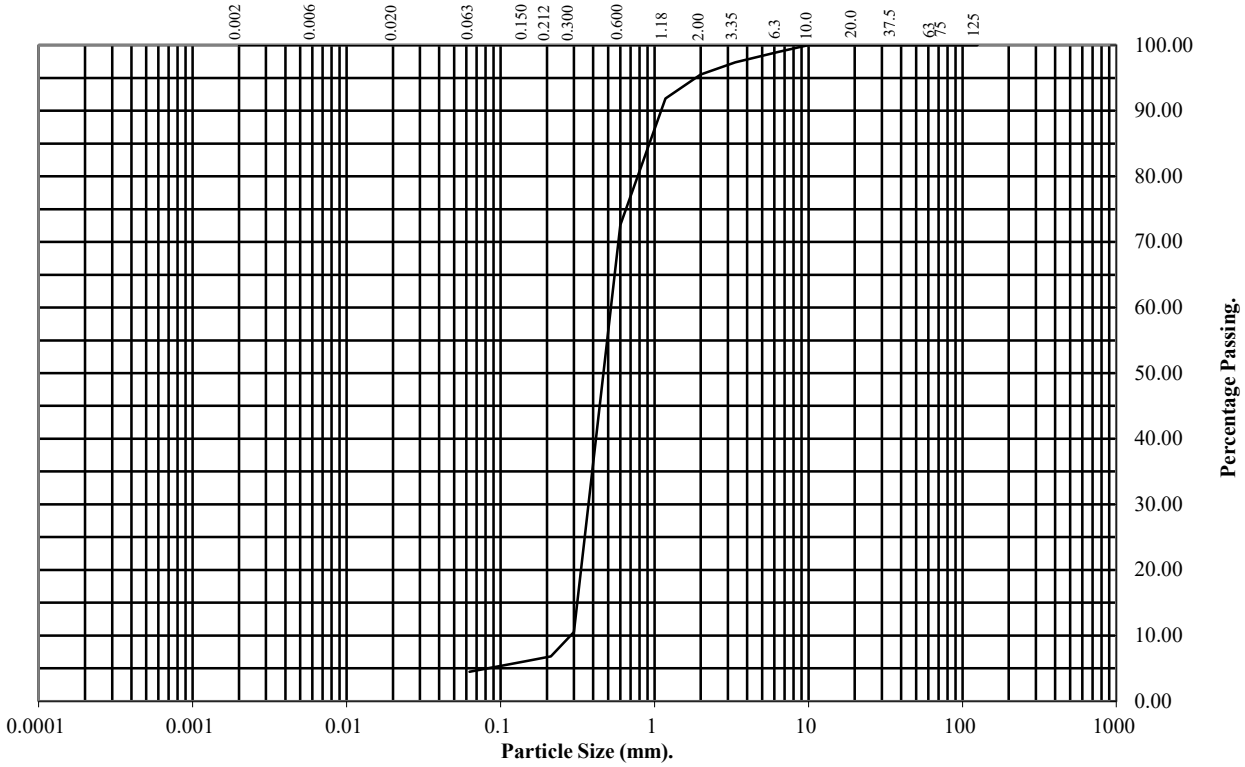
UKAS TESTING 4043	PSL Professional Soils Laboratory	**A46 Newark NNB**	**Contract No:** PSL21/5752 **Client Ref:** 784-B026948

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH26**	**Top Depth (m):**	**6.00**
Sample Number:	**22**	**Base Depth(m):**	**6.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	99
3.35	97
2	96
1.18	92
0.6	73
0.3	11
0.212	7
0.15	6
0.063	4

Soil Fraction	Total Percentage
Cobbles	0
Gravel	4
Sand	92
Silt/Clay	4

Remarks:

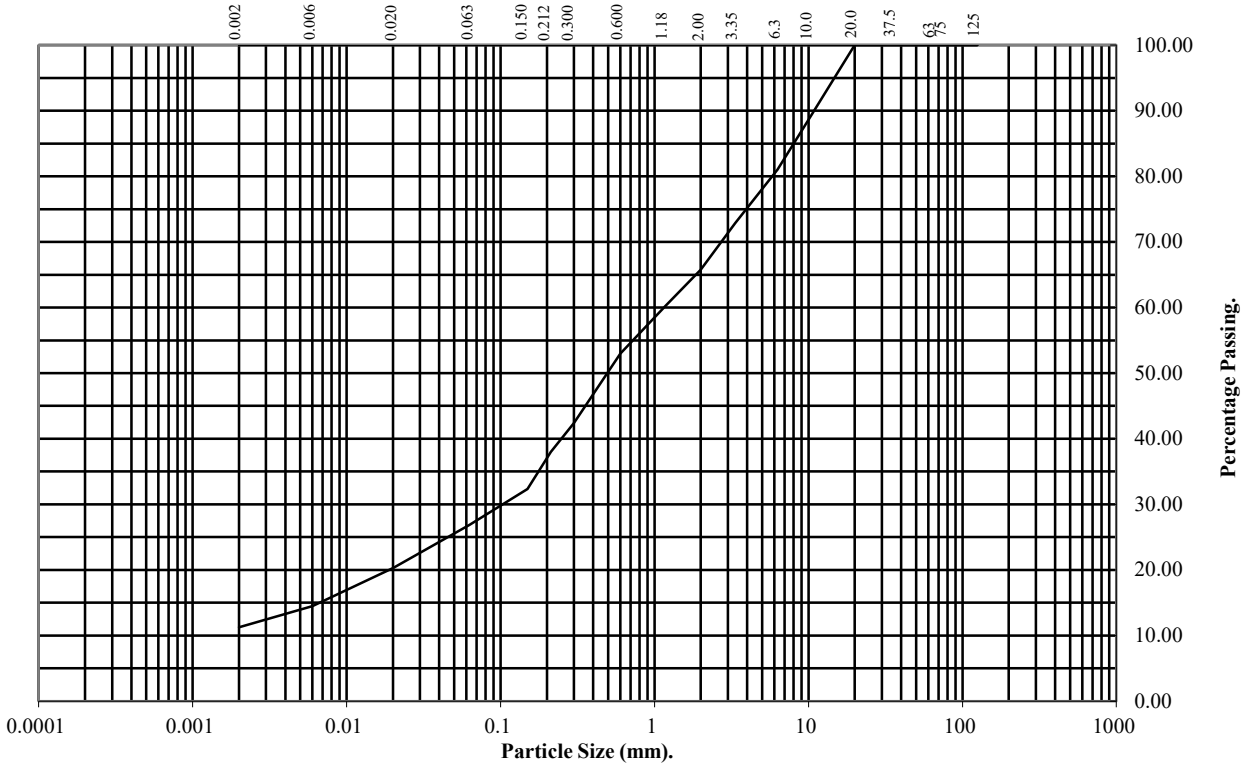
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH26**	**Top Depth (m):**	**8.00**
Sample Number:	**28**	**Base Depth(m):**	**9.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	89
6.3	81
3.35	73
2	66
1.18	60
0.6	53
0.3	42
0.212	38
0.15	32
0.063	27

Particle Diameter	Percentage Passing
0.02	20
0.006	14
0.002	11

Soil Fraction	Total Percentage
Cobbles	0
Gravel	34
Sand	39
Silt	16
Clay	11

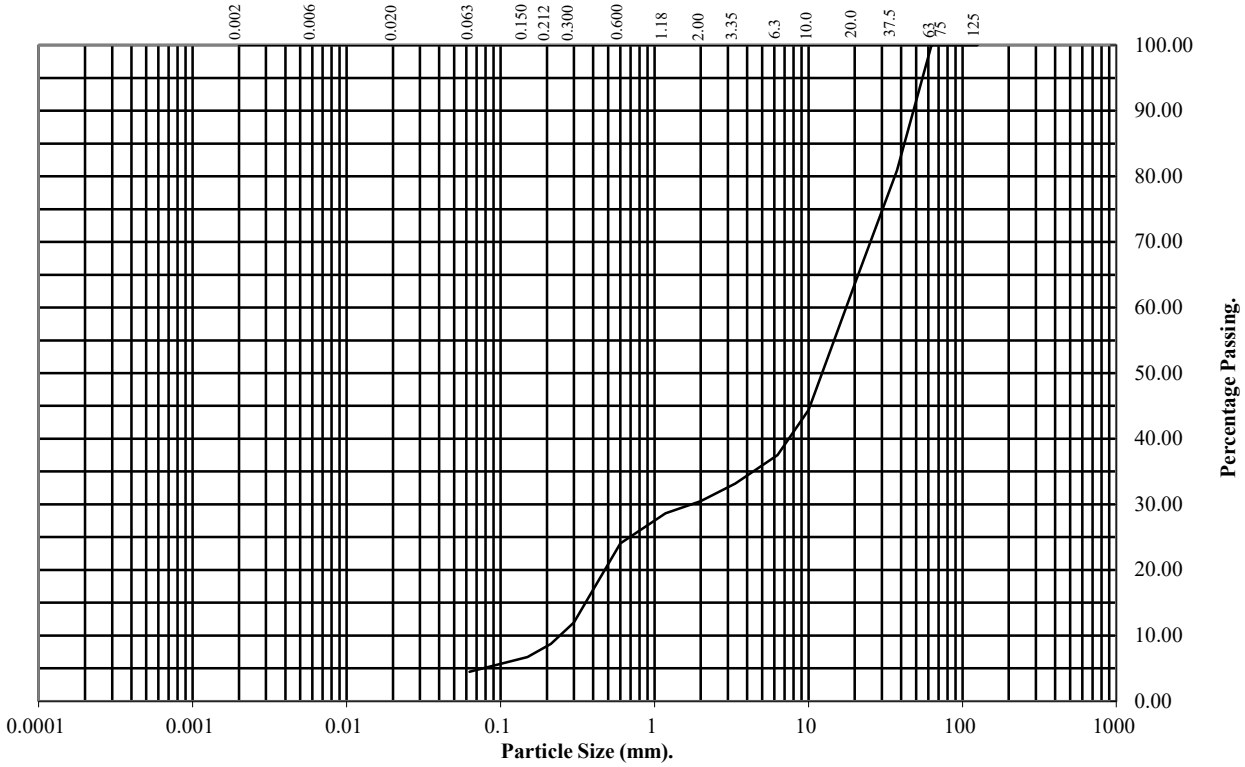
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH27**	**Top Depth (m):**	**2.00**
Sample Number:	**9**	**Base Depth(m):**	**3.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	81
20	64
10	44
6.3	37
3.35	33
2	30
1.18	29
0.6	24
0.3	12
0.212	9
0.15	7
0.063	4

Soil Fraction	Total Percentage
Cobbles	0
Gravel	70
Sand	26
Silt/Clay	4

Remarks:

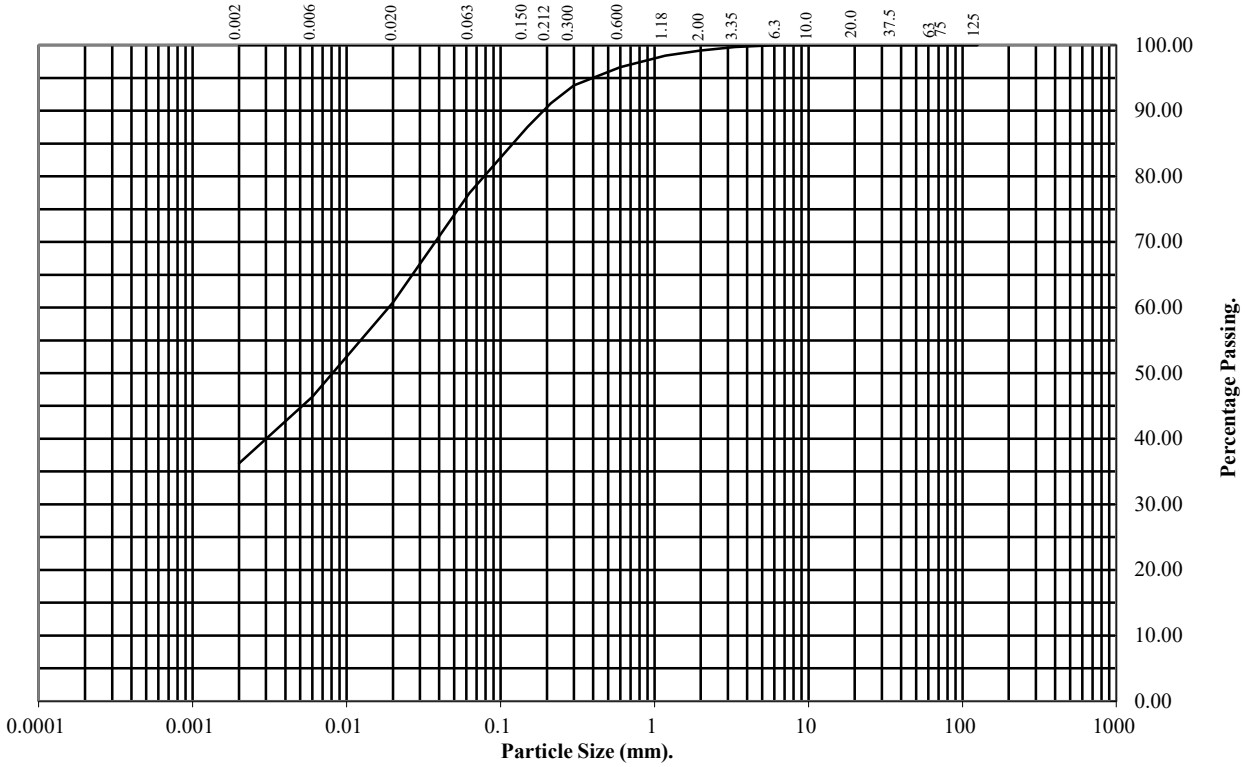
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH27**	**Top Depth (m):**	**5.40**
Sample Number:	**14**	**Base Depth(m):**	**5.90**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	99
1.18	98
0.6	97
0.3	94
0.212	91
0.15	88
0.063	77

Particle Diameter	Percentage Passing
0.02	61
0.006	46
0.002	36

Soil Fraction	Total Percentage
Cobbles	0
Gravel	1
Sand	22
Silt	41
Clay	36

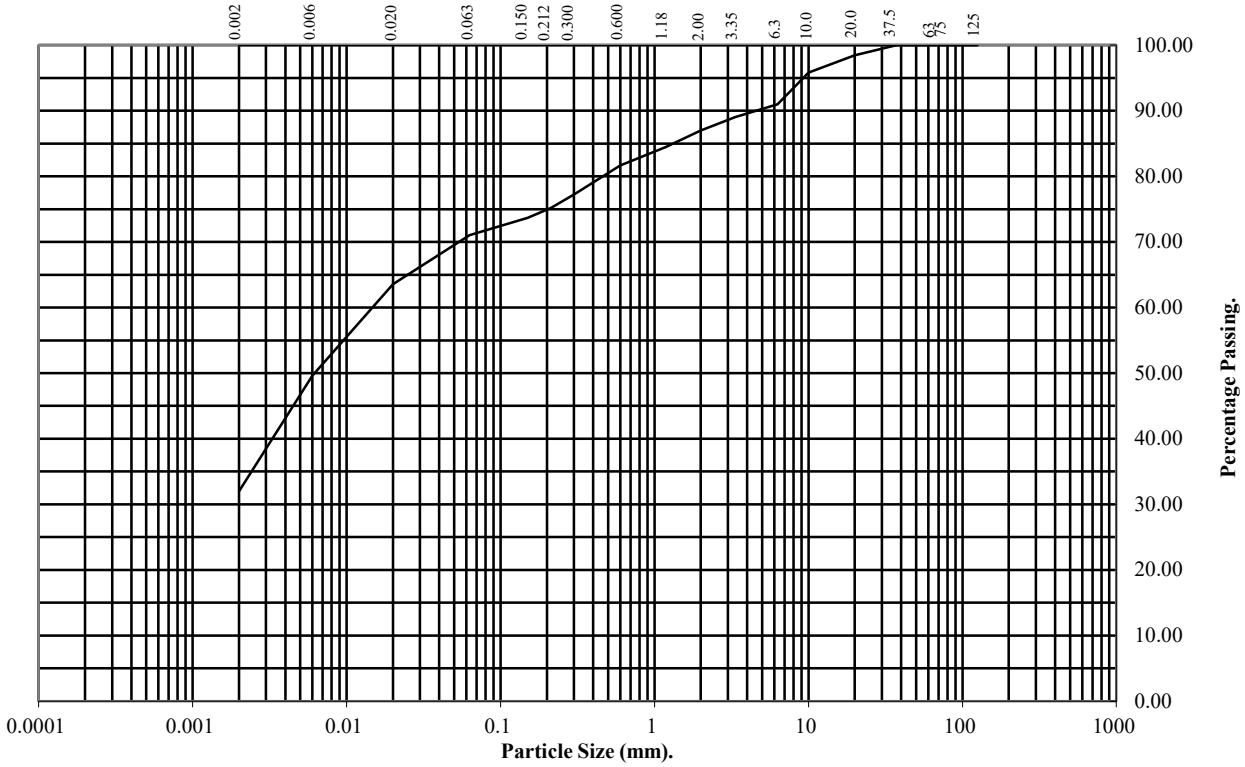
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH57**	**Top Depth (m):**	**1.50**
Sample Number:	**2**	**Base Depth(m):**	**1.70**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	98
10	96
6.3	91
3.35	89
2	87
1.18	84
0.6	82
0.3	77
0.212	75
0.15	74
0.063	71

Particle Diameter	Percentage Passing
0.02	64
0.006	50
0.002	32

Soil Fraction	Total Percentage
Cobbles	0
Gravel	13
Sand	16
Silt	39
Clay	32

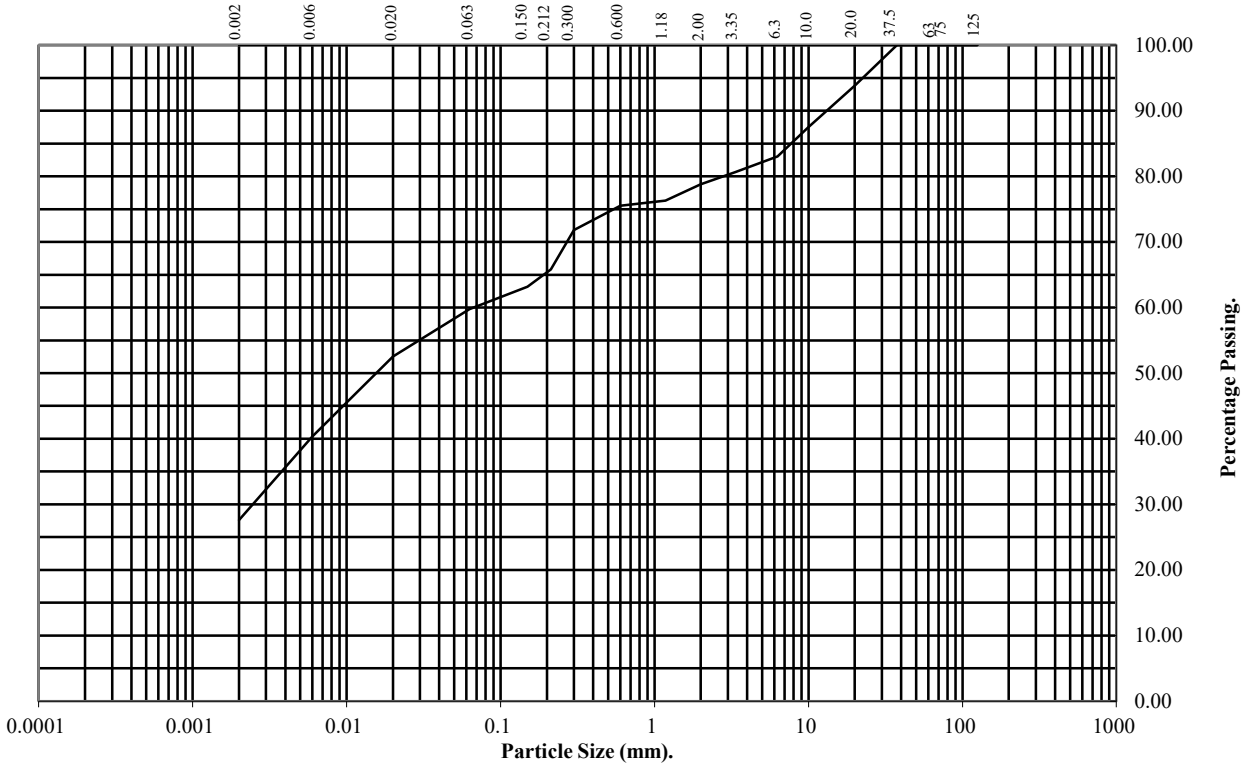
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH58**	**Top Depth (m):**	**1.00**
Sample Number:	**4**	**Base Depth(m):**	
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	94
10	88
6.3	83
3.35	81
2	79
1.18	76
0.6	76
0.3	72
0.212	66
0.15	63
0.063	60

Particle Diameter	Percentage Passing
0.02	53
0.006	40
0.002	28

Soil Fraction	Total Percentage
Cobbles	0
Gravel	21
Sand	19
Silt	32
Clay	28

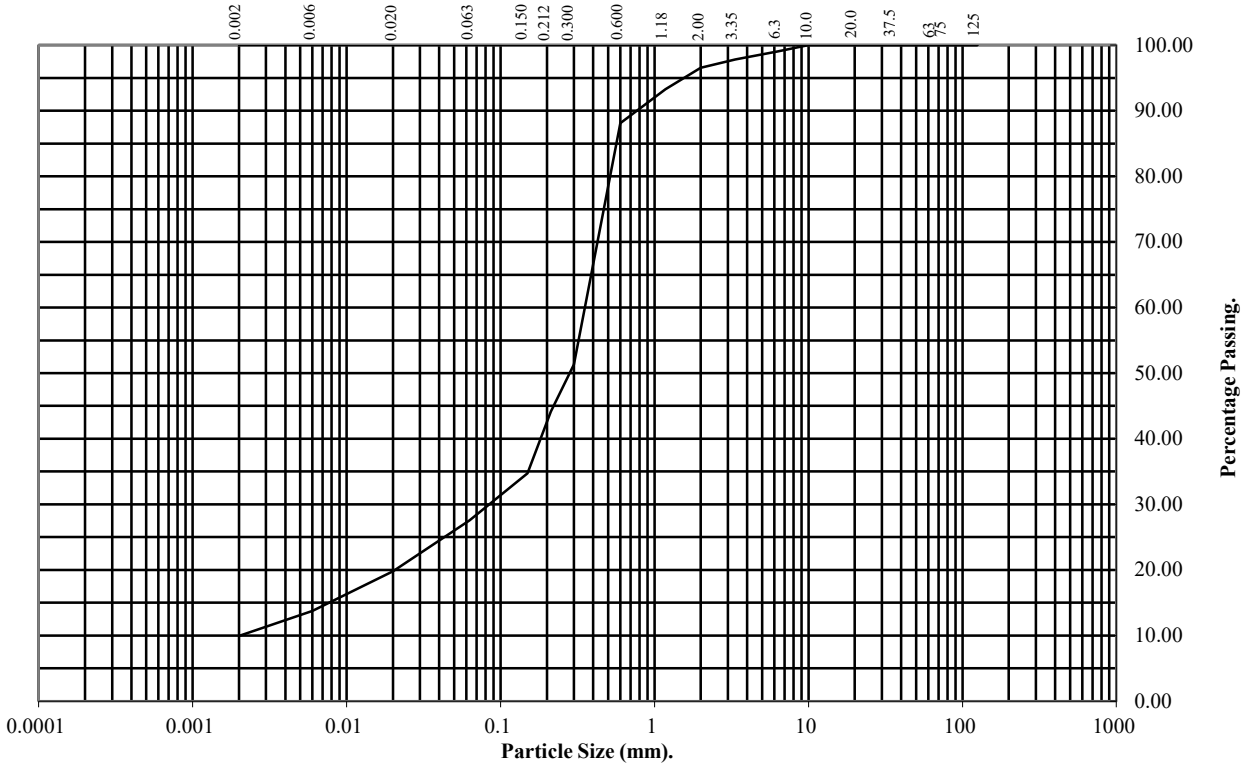
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH58**	**Top Depth (m):**	**1.50**
Sample Number:	**6**	**Base Depth(m):**	
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	99
3.35	98
2	97
1.18	93
0.6	88
0.3	51
0.212	44
0.15	35
0.063	28

Particle Diameter	Percentage Passing
0.02	20
0.006	14
0.002	10

Soil Fraction	Total Percentage
Cobbles	0
Gravel	3
Sand	69
Silt	18
Clay	10

Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

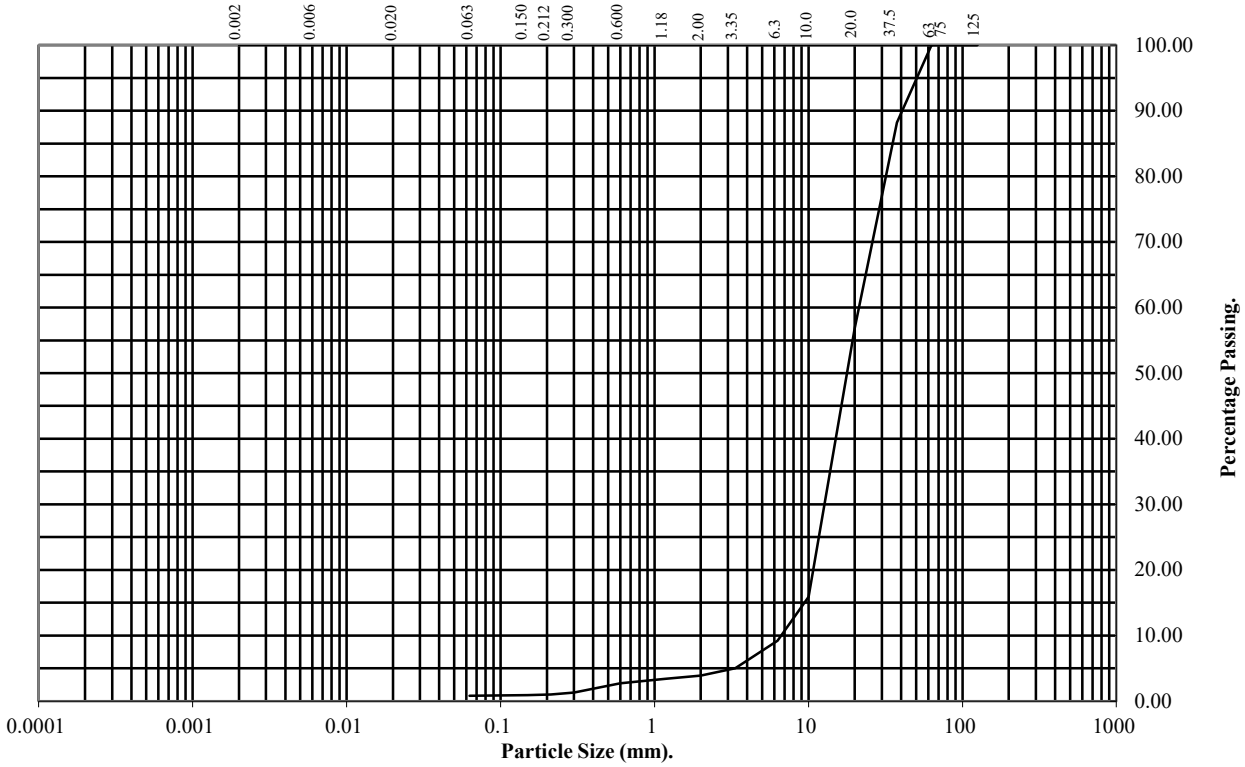
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: BH58 **Top Depth (m):** 3.50

Sample Number: 9 **Base Depth(m):**

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	88
20	57
10	16
6.3	9
3.35	5
2	4
1.18	3
0.6	3
0.3	1
0.212	1
0.15	1
0.063	1

Soil Fraction	Total Percentage
Cobbles	0
Gravel	96
Sand	3
Silt/Clay	1

Remarks:

See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

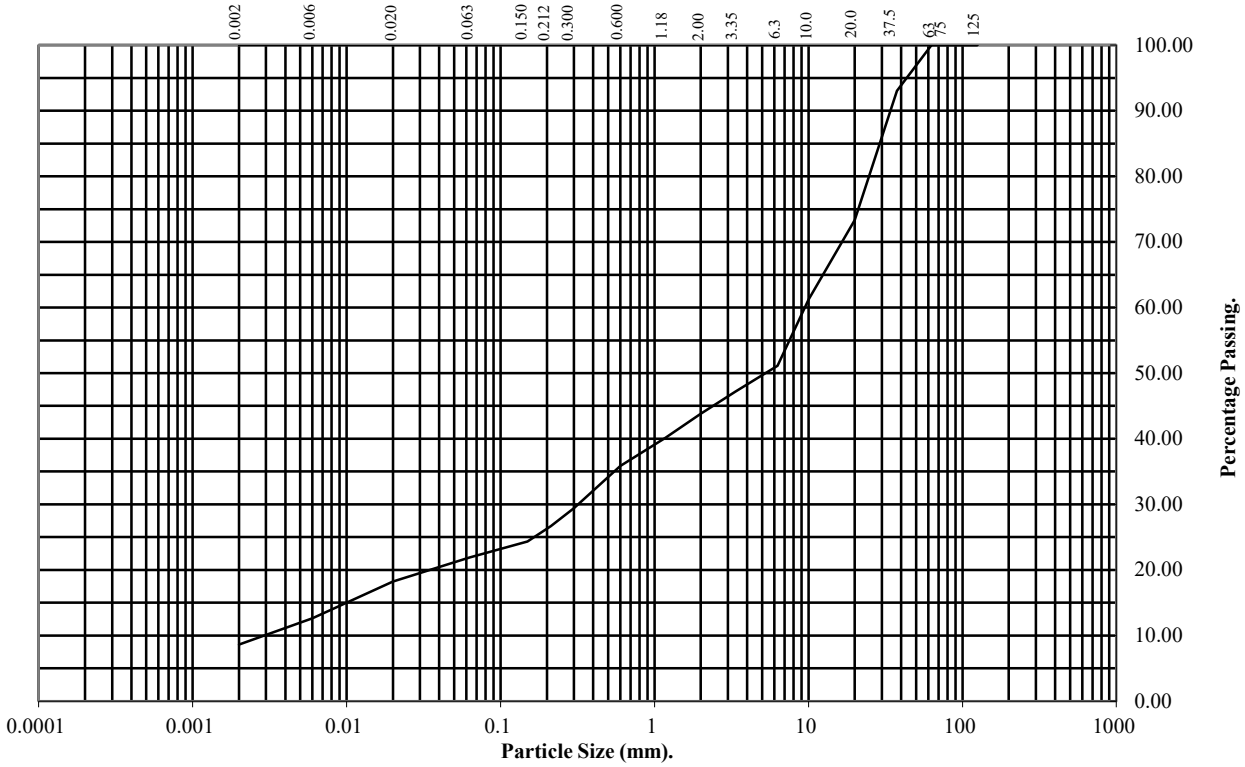
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: **BH58** **Top Depth (m):** **7.50**

Sample Number: **12** **Base Depth(m):**

Sample Type: **B**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	93
20	73
10	61
6.3	51
3.35	47
2	44
1.18	40
0.6	36
0.3	29
0.212	27
0.15	24
0.063	22

Particle Diameter	Percentage Passing
0.02	18
0.006	13
0.002	9

Soil Fraction	Total Percentage
Cobbles	0
Gravel	56
Sand	22
Silt	13
Clay	9

Remarks:
See Summary of Soil Descriptions

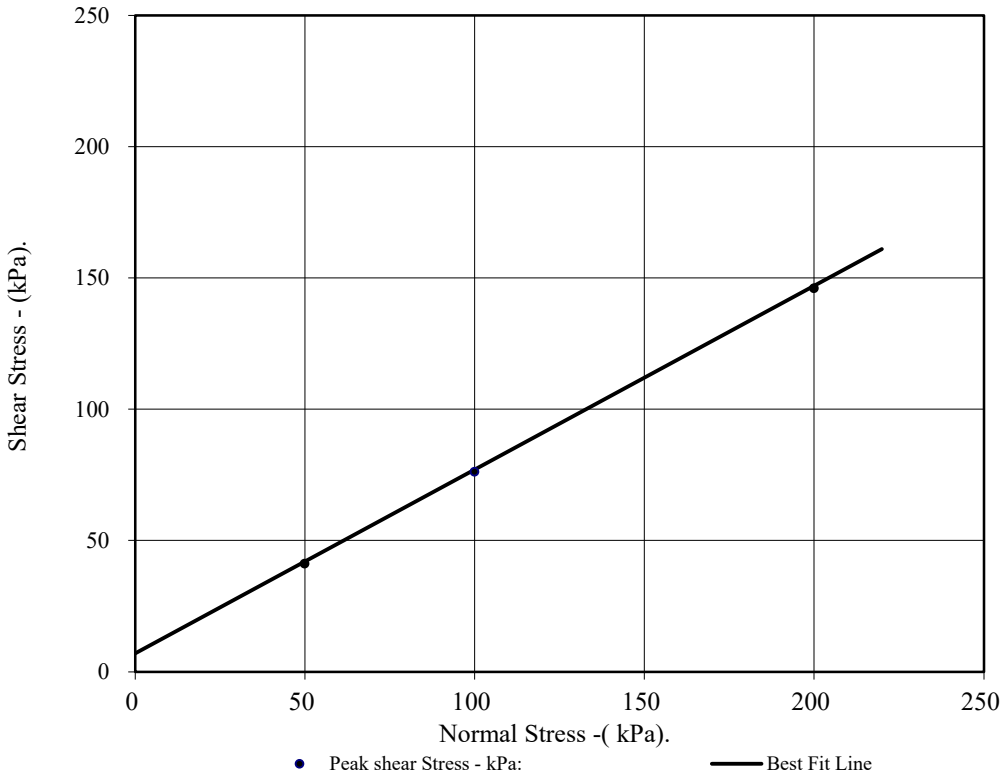
UKAS TESTING 4043	PSL Professional Soils Laboratory	**A46 Newark NNB**	**Contract No:** PSL21/5752 **Client Ref:** 784-B026948

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH57**		Top Depth:	**3.20**
Sample Number:	**4**		Base Depth:	**3.50**
Sample Conditions:	Dry		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 2mm sieve Remoulded using hand tamped effort.			
Sample Description:	**See summary of soil descriptions.**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	19.99	19.99	19.99
Length - mm:	60.05	60.05	60.05
Moisture Content - %:	9.8	9.8	9.8
Bulk Density - Mg/m3:	1.87	1.87	1.87
Dry Density - Mg/m3:	1.70	1.70	1.70
Voids Ratio:	0.556	0.556	0.556
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	19.71	19.59	19.42
Shearing Stage			
Rate of Strain - mm/min	0.60	0.60	0.60
Displacement at peak shear stress - mm	4.80	6.01	3.61
Peak shear Stress - kPa:	41	76	146
Final Consolidated Conditions			
Moisture Content - %:	9.4	9.3	9.2
Bulk Density - Mg/m3:	1.90	1.91	1.92
Dry Density - Mg/m3:	1.73	1.75	1.76
Peak			
Angle of Shearing Resistance:(~~θ~~)	**35**		
Effective Cohesion - kPa:	**7**		



UKAS TESTING 4043

PSL Professional Soils Laboratory

A46 Newark NNB

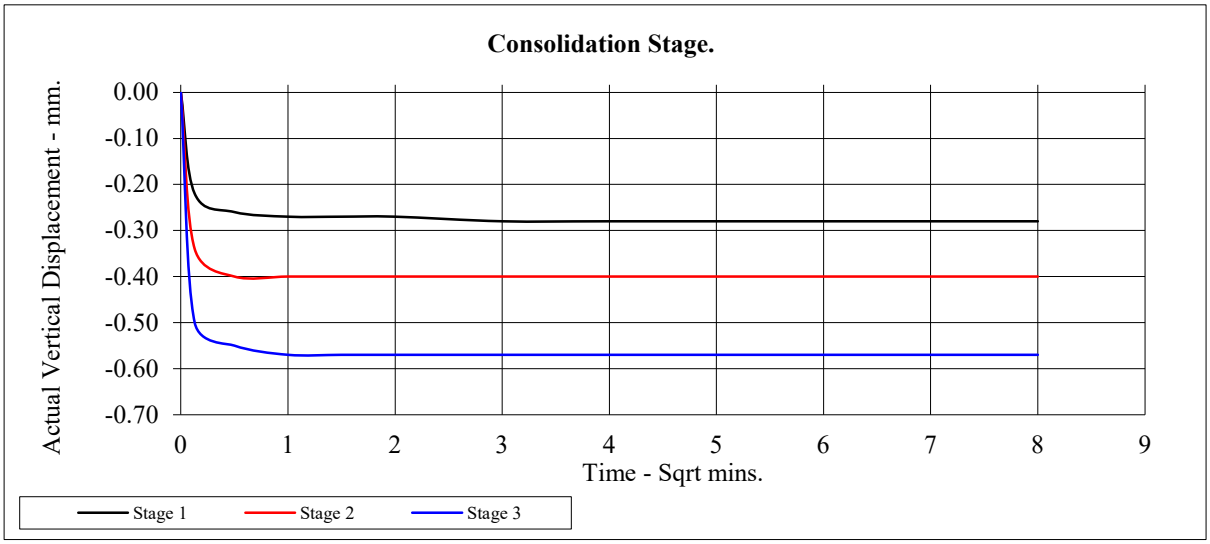
Contract No: PSL21/5752

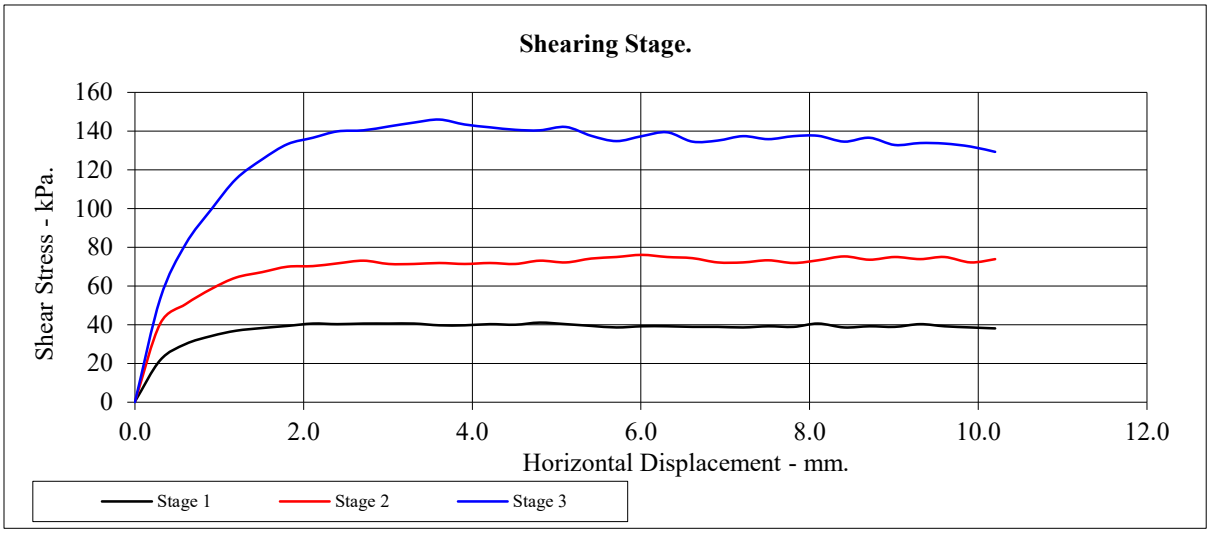
Client Ref: 784-B026948

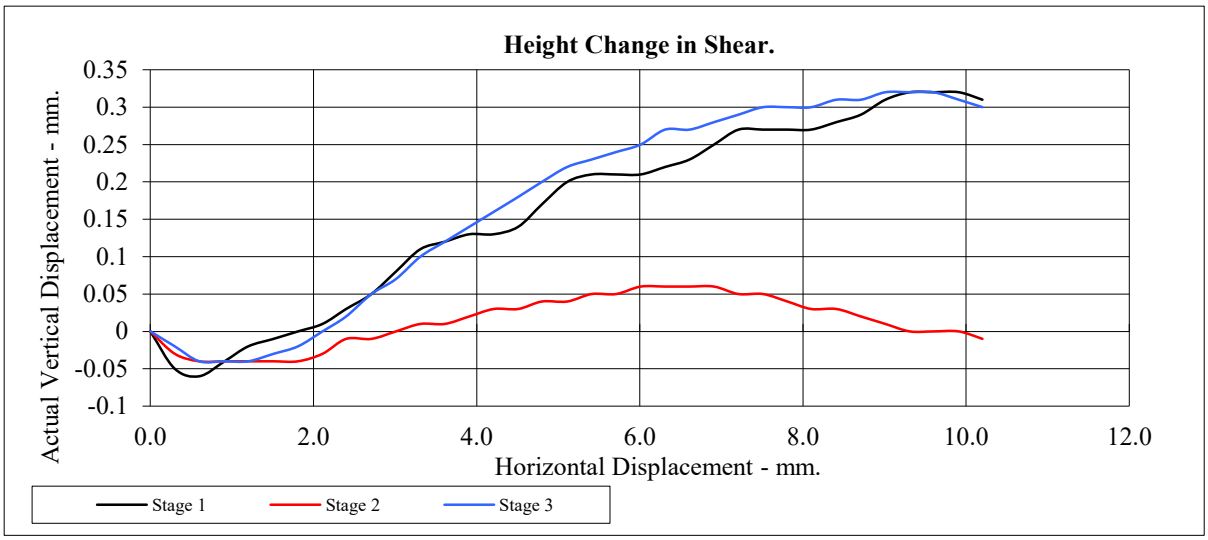
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH57**	Top Depth:	**3.20**
Sample Number:	**4**	Base Depth:	**3.50**





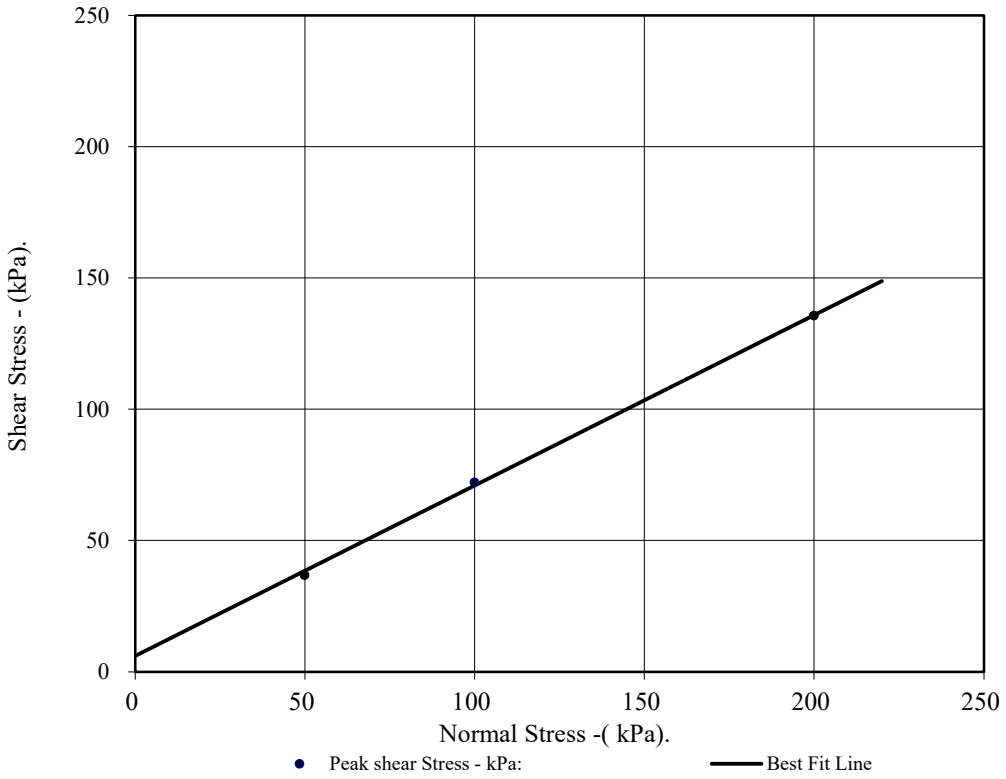


CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH58**		Top Depth:	**6.00**
Sample Number:	**11**		Base Depth:	
Sample Conditions:	Dry		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 2mm sieve Remoulded using hand tamped effort.			
Sample Description:	**See summary of soil descriptions.**			

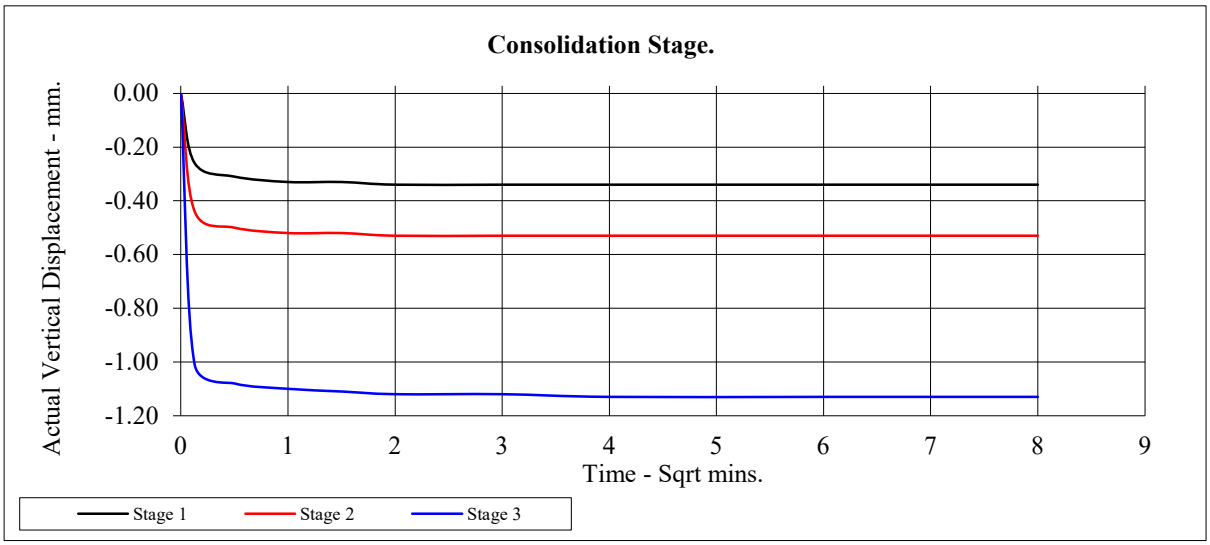
STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	19.99	19.99	19.99
Length - mm:	60.05	60.05	60.05
Moisture Content - %:	11	11	11
Bulk Density - Mg/m3:	1.87	1.87	1.87
Dry Density - Mg/m3:	1.68	1.68	1.68
Voids Ratio:	0.574	0.574	0.574
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	19.65	19.46	18.86
Shearing Stage			
Rate of Strain - mm/min	0.60	0.60	0.60
Displacement at peak shear stress - mm	7.21	6.31	10.20
Peak shear Stress - kPa:	37	72	136
Final Consolidated Conditions			
Moisture Content - %:	11	10	10
Bulk Density - Mg/m3:	1.90	1.92	1.98
Dry Density - Mg/m3:	1.72	1.74	1.80
Peak			
Angle of Shearing Resistance:(~~θ~~)	**33**		
Effective Cohesion - kPa:	**6**		

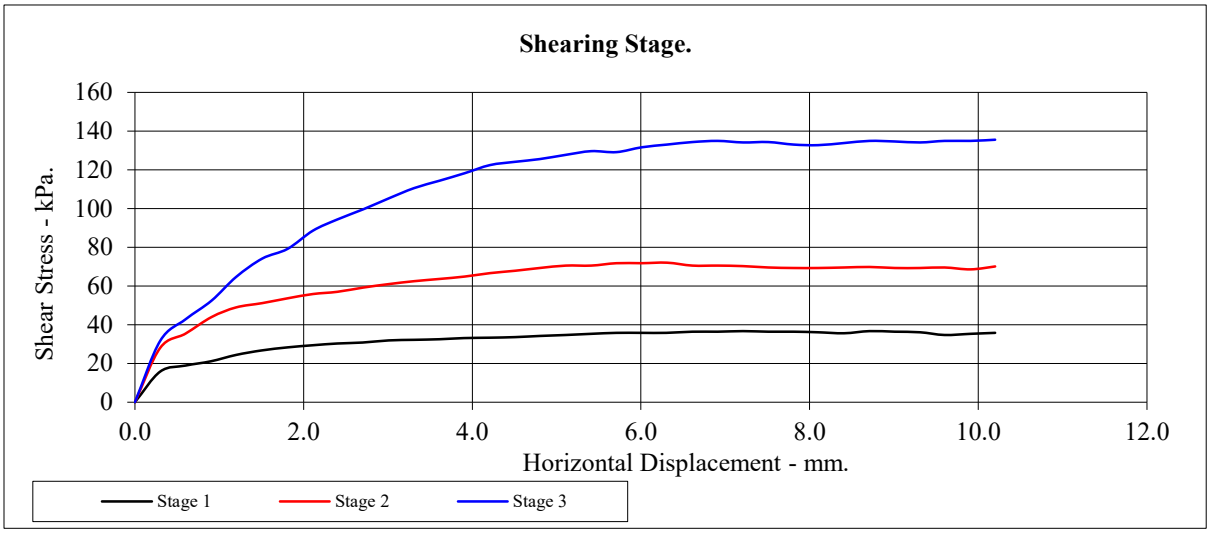


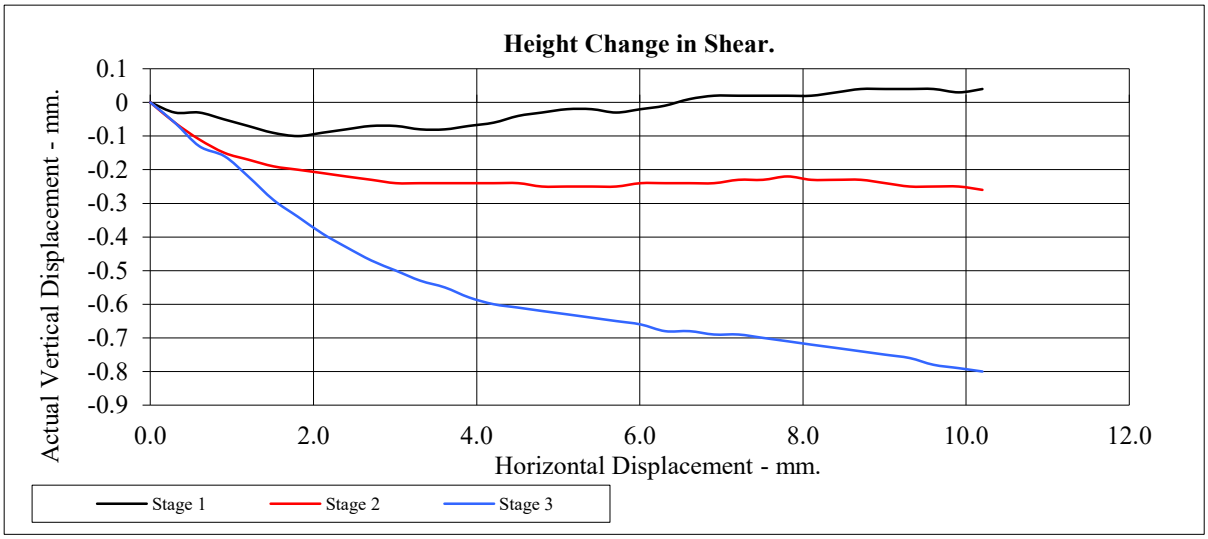
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH58**	Top Depth:	**6.00**
Sample Number:	**11**	Base Depth:	







2531

ANALYTICAL TEST REPORT

Contract no: 100636

Contract name: A46 Newark NNB

Client reference: PSL21/5752

Clients name: Professional Soils Laboratory

Clients address: 5/7 Hexthorpe Road
Doncaster
DN4 0AR

Samples received: 21 September 2021

Analysis started: 21 September 2021

Analysis completed: 28 September 2021

Report issued: 28 September 2021

Notes:
Opinions and interpretations expressed herein are outside the UKAS accreditation scope.
Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.
All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.
Methods, procedures and performance data are available on request.
Results reported herein relate only to the material supplied to the laboratory.
This report shall not be reproduced except in full, without prior written approval.
Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

Key:
U UKAS accredited test
M MCERTS & UKAS accredited test
$ Test carried out by an approved subcontractor
I/S Insufficient sample to carry out test
N/S Sample not suitable for testing

Approved by: [redacted]
Rachael Burton
Customer Support Squad Leader

Chemtech Environmental Limited

SOILS

Lab number			100636-1	100636-2	100636-3	100636-4
Sample id			BH12	BH25	BH26	BH27
Depth (m)			3.50	6.00-6.50	3.60-3.70	5.40-5.90
Date sampled			17/06/2021	17/06/2021	16/06/2021	15/06/2021
Test	**Method**	**Units**				
pH	CE004 [U]	units	8.8	-	-	-
Magnesium (2:1 water soluble)	CE061	mg/l Mg	16	-	-	-
Chloride (2:1 water soluble)	CE049 [U]	mg/l Cl	15	-	-	-
Nitrate (2:1 water soluble)	CE049 [U]	mg/l NO_3	53	-	-	-
Sulphate (2:1 water soluble)	CE061	mg/l SO_4	436	-	-	-
Sulphate (total)	CE062	mg/kg SO_4	13527	-	-	-
Sulphur (total)	CE119	mg/kg S	6006	-	-	-
Sulphur (total)	CE119	% w/w S	0.60	-	-	-
Total Organic Carbon (TOC)	CE197	% w/w C	-	0.4	0.2	0.1
Estimate of OMC (calculated from TOC)	CE197	% w/w	-	0.7	0.3	0.2

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE004	pH	Based on BS 1377, pH Meter	As received	U	-	units
CE061	Magnesium (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry		1	mg/l Mg
CE049	Chloride (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l Cl
CE049	Nitrate (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l NO_3
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry		10	mg/l SO_4
CE062	Sulphate (total)	Acid extraction, ICP-OES	Dry		100	mg/kg SO_4
CE119	Sulphur (total)	Acid extraction, ICP-OES	Dry		100	mg/kg S
CE119	Sulphur (total)	Acid extraction, ICP-OES	Dry		0.01	% w/w S
CE197	Total Organic Carbon (TOC)	Carbon Analyser	Dry		0.1	% w/w C
CE197	Estimate of OMC (calculated from TOC)	Calculation from Total Organic Carbon	Dry		0.1	% w/w

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
100636-1	BH12	3.50	Y	All (EHT)
100636-2	BH25	6.00-6.50	Y	All (EHT)
100636-3	BH26	3.60-3.70	Y	All (EHT)
100636-4	BH27	5.40-5.90	Y	All (EHT)

LABORATORY REPORT

4043

Contract Number: PSL21/6170

Report Date: 28 September 2021

Client's Reference: 784-B026948

Client Name: Tetra Tech
54 Hagley Road
Birmingham
B16 8PE

For the attention of: Nicholas Bool

Contract Title: A46 Newark NNB

Date Received: 2/8/2021
Date Commenced: 2/8/2021
Date Completed: 28/9/2021

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins (Director)

R Berriman (Quality Manager)

S Royle (Laboratory Manager)

[redacted]

L Knight (Assistant Laboratory Manager)

S Eyre (Senior Technician)

T Watkins (Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AR
[redacted]

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH08	D7	D	5.50	5.60	Dark brown mottled grey slightly gravelly SILT.
BH08	B12	B	9.00	10.00	Brown mottled grey very gravelly SAND.
BH08	B13	B	10.50	12.50	Brown very sandy silty GRAVEL.
BH08	C15	CORE	15.90	16.00	Reddish brown mottled grey very sandy CLAY.
BH08	C19	CORE	23.30	23.60	Stiff brown slightly gravelly sandy CLAY
BH08	C21	CORE	25.50	25.80	Stiff brown slightly gravelly slightly sandy CLAY
BH09	D3	D	0.80	0.90	Dark brown slightly gravelly slightly sandy CLAY.
BH09	B4	B	0.90	1.10	Brown mottled grey sandy CLAY.
BH09	D6	D	2.10	2.20	Brown mottled grey slightly sandy CLAY.
BH09	B7	B	2.30	2.80	Dark brown slightly gravelly very sandy CLAY.
BH09	B8	B	3.20	3.70	Brown gravelly SAND.
BH09	B10	B	4.30	4.70	Brown very sandy slightly silty GRAVEL.
BH09	D12	D	5.50	5.60	Reddish brown gravelly very sandy CLAY.
BH10	B5	B	0.50	1.10	Brown very sandy silty CLAY.
BH10	D4	D	0.50	0.60	Reddish brown sandy silty CLAY.
BH10	B6	B	1.50	2.00	Brown mottled grey sandy CLAY.
BH10	B10	B	2.50	2.80	Brownish grey very gravelly very clayey SAND.
BH42	D6	D	3.50	3.60	Grey sandy SILT.
BH42	D10	D	7.50	7.60	Grey slightly gravelly sandy SILT.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH08	D7	D	5.50	5.60	20				NP			
BH08	C15	CORE	15.90	16.00	21			43	22	21	100	Intermediate Plasticity CI
BH09	D3	D	0.80	0.90	37							
BH09	B4	B	0.90	1.10	35			45	23	22	98	Intermediate Plasticity CI
BH09	D6	D	2.10	2.20	36			50	24	26	100	High Plasticity CH
BH09	D12	D	5.50	5.60	29			33	22	11	95	Low Plasticity CL
BH10	B5	B	0.50	1.10	27			52	25	27	98	High Plasticity CH
BH10	D4	D	0.50	0.60	27							
BH10	B6	B	1.50	2.00	25			50	24	26	100	High Plasticity CH
BH42	D6	D	3.50	3.60	17				NP			
BH42	D10	D	7.50	7.60	16				NP			

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL Professional Soils Laboratory

A46 Newark NNB

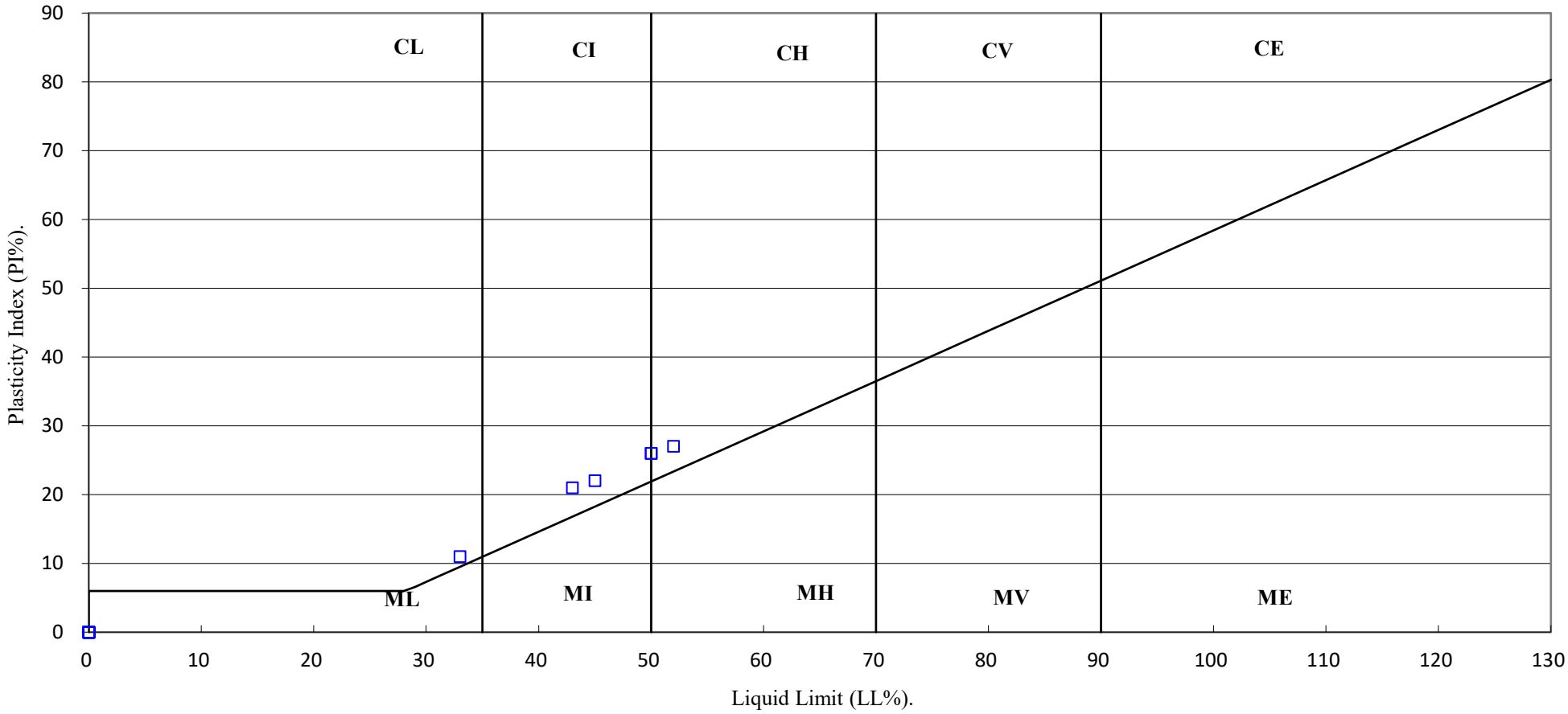
Contract No:

PSL21/6170

Client Ref:

784-B026948

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



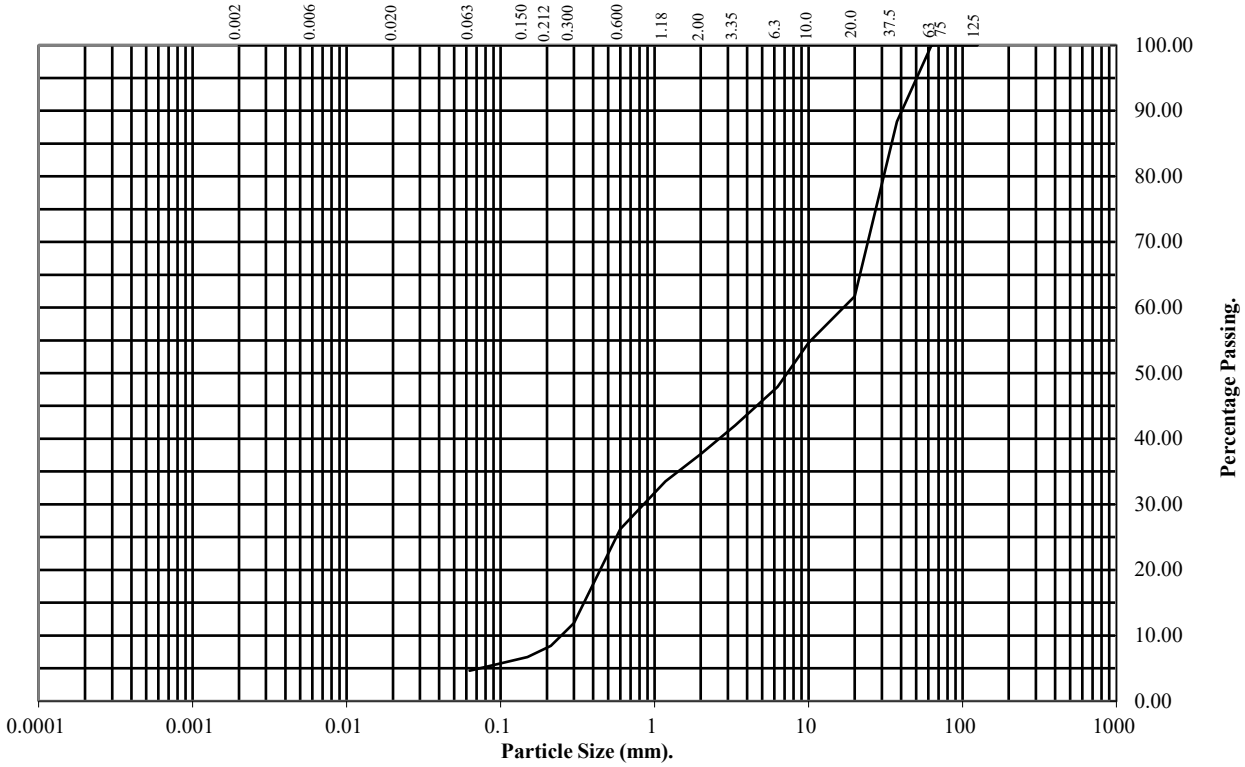
UKAS TESTING 4043	PSL Professional Soils Laboratory	A46 Newark NNB	Contract No: PSL21/6170 Client Ref: 784-B026948

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH08**	**Top Depth (m):**	**10.50**
Sample Number:	**B13**	**Base Depth(m):**	**12.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	88
20	62
10	55
6.3	48
3.35	42
2	38
1.18	34
0.6	26
0.3	12
0.212	8
0.15	7
0.063	5

Soil Fraction	Total Percentage
Cobbles	0
Gravel	62
Sand	33
Silt/Clay	5

Remarks:

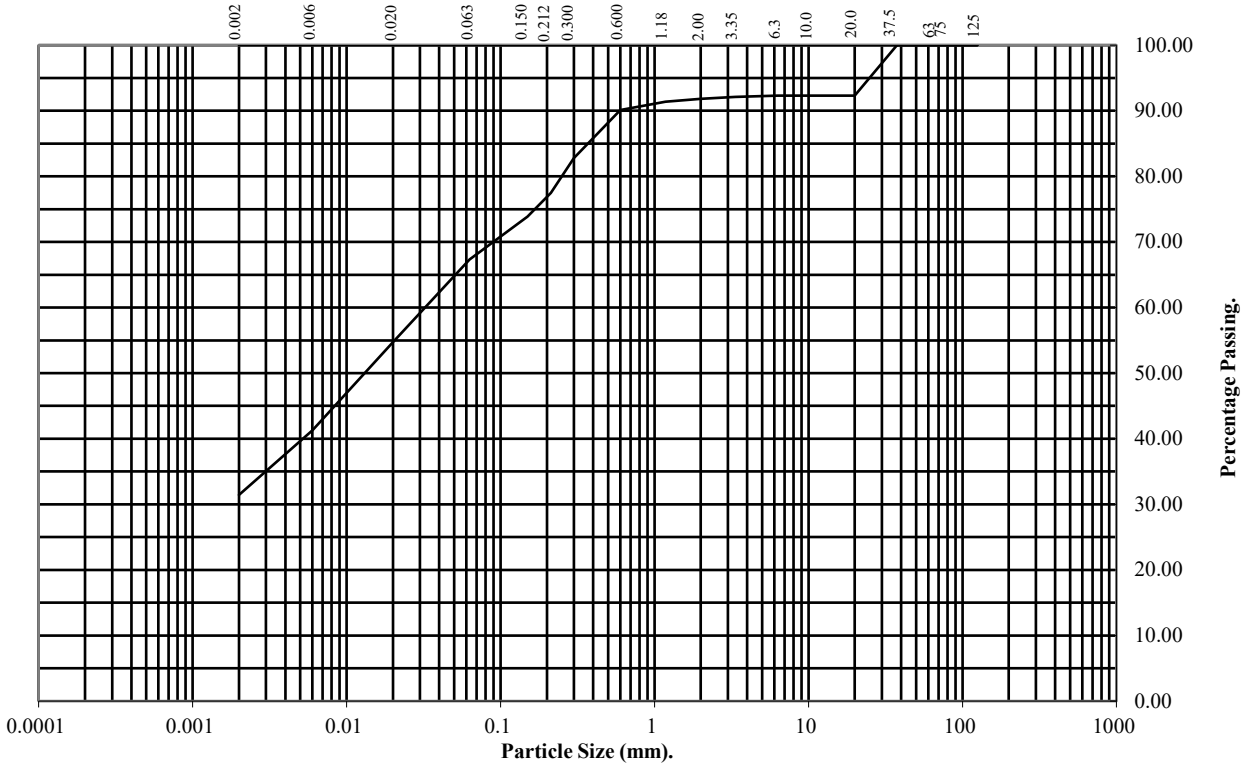
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH09**	**Top Depth (m):**	**2.30**
Sample Number:	**B7**	**Base Depth(m):**	**2.80**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	92
10	92
6.3	92
3.35	92
2	92
1.18	91
0.6	90
0.3	83
0.212	77
0.15	74
0.063	67

Particle Diameter	Percentage Passing
0.02	55
0.006	41
0.002	31

Soil Fraction	Total Percentage
Cobbles	0
Gravel	8
Sand	25
Silt	36
Clay	31

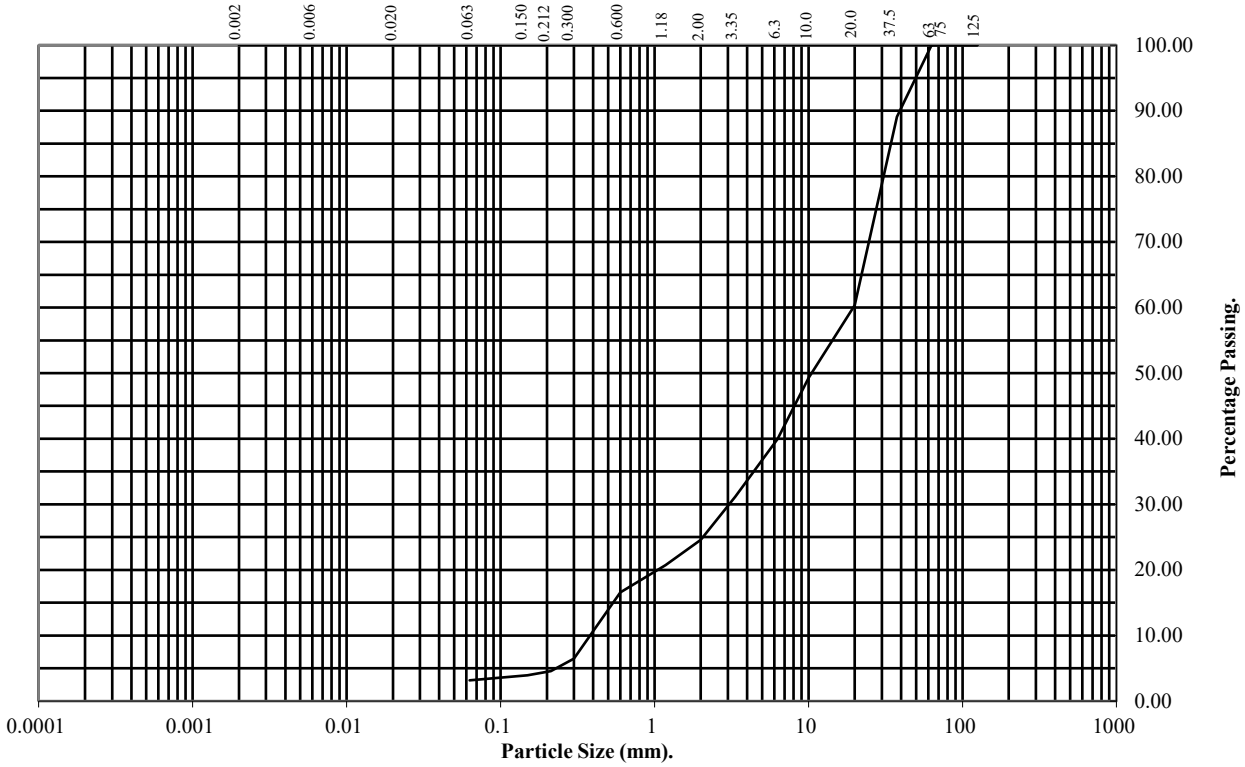
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH09**	**Top Depth (m):**	**4.30**
Sample Number:	**B10**	**Base Depth(m):**	**4.70**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	89
20	60
10	49
6.3	40
3.35	31
2	25
1.18	21
0.6	17
0.3	6
0.212	5
0.15	4
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	75
Sand	22
Silt/Clay	3

Remarks:

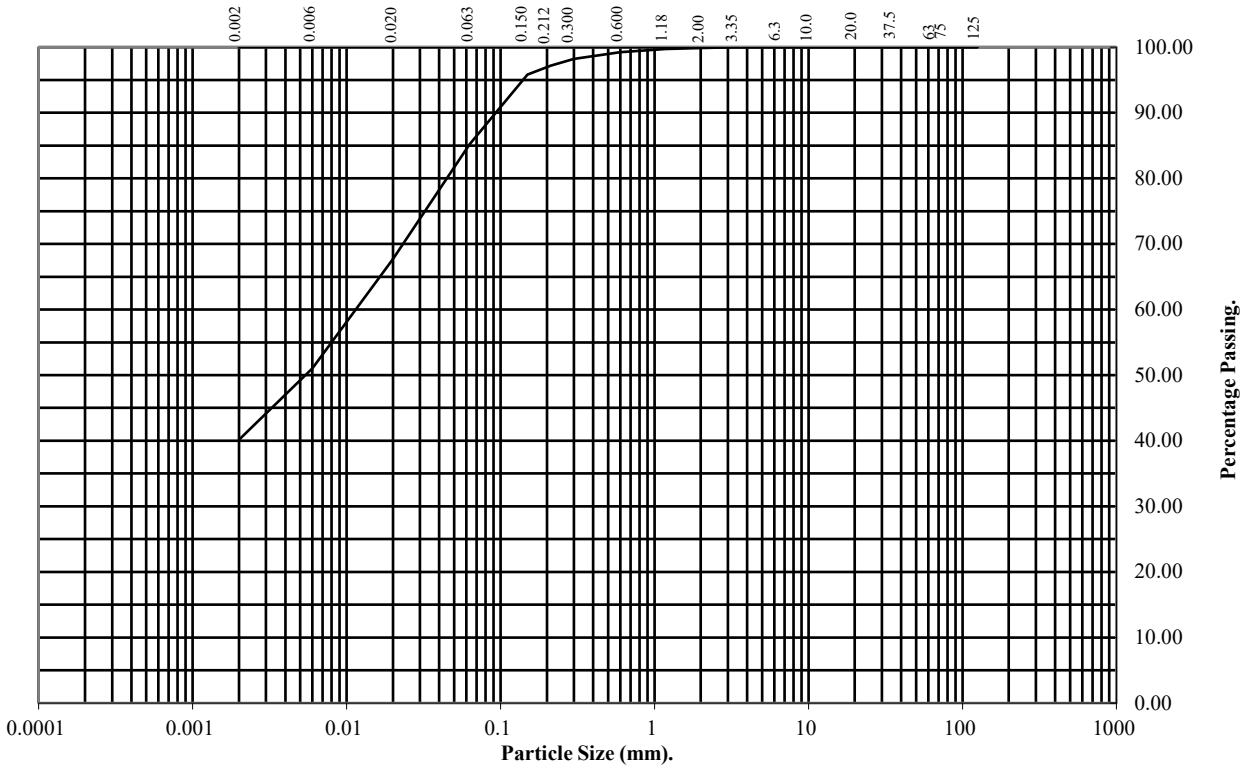
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH10**	**Top Depth (m):**	**0.50**
Sample Number:	**B5**	**Base Depth(m):**	**1.10**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	99
0.3	98
0.212	97
0.15	96
0.063	85

Particle Diameter	Percentage Passing
0.02	68
0.006	51
0.002	40

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	15
Silt	45
Clay	40

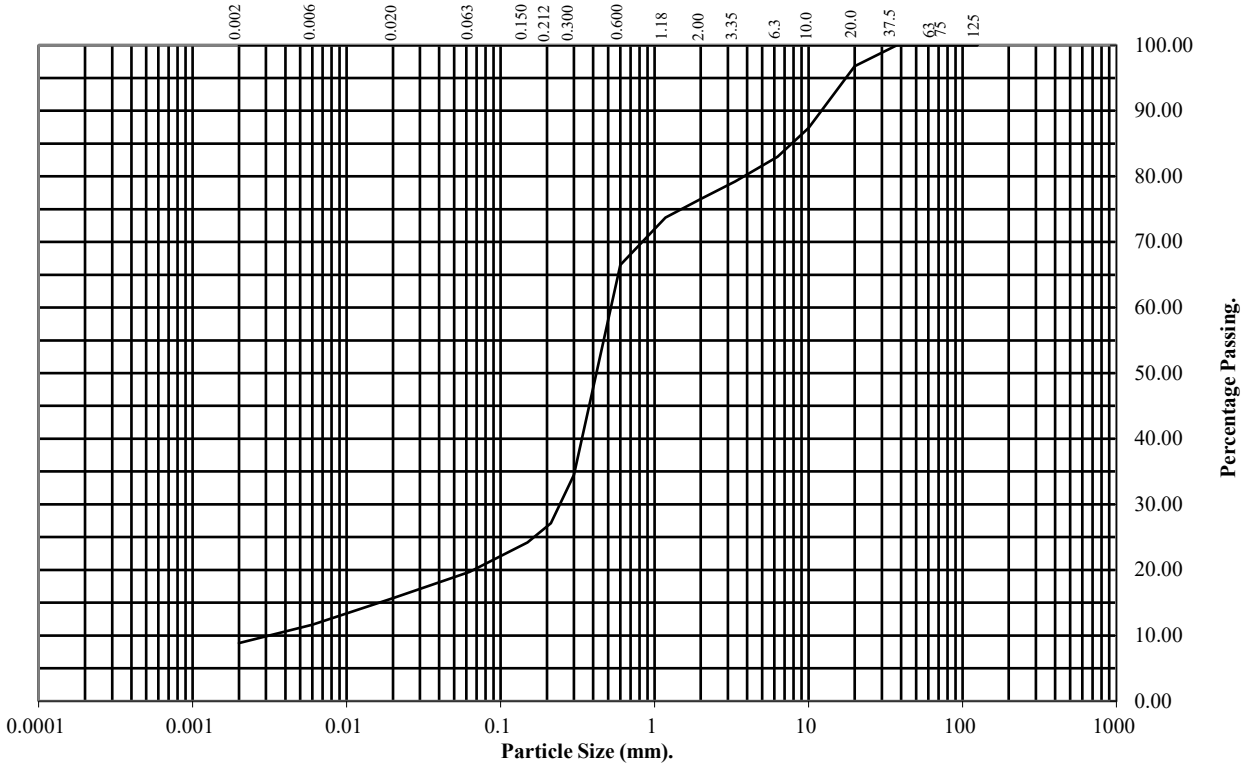
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH10**	**Top Depth (m):**	**2.50**
Sample Number:	**B10**	**Base Depth(m):**	**2.80**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	97
10	87
6.3	83
3.35	79
2	77
1.18	74
0.6	66
0.3	35
0.212	27
0.15	24
0.063	20

Particle Diameter	Percentage Passing
0.02	16
0.006	12
0.002	9

Soil Fraction	Total Percentage
Cobbles	0
Gravel	23
Sand	57
Silt	11
Clay	9

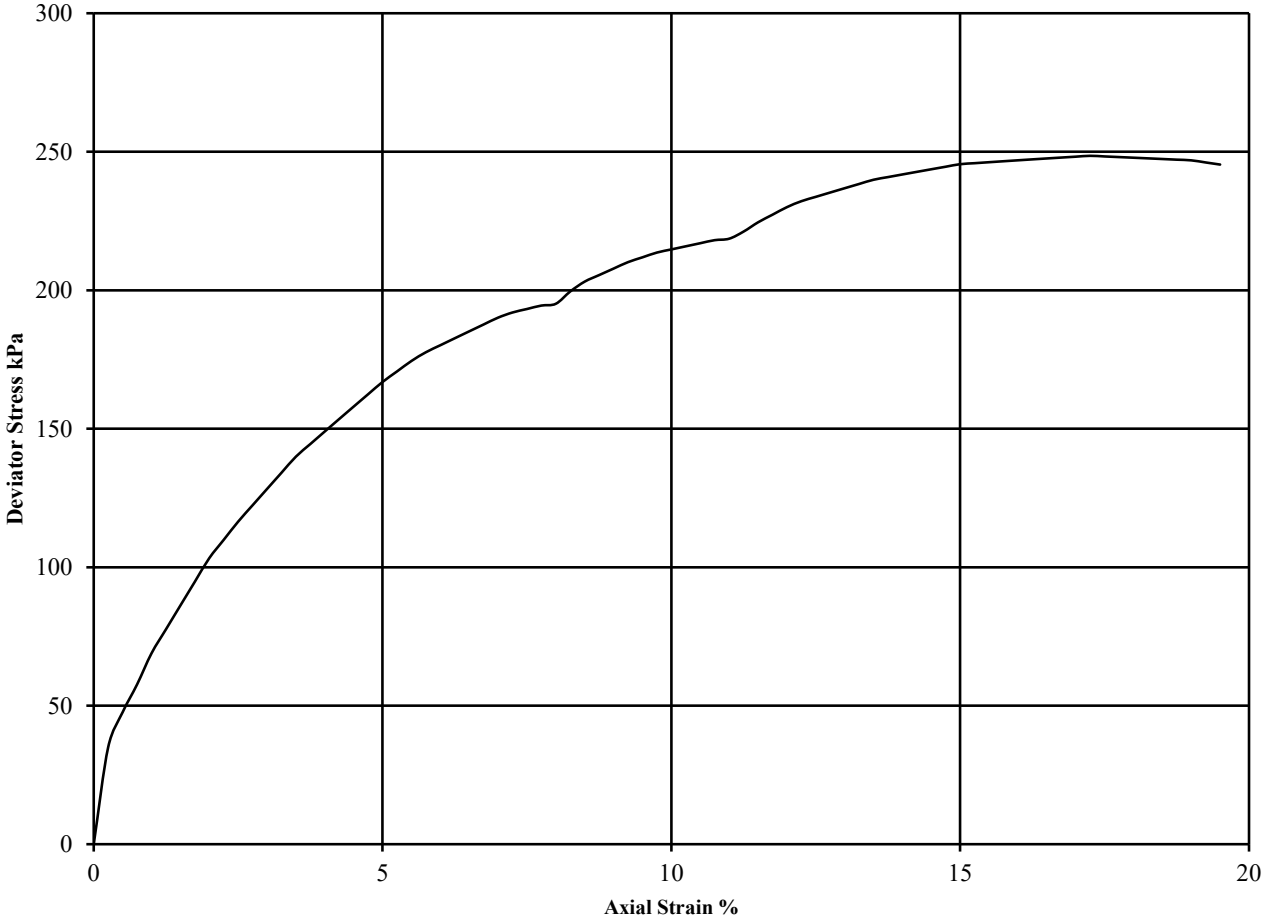
Remarks:
See Summary of Soil Descriptions

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 9

Hole Number:	**BH08**	**Top Depth (m):**	**23.30**
Sample Number:	**C19**	**Base Depth (m):**	**23.60**
Sample Type	**CORE**		



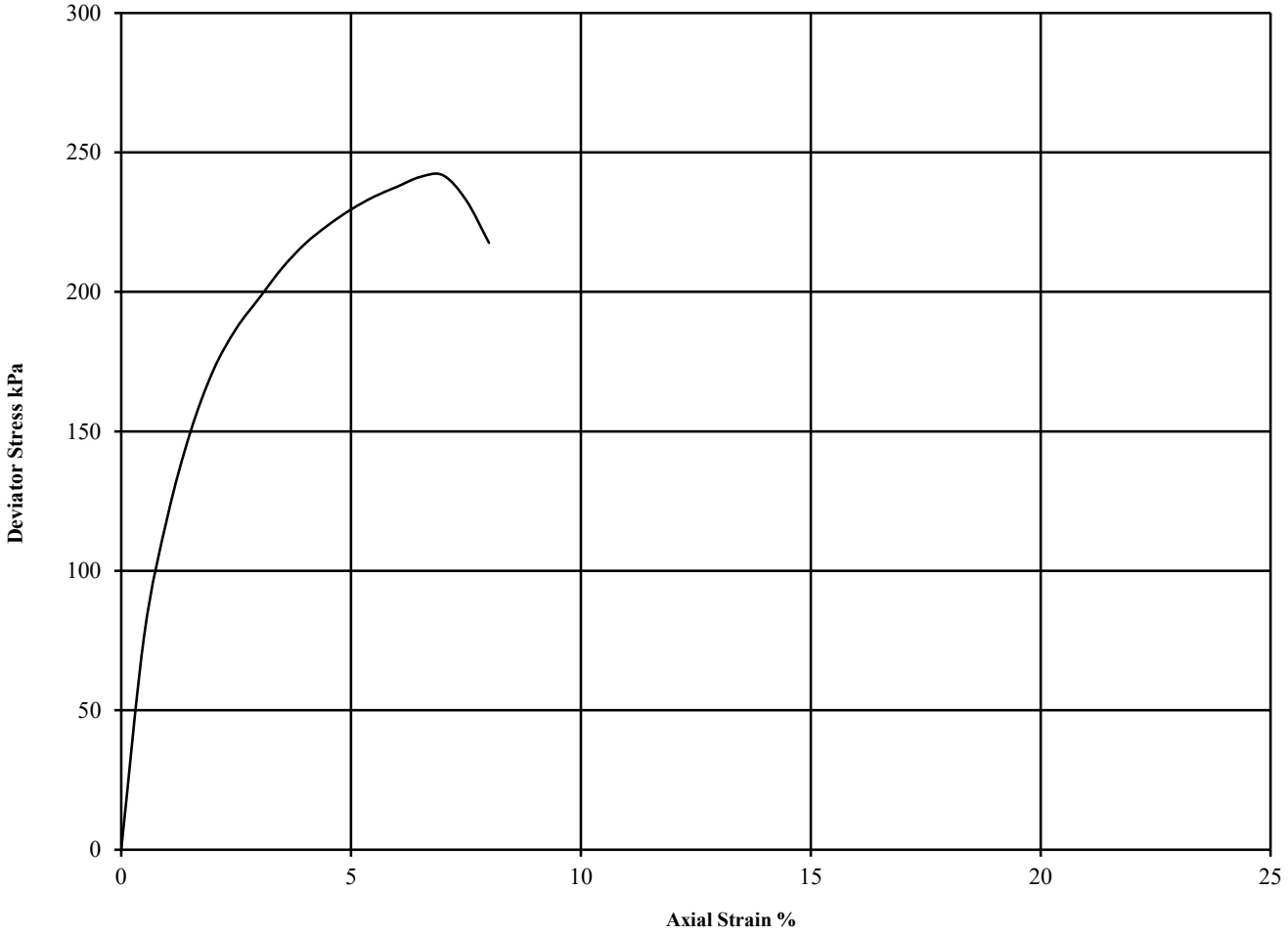
Diameter (mm):		102	Height (mm):		204	Test:	UU Multistage		Remarks
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick Membrane Correction applied (kPa)
1	20	2.04	1.69	100	195	98	8.0		0.36 0.35 0.34
				200	219	109	11.0		See summary of soil descriptions
				400	249	124	17.3	Plastic	

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number:	**BH08**	**Top Depth (m):**	**25.50**
Sample Number:	**C21**	**Base Depth (m):**	**25.80**
Sample Type	**CORE**		



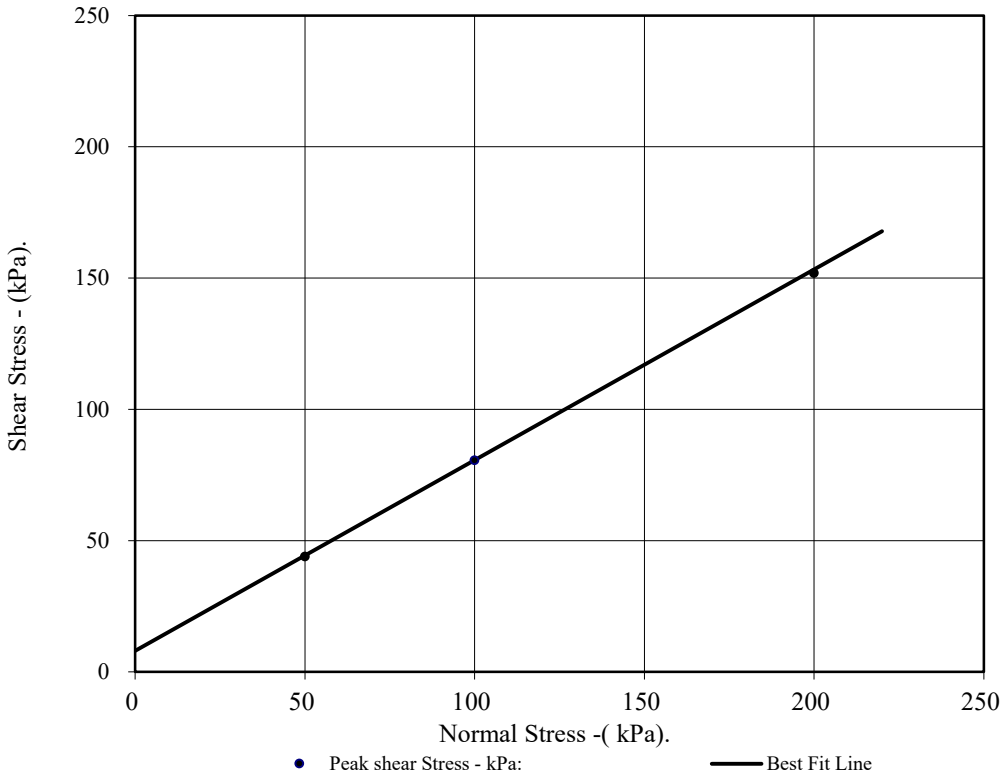
Diameter (mm):		102	Height (mm):		204	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.36
1	26	2.02	1.60	125	242	121	7.0	Brittle	See summary of soil descriptions

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH08**		Top Depth:	**9.00**
Sample Number:	**B12**		Base Depth:	**10.00**
Sample Conditions:	Dry		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 2mm sieve Remoulded using hand tamped effort.			
Sample Description:	**See summary of soil descriptions.**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	19.99	19.99	19.99
Length - mm:	60.05	60.05	60.05
Moisture Content - %:	5.4	5.4	5.4
Bulk Density - Mg/m3:	1.93	1.93	1.93
Dry Density - Mg/m3:	1.83	1.83	1.83
Voids Ratio:	0.444	0.444	0.444
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	19.62	19.32	19.19
Shearing Stage			
Rate of Strain - mm/min	0.60	0.60	0.60
Displacement at peak shear stress - mm	7.81	8.10	9.01
Peak shear Stress - kPa:	44	81	152
Final Consolidated Conditions			
Moisture Content - %:	5.4	5.3	5.2
Bulk Density - Mg/m3:	1.97	2.00	2.01
Dry Density - Mg/m3:	1.87	1.90	1.91
Peak			
Angle of Shearing Resistance:(~~θ~~)	**36**		
Effective Cohesion - kPa:	**8**		



UKAS TESTING 4043

PSL Professional Soils Laboratory

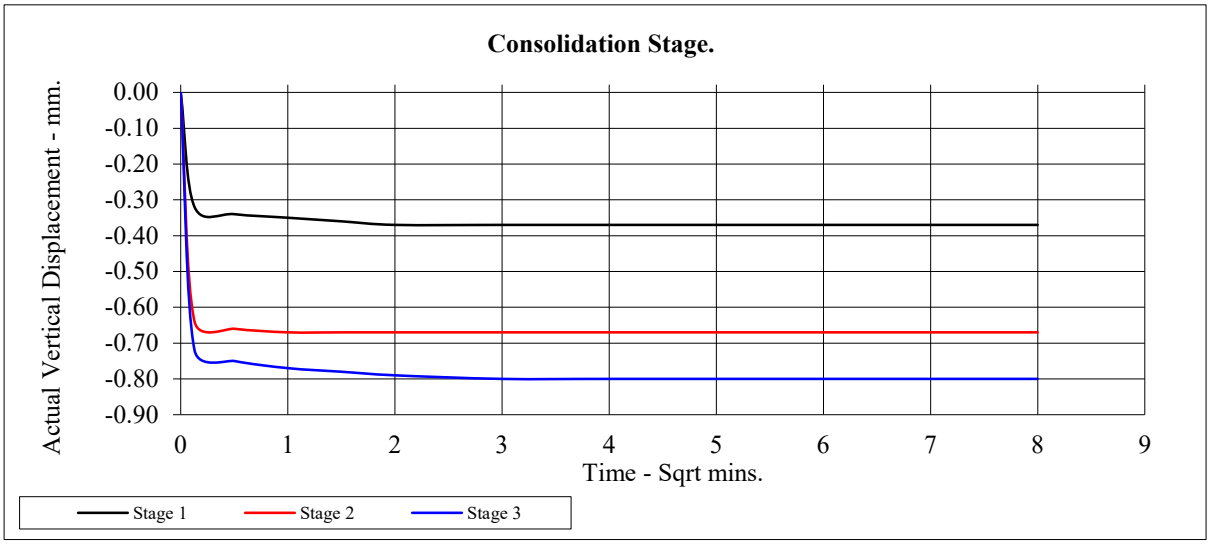
A46 Newark NNB

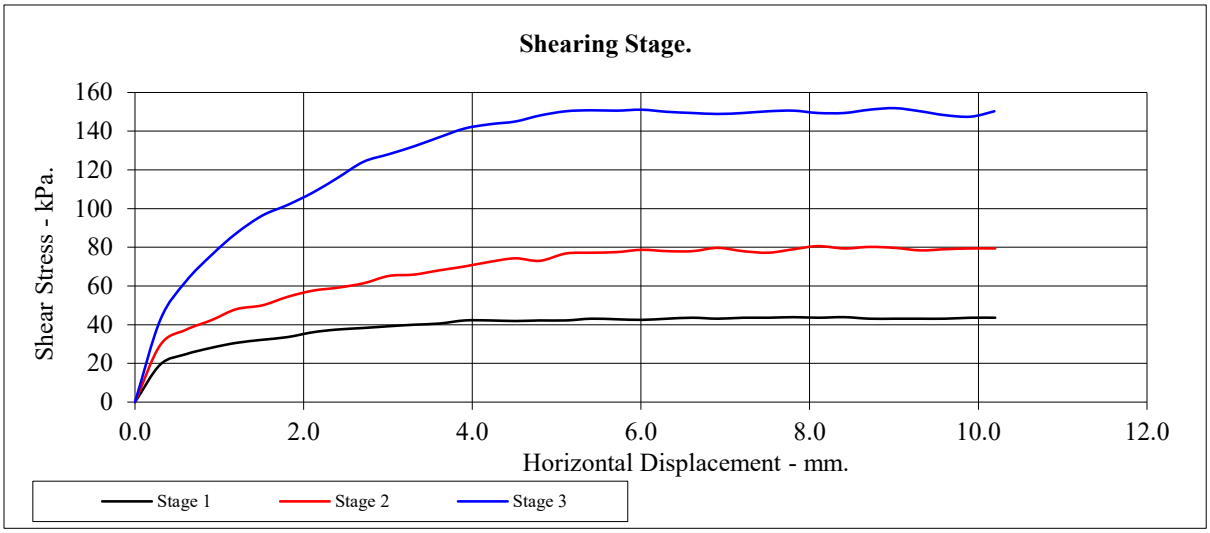
Contract No:
PSL21/6170
Client Ref:
784-B026948

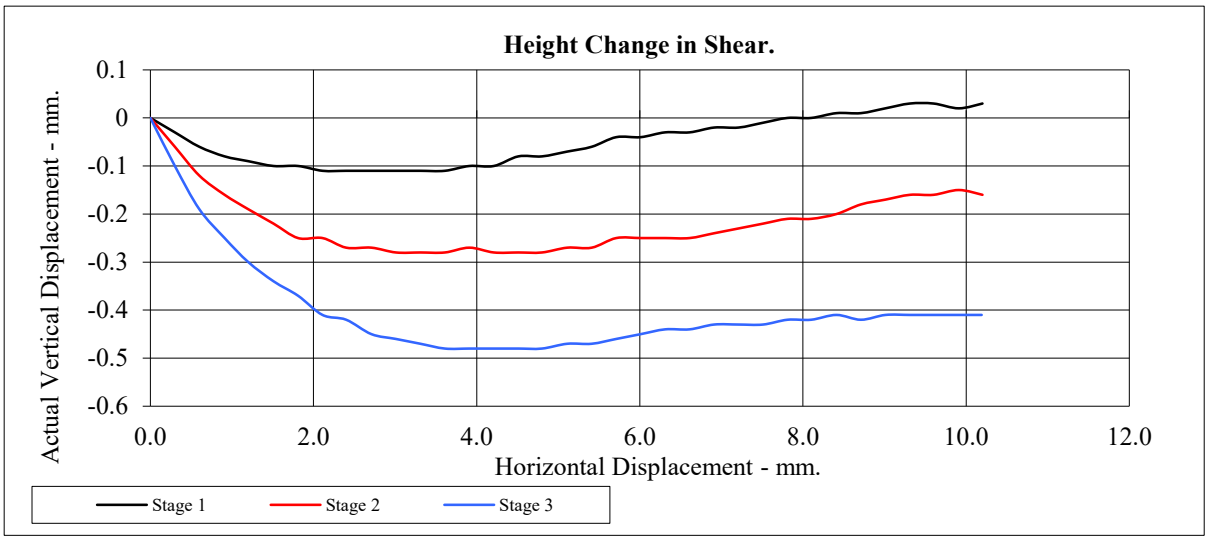
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH08**	Top Depth:	**9.00**
Sample Number:	**B12**	Base Depth:	**10.00**





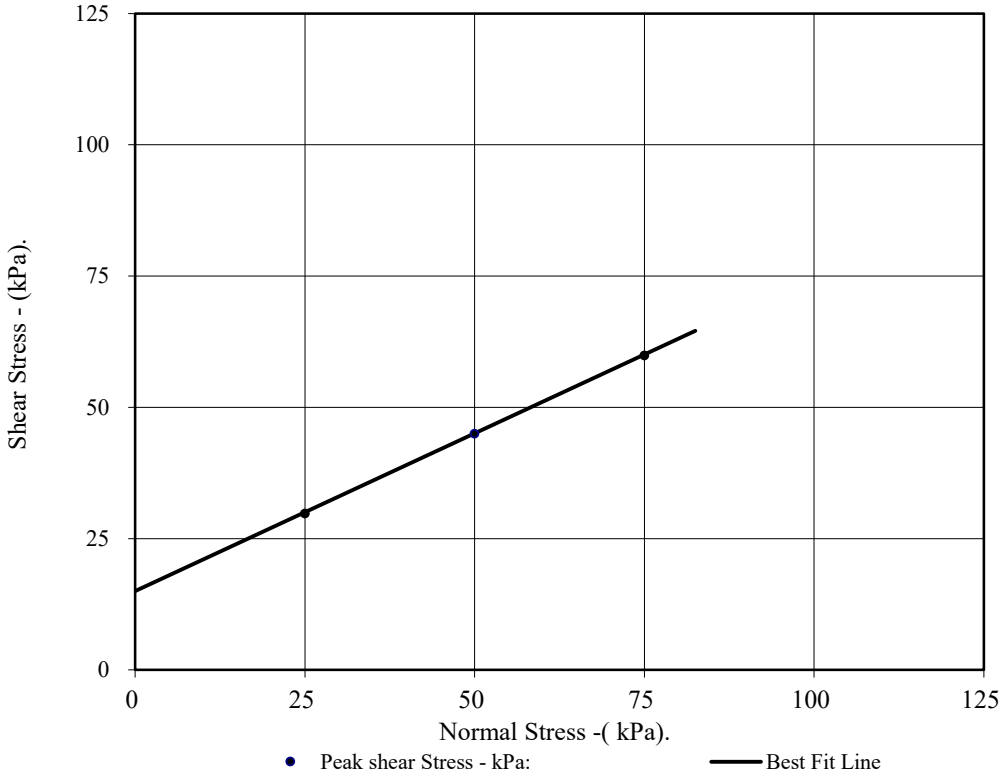


CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH09**		Top Depth:	**3.20**	
Sample Number:	**B8**		Base Depth:	**3.70**	
Sample Conditions:	Dry		Sample Type	**B**	
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**		
Sample Preparation:	Material tested passing 2mm sieve Remoulded using hand tamped effort				
Sample Description:	**See summary of soil descriptions**				

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	20.05	20.05	20.05
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	10	10	10
Bulk Density - Mg/m3:	2.00	2.00	2.01
Dry Density - Mg/m3:	1.82	1.82	1.82
Voids Ratio:	0.459	0.455	0.454
Normal Pressure- kPa	25	50	75
Consolidation Stage			
Consolidated Height - mm:	19.96	19.83	19.79
Shearing Stage			
Rate of Strain (mm/min)	0.600	0.600	0.600
Displacement at peak shear stress (mm)	2.50	3.00	2.00
Peak shear Stress - kPa:	30	45	60
Final Consolidated Conditions			
Moisture Content - %:	8.6	8.6	8.4
Bulk Density - Mg/m3:	2.01	2.02	2.03
Dry Density - Mg/m3:	1.85	1.86	1.87
Peak			
Angle of Shearing Resistance:(~~θ~~)	**31**		
Effective Cohesion - kPa:	**15**		

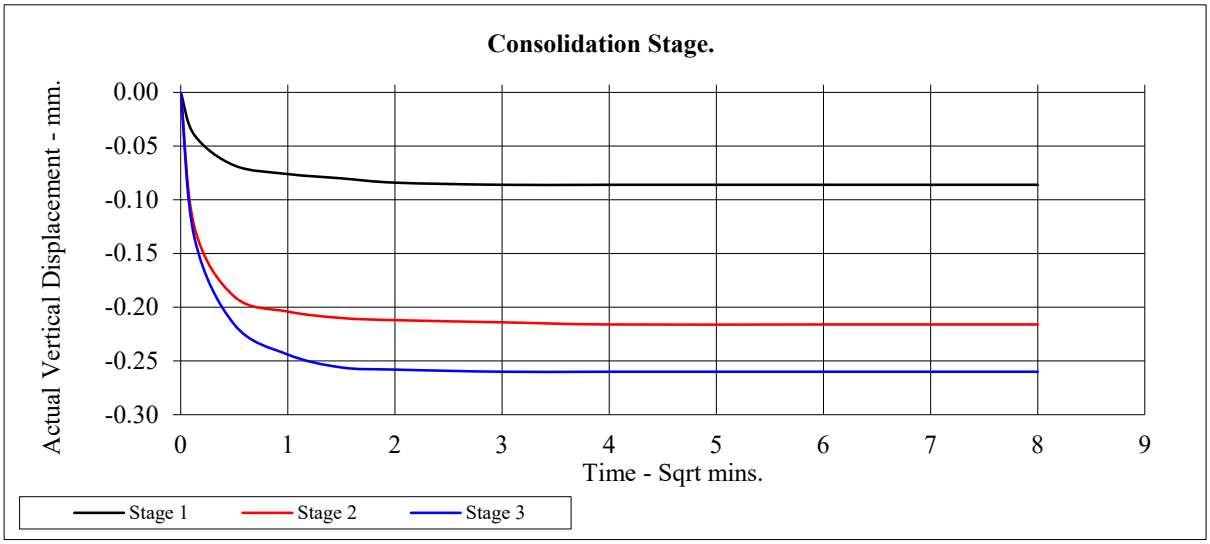


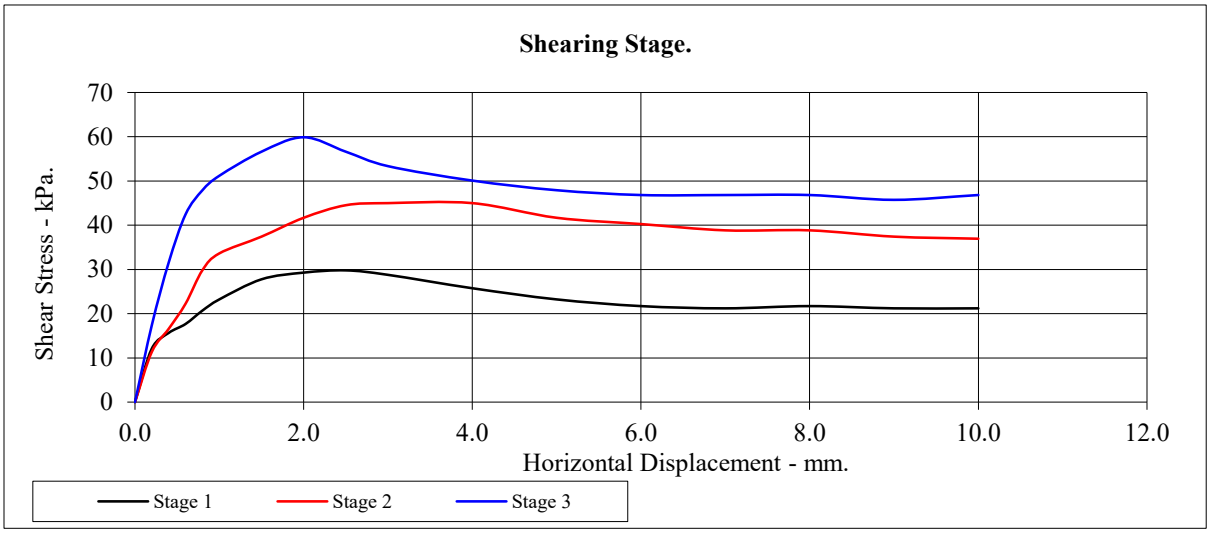
UKAS TESTING 4043	PSL Professional Soils Laboratory	**A46 Newark NNB**	**Contract No:** PSL21/6170 **Client Ref:** 784-B026948

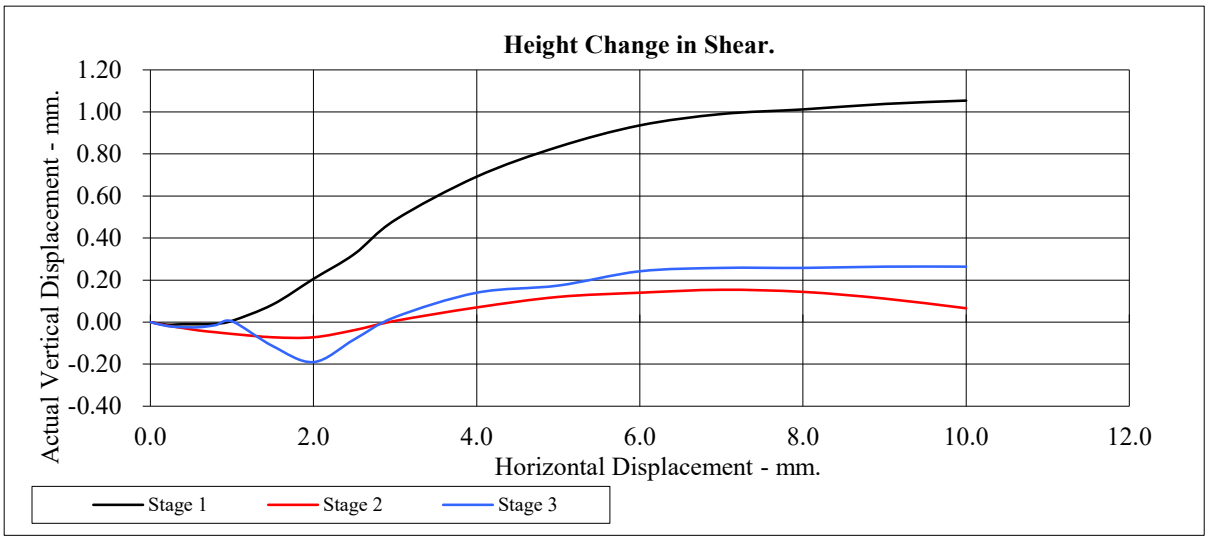
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH09**	Top Depth:	**3.20**
Sample Number:	**B8**	Base Depth:	**3.70**







SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		Area	D_e^2	D_e	Failure Load (P)		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH08	20.25	C18	A	Perp	100	43	4300	5474.93	73.99	-	3.10	0.57	1.193	0.68	Valid	
BH08	24.50	C20	A	Perp	100	74	7400	9421.97	97.07	-	0.22	0.02	1.348	0.03	Valid	
BH08	27.20	C22	A	Perp	100	42	4200	5347.61	73.13	-	0.14	0.03	1.187	0.03	Valid	
BH08	30.20	C24	A	Perp	100	52	5200	6620.85	81.37	-	1.16	0.18	1.245	0.22	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular

UKAS TESTING 4043

PSL Professional Soils Laboratory

A46 Newark NNB

Contract No:

PSL21/6170

Client Ref:

784-B026948

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		D_e^2	D_e	Failure Load		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	L	D		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH08	20.25	C18	D	Par	-	100	10000	100.00	-	1.38	0.138	1.366	0.19	Valid	
BH08	24.50	C20	D	Par	-	103	10609	103.00	-	0.19	0.018	1.384	0.02	Valid	
BH08	27.20	C22	D	Par	-	100	10000	100.00	-	0.10	0.010	1.366	0.01	Valid	
BH08	30.20	C24	D	Par	-	100	10000	100.00	-	1.25	0.125	1.366	0.17	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

UKAS TESTING 4043	PSL Professional Soils Laboratory	A46 Newark NNB	Contract No: PSL21/6170 Client Ref: 784-B026948

LABORATORY REPORT

4043

Contract Number: PSL21/6171

Report Date: 27 September 2021

Client's Reference: 784-B026948

Client Name: Tetra Tech
54 Hagley Road
Birmingham
B16 8PE

For the attention of: Nicholas Bool

Contract Title: A46 Newark NNB

Date Received: 2/8/2021
Date Commenced: 2/8/2021
Date Completed: 27/9/2021

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins (Director)

R Berriman (Quality Manager)

S Royle (Laboratory Manager)

[redacted]

L Knight (Assistant Laboratory Manager)

S Eyre (Senior Technician)

T Watkins (Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AR
[redacted]

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH06	4	B	1.00		Brown slightly gravelly sandy CLAY.
BH06	6	B	1.50		Brown very sandy sandy CLAY.
BH06	9	B	6.00		Brown very sandy very sandy CLAY.
BH06	10	D	9.30		Reddish brown mottled grey sandy CLAY.
BH06	1	C	11.60	11.75	Very stiff brown slightly sandy silty CLAY.
BH13	7	D	2.60	2.70	Dark grey sandy SILT.
BH13	10	B	3.50	4.50	Dark grey sandy SILT.
BH13	14	D	7.40	7.50	Dark grey sandy SILT.
BH13	24	D	15.50	15.60	Brown sandy GRAVEL.
BH13	25	C	18.80	19.00	Very stiff brown slightly gravelly sandy CLAY.
BH13	30	D	27.00	27.20	Reddish brown gravelly sandy silty CLAY.
BH43	16	B	4.00	4.90	Dark grey slightly sandy SILT.
BH43	18	D	4.90	5.00	Dark grey sandy SILT.
BH43	28	B	9.00	10.00	Brown very sandy slightly silty GRAVEL.
BH43	30	D	10.50	10.60	Brown slightly gravelly sandy CLAY.
BH43	33	B	12.50	13.50	Brown slightly silty very sandy GRAVEL.
BH43	34	D	14.20	14.30	Grey mottled brown slightly gravelly sandy CLAY.
BH44	13	B	2.50	3.50	Dark grey slightly sandy CLAY.
BH44	12	D	3.50	3.60	Dark grey SILT.

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH44	17	B	5.00	6.00	Brown very sandy silty GRAVEL.

UKAS TESTING
4043

Professional Soils Laboratory

A46 Newark NNB

Contract No:
PSL21/6171
Client Ref:
784-B026948

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH06	4	B	1.00		38			49	25	24	99	Intermediate Plasticity CI
BH06	10	D	9.30		35			39	22	17	100	Intermediate Plasticity CI
BH13	7	D	2.60	2.70	23				NP			
BH13	14	D	7.40	7.50	21				NP			
BH13	24	D	15.50	15.60	8.7				NP			
BH13	30	D	27.00	27.20	26							
BH43	18	D	4.90	5.00	12				NP			
BH43	30	D	10.50	10.60	25			41	23	18	98	Intermediate Plasticity CI
BH43	34	D	14.20	14.30	18			42	23	19	94	Intermediate Plasticity CI
BH44	12	D	3.50	3.60	20				NP			

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL Professional Soils Laboratory

A46 Newark NNB

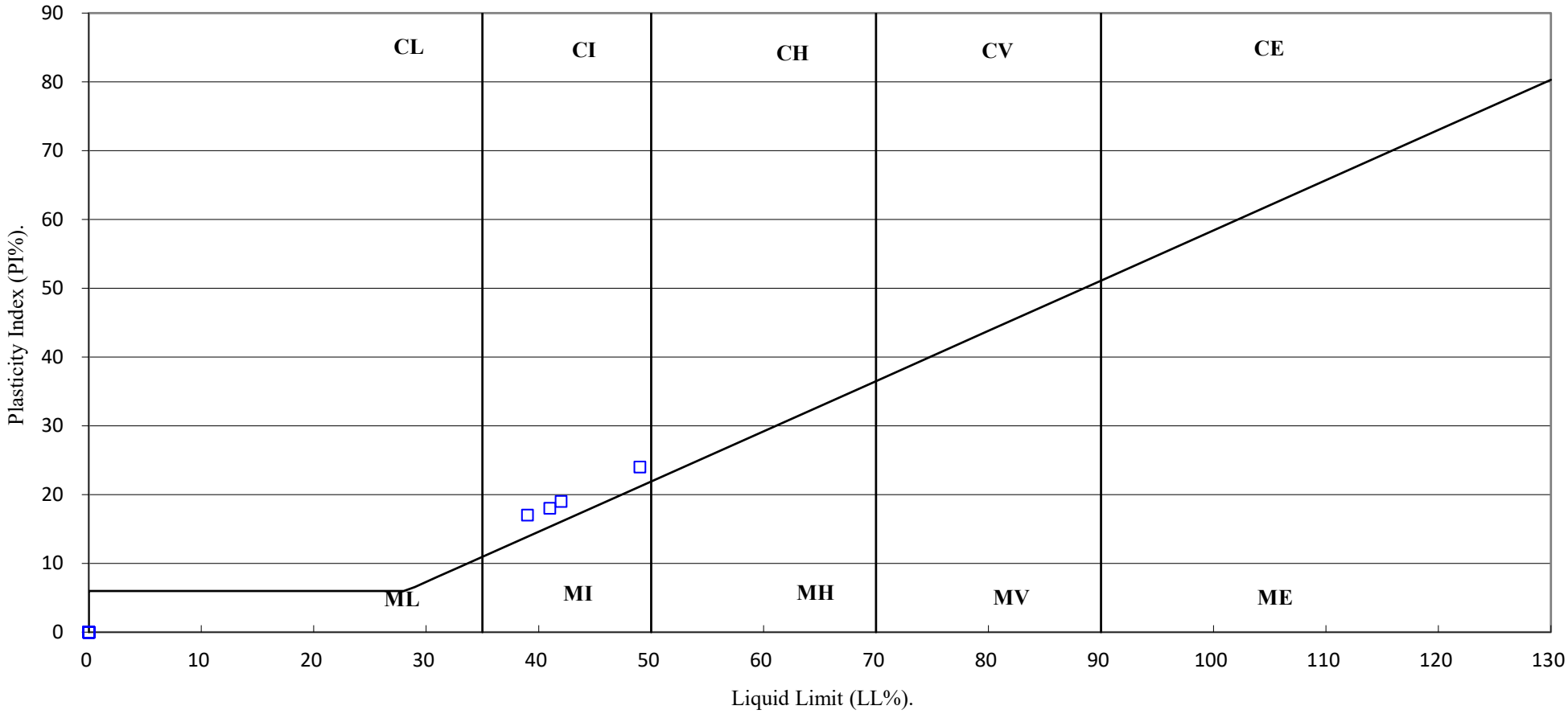
Contract No:

PSL21/6171

Client Ref:

784-B026948

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



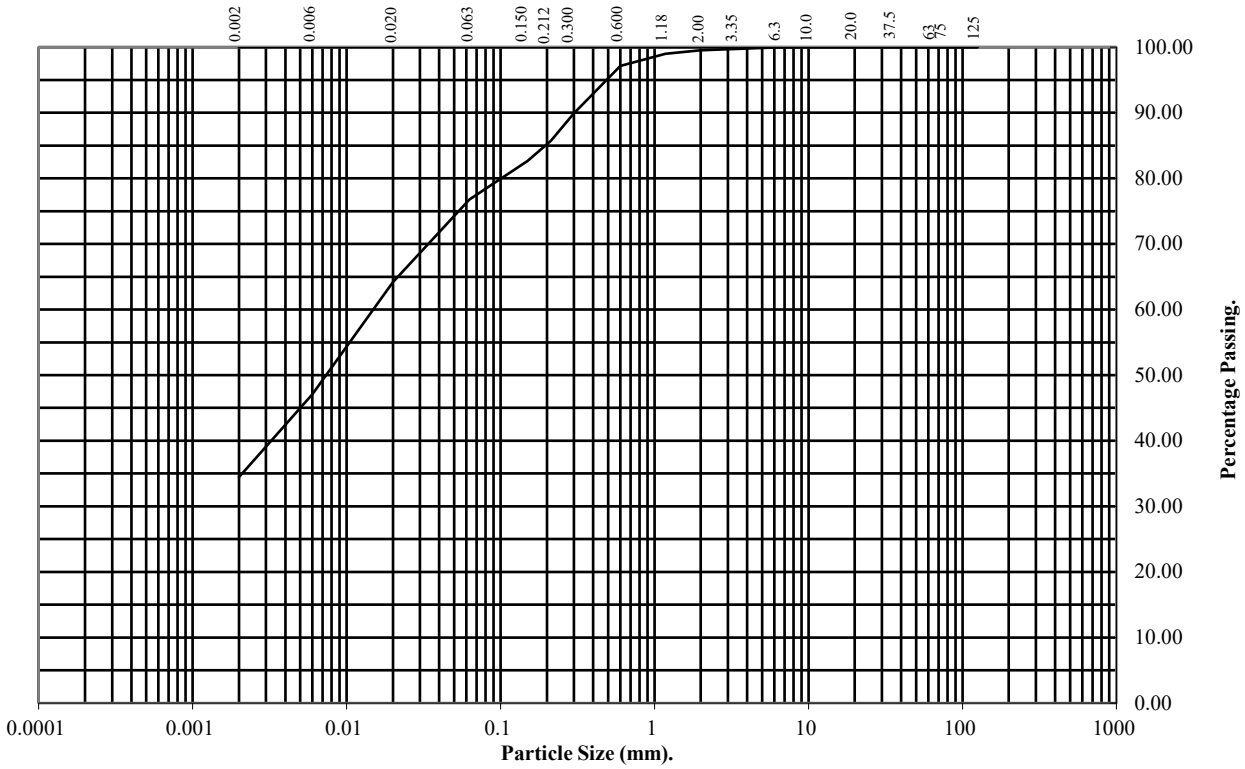
UKAS TESTING 4043	PSL Professional Soils Laboratory	A46 Newark NNB	Contract No: PSL21/6171 Client Ref: 784-B026948

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH06**	**Top Depth (m):**	**1.50**
Sample Number:	**6**	**Base Depth(m):**	
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	99
0.6	97
0.3	90
0.212	86
0.15	83
0.063	77

Particle Diameter	Percentage Passing
0.02	64
0.006	47
0.002	34

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	23
Silt	43
Clay	34

Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

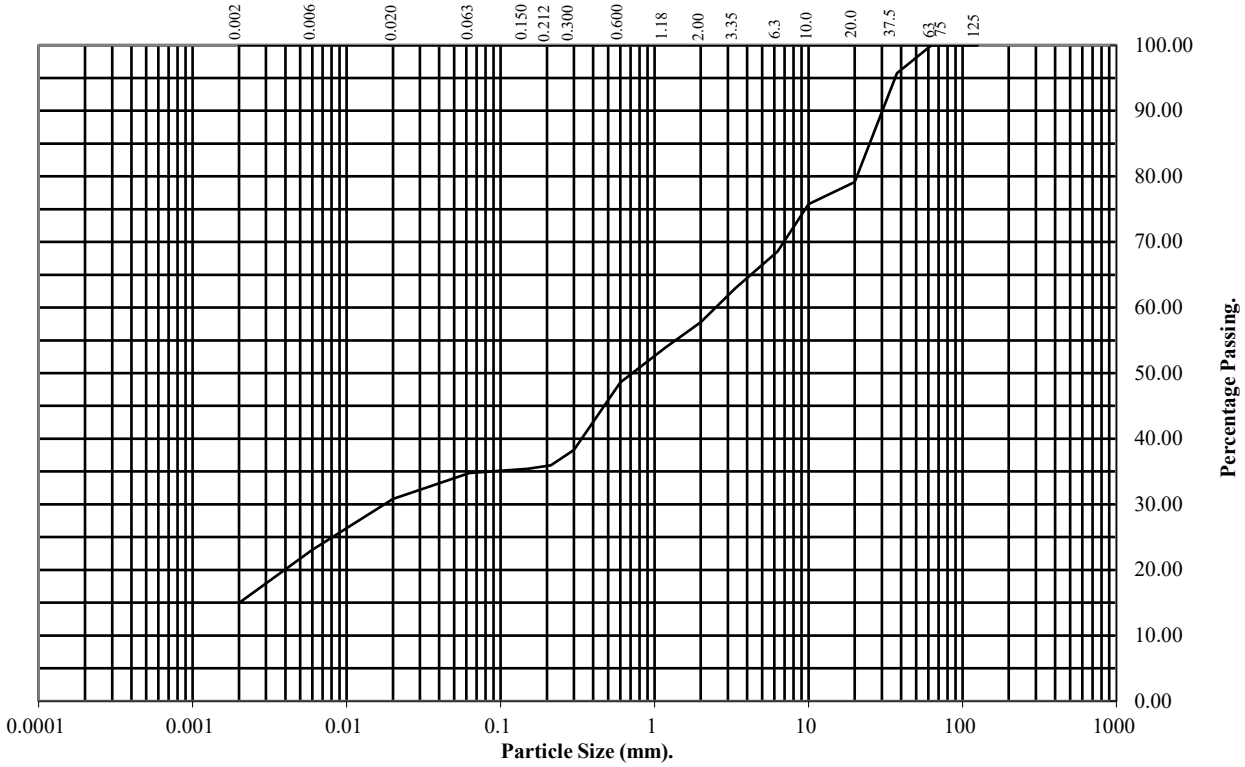
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: BH06 **Top Depth (m):** 6.00

Sample Number: 9 **Base Depth(m):**

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	96
20	79
10	76
6.3	69
3.35	63
2	58
1.18	54
0.6	49
0.3	38
0.212	36
0.15	35
0.063	35

Particle Diameter	Percentage Passing
0.02	31
0.006	23
0.002	15

Soil Fraction	Total Percentage
Cobbles	0
Gravel	42
Sand	23
Silt	20
Clay	15

Remarks:

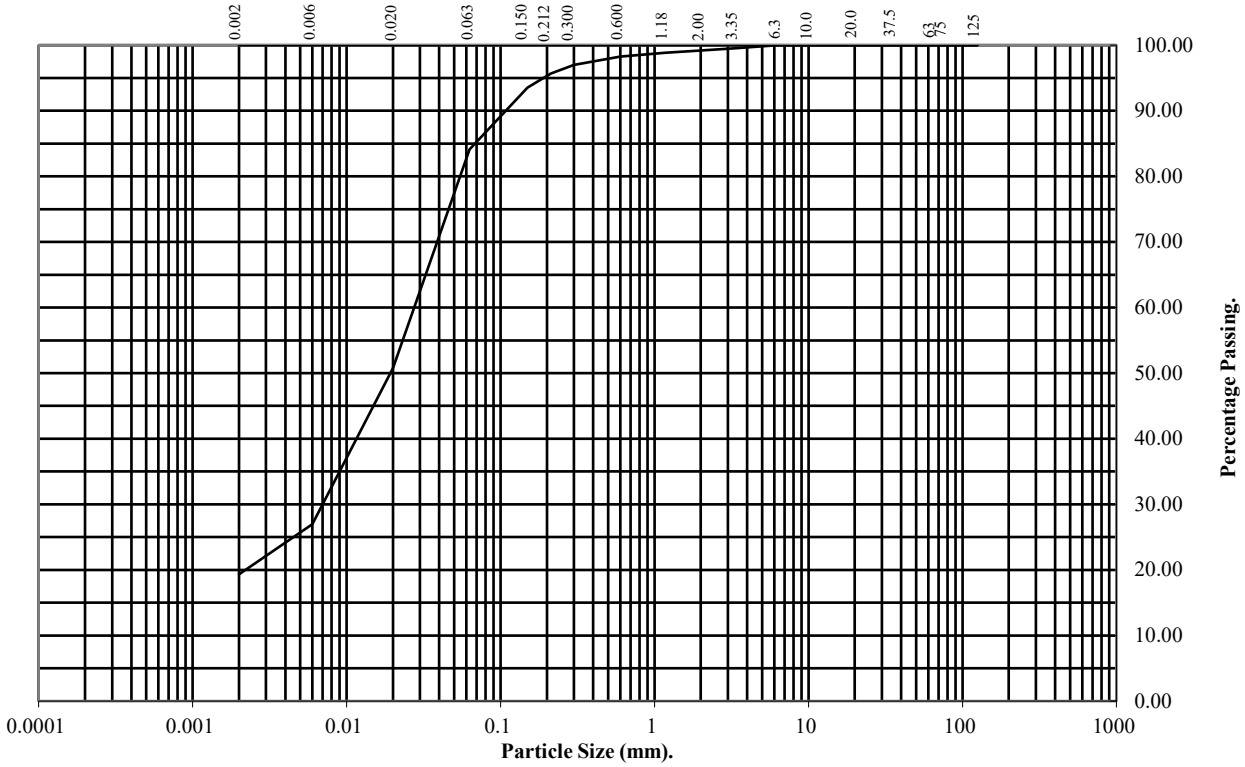
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH13**	**Top Depth (m):**	**3.50**
Sample Number:	**10**	**Base Depth(m):**	**4.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	99
1.18	99
0.6	98
0.3	97
0.212	96
0.15	94
0.063	84

Particle Diameter	Percentage Passing
0.02	51
0.006	27
0.002	19

Soil Fraction	Total Percentage
Cobbles	0
Gravel	1
Sand	15
Silt	65
Clay	19

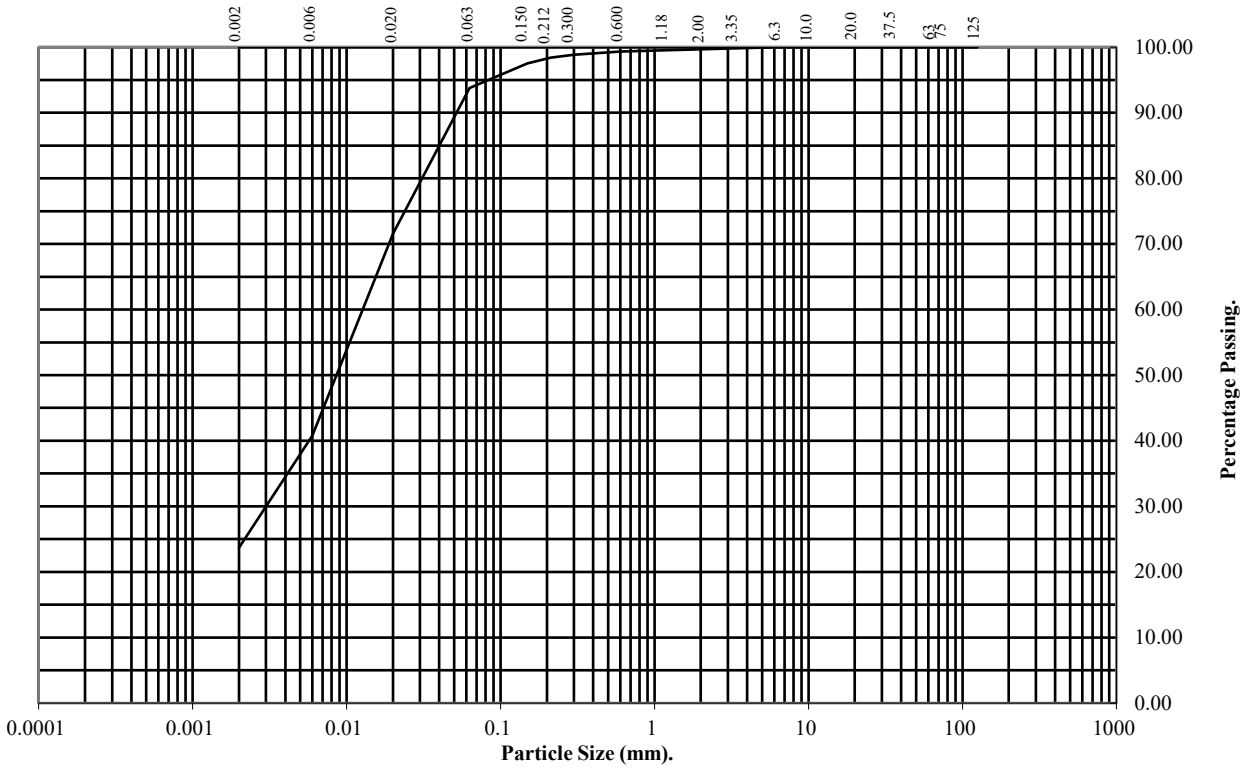
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH43**	**Top Depth (m):**	**4.00**
Sample Number:	**16**	**Base Depth(m):**	**4.90**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	99
0.3	99
0.212	98
0.15	98
0.063	94

Particle Diameter	Percentage Passing
0.02	72
0.006	41
0.002	24

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	6
Silt	70
Clay	24

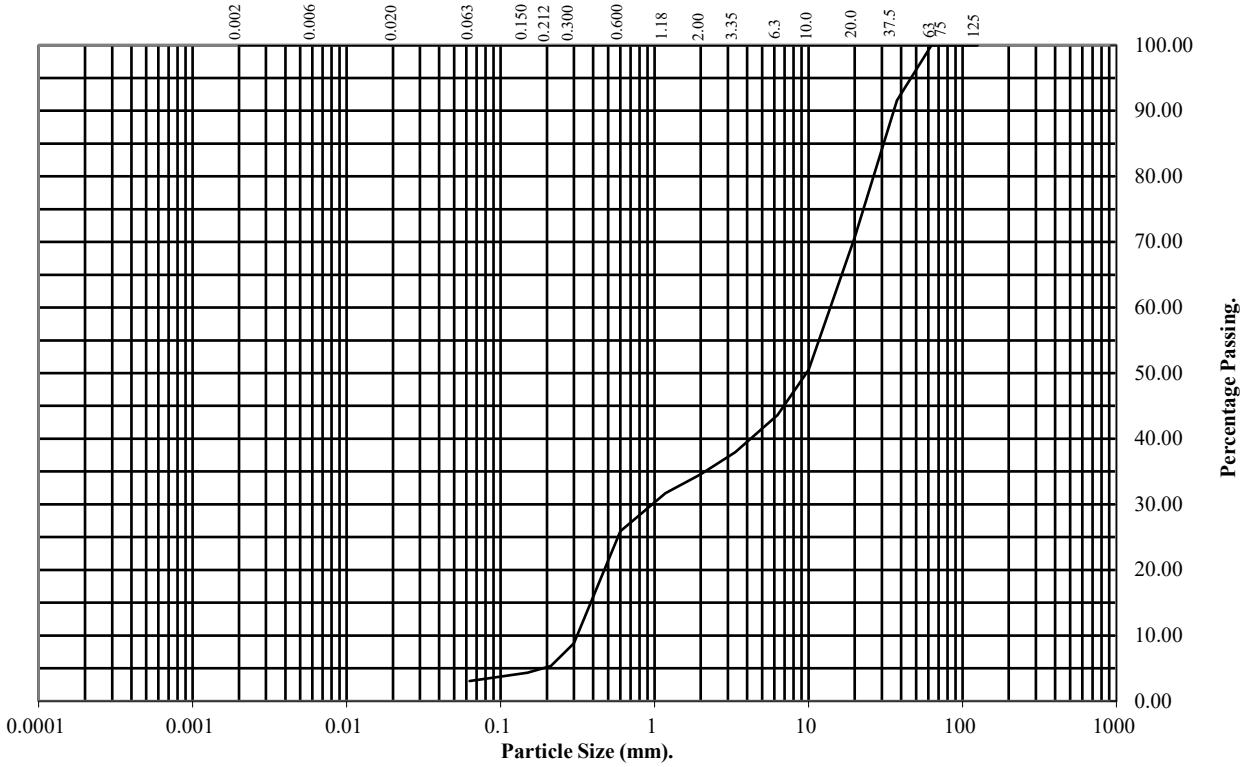
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH43**	**Top Depth (m):**	**9.00**
Sample Number:	**28**	**Base Depth(m):**	**10.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	92
20	71
10	51
6.3	44
3.35	38
2	35
1.18	32
0.6	26
0.3	9
0.212	5
0.15	4
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	65
Sand	32
Silt/Clay	3

Remarks:

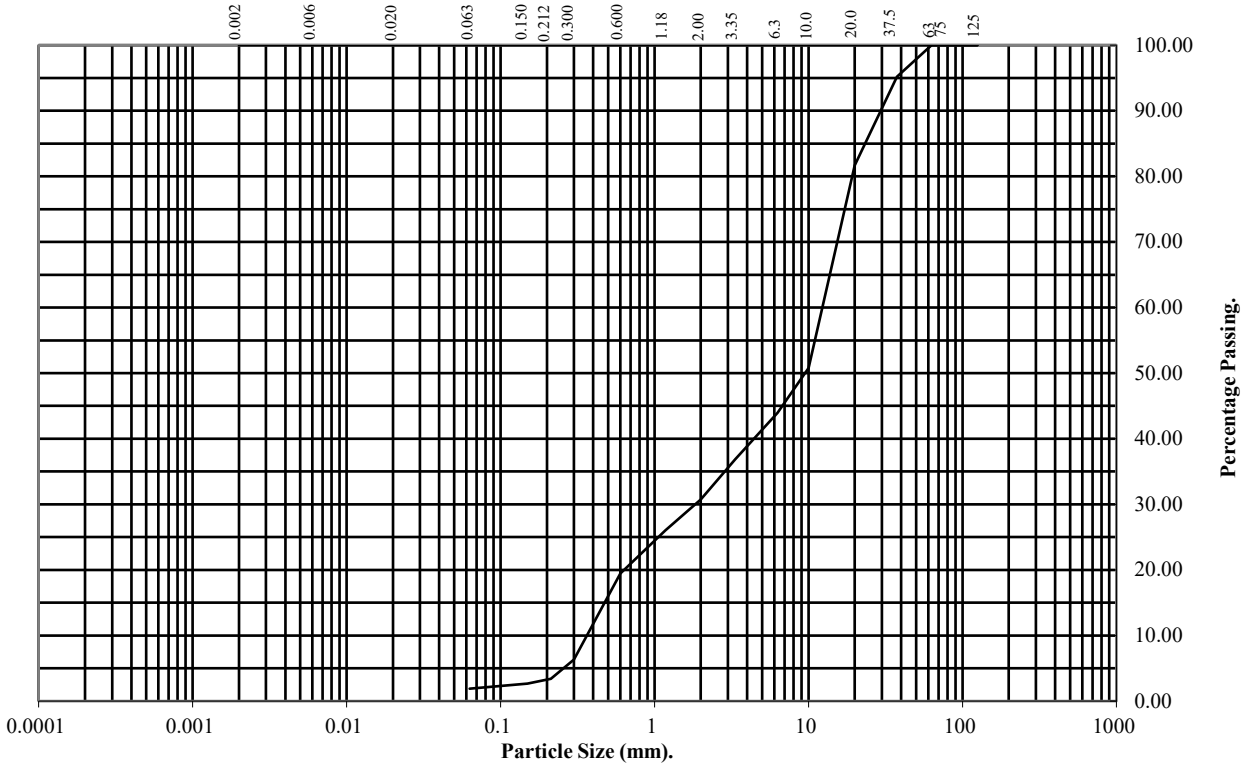
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH43**	**Top Depth (m):**	**12.50**
Sample Number:	**33**	**Base Depth(m):**	**13.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	95
20	82
10	51
6.3	44
3.35	37
2	31
1.18	26
0.6	19
0.3	6
0.212	3
0.15	3
0.063	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	69
Sand	29
Silt/Clay	2

Remarks:

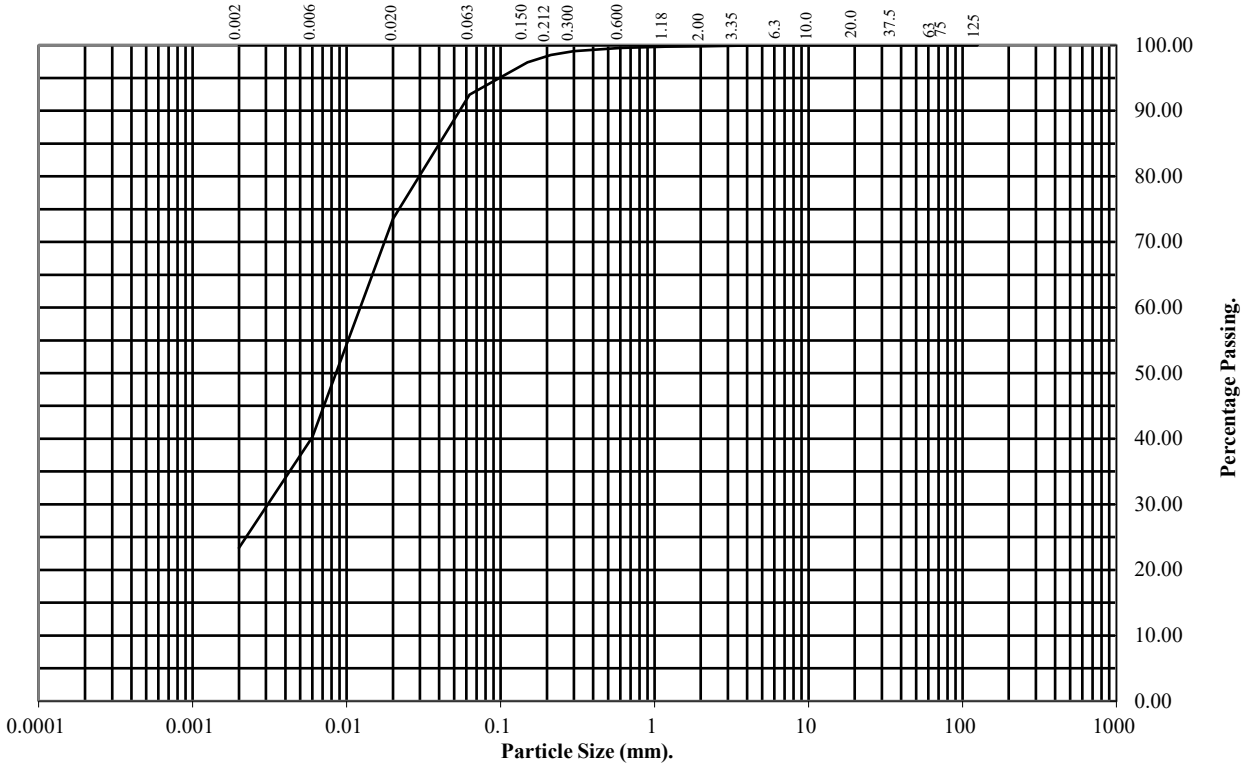
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH44**	**Top Depth (m):**	**2.50**
Sample Number:	**13**	**Base Depth(m):**	**3.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	100
0.3	99
0.212	98
0.15	97
0.063	92

Particle Diameter	Percentage Passing
0.02	74
0.006	40
0.002	23

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	8
Silt	69
Clay	23

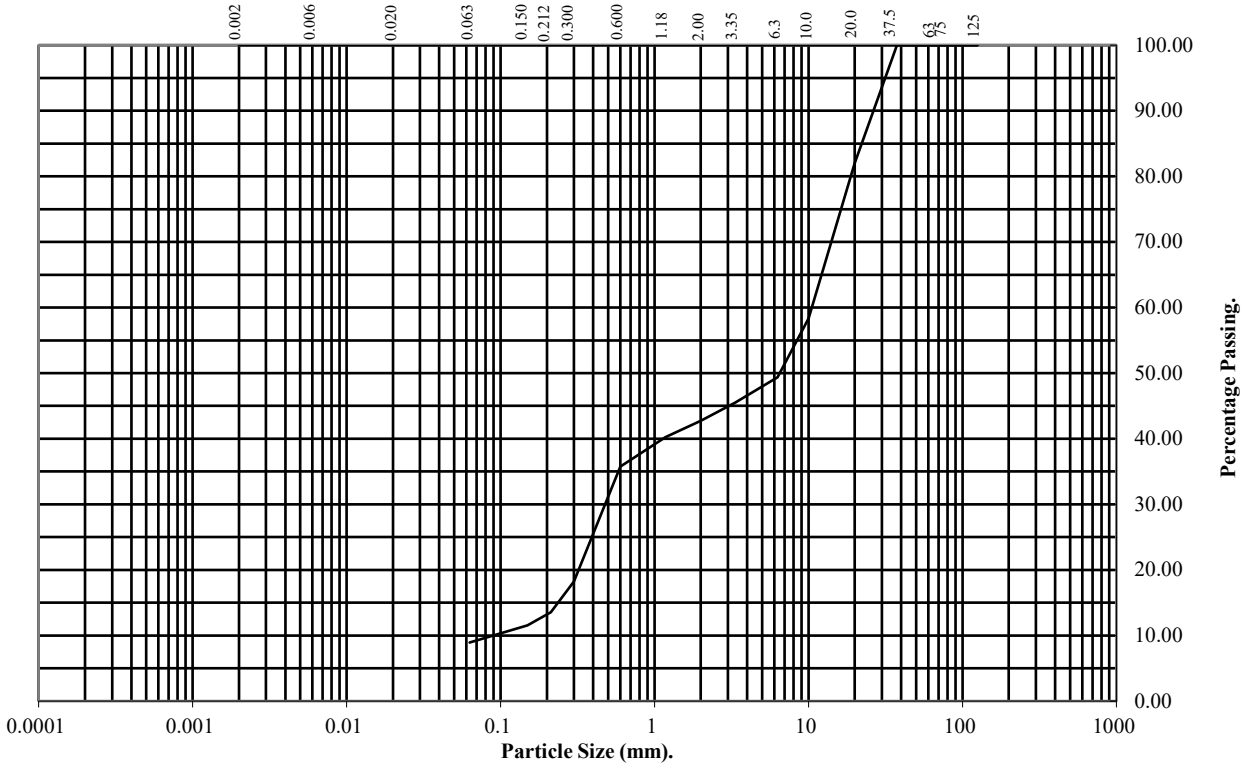
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH44**	**Top Depth (m):**	**5.00**
Sample Number:	**17**	**Base Depth(m):**	**6.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	82
10	58
6.3	49
3.35	46
2	43
1.18	40
0.6	36
0.3	18
0.212	14
0.15	12
0.063	9

Soil Fraction	Total Percentage
Cobbles	0
Gravel	57
Sand	34
Silt/Clay	9

Remarks:

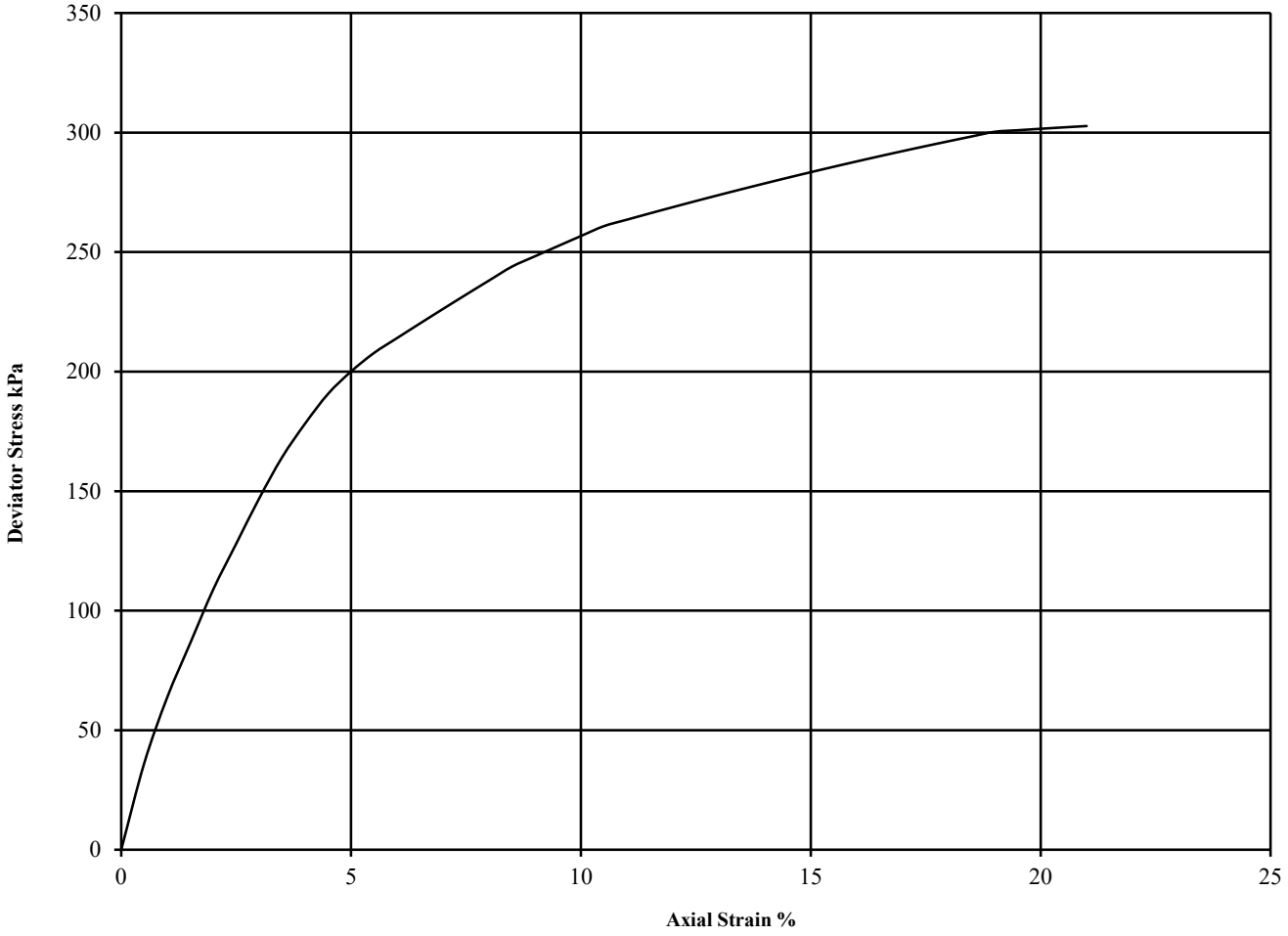
See Summary of Soil Descriptions

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

Hole Number:	**BH06**	**Top Depth (m):**	**11.60**
Sample Number:	**1**	**Base Depth (m):**	**11.75**
Sample Type	**C**		



Diameter (mm):		38	Height (mm):		76	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.67
1	25	1.97	1.57	100	303	151	21.0	Intermediate	See summary of soil descriptions

*** 38mm due to insufficient material**

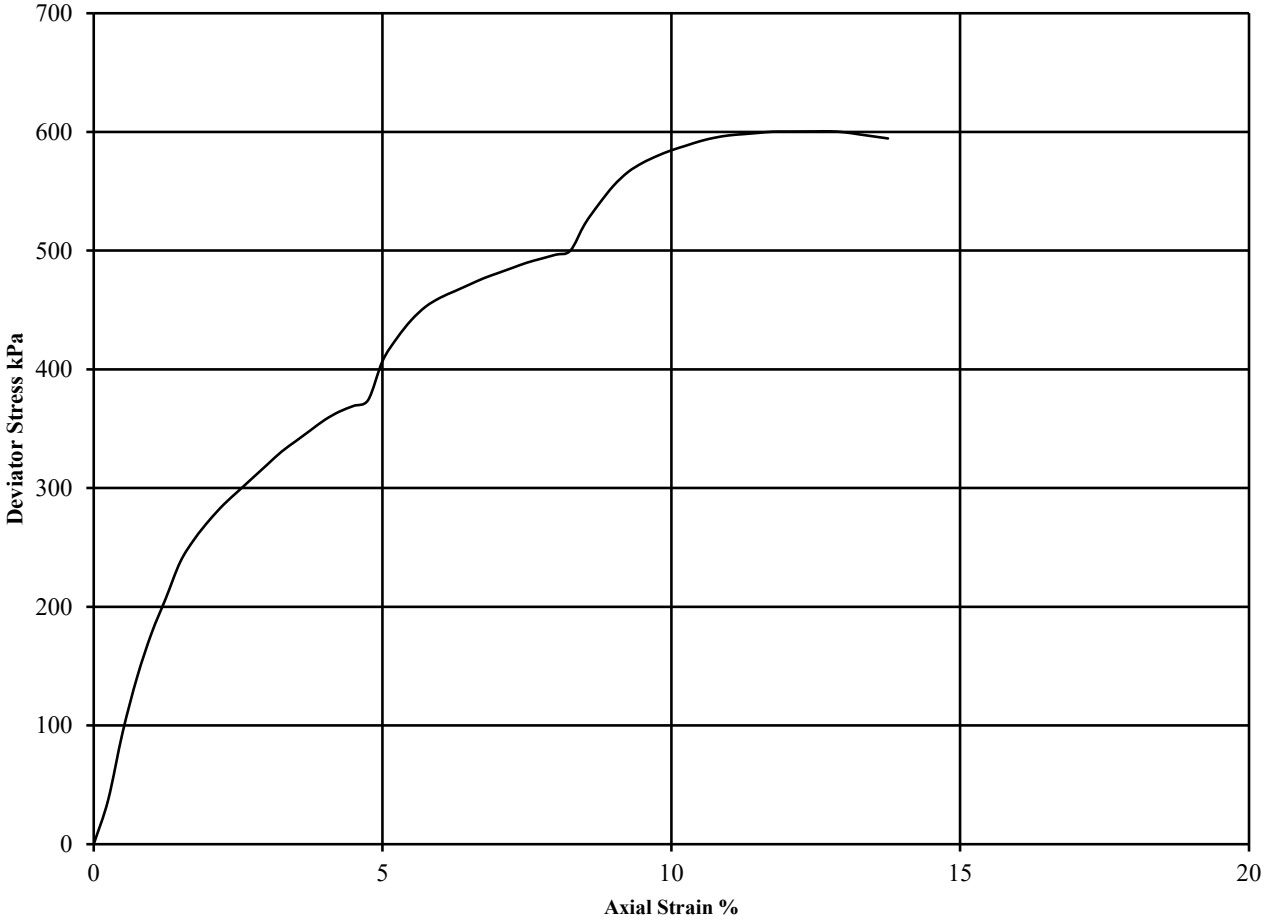
UKAS TESTING 4043	PSL Professional Soils Laboratory	**A46 Newark NNB**	**Contract No:** PSL21/6171 **Client Ref:** 784-B026948

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 9

Hole Number:	**BH13**	**Top Depth (m):**	**18.80**
Sample Number:	**25**	**Base Depth (m):**	**19.00**
Sample Type	**C**		



Diameter (mm):		102	Height (mm):		204	Test:	UU Multistage		Remarks
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick Membrane Correction applied (kPa)
1	21	2.10	1.73	100	374	187	4.8		0.36 0.36 0.35
				200	500	250	8.3		See summary of soil descriptions
				400	601	300	12.8	Intermediate	

DETERMINATION OF UNCONFINED COMPRESSIVE STRENGTH

ISRM Suggested Methods, pp 111 –116, 1981.

Hole Number	Sample Number	Sample Type	Top Depth (m)	Base Depth (m)	Sample Diameter (mm)	Sample Length (mm)	Height Ratio	Initial Mass (g)	Bulk Density (Mg/m)	Moisture Content (%)	Dry Density (Mg/m)	Load Failure (kN)	UCS (MPa)	Failure Mode	Date Tested	Remarks
BH06	5	C	22.00	22.20	103	185	1.8	3579	2.32	7.7	2.16	26.1	3.1	Brittle	23/09/21	
BH12	13	C	9.50	9.73	103	170	1.7	3250	2.29	5.1	2.18	25.8	3.1	Brittle	23/09/21	
BH13	29	C	24.85	25.10	104	201	1.9	3812	2.23	7.7	2.07	22.6	2.7	Brittle	23/09/21	

PSL Professional Soils Laboratory	A46 Newark NNB	Contract No: PSL21/6171 Client Ref: 784-B026948

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		Area	D_e^2	D_e	Failure Load (P)		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH06	14.75	2	A	Perp	101	44	4444	5658.28	75.22	-	0.78	0.14	1.202	0.17	Valid	
BH06	21.10	4	A	Perp	102	55	5610	7142.87	84.52	-	1.01	0.14	1.266	0.18	Valid	
BH06	24.60	6	A	Perp	102	52	5304	6753.26	82.18	-	1.01	0.15	1.251	0.19	Valid	
BH12	11.30	14	A	Perp	104	51	5304	6753.26	82.18	-	0.81	0.12	1.251	0.15	Valid	
BH12	13.35	15	A	Perp	104	48	4992	6356.01	79.72	-	1.30	0.20	1.234	0.25	Valid	
BH12	14.70	16	A	Perp	103	60	6180	7868.62	88.71	-	3.01	0.38	1.294	0.50	Valid	
BH13	26.25	31	A	Perp	100	52	5200	6620.85	81.37	-	0.98	0.15	1.245	0.18	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular

UKAS TESTING 4043

PSL Professional Soils Laboratory

A46 Newark NNB

Contract No:

PSL21/6171

Client Ref:

784-B026948

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		D_e^2	D_e	Failure Load		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	L	D		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH06	14.75	2	D	Par	-	101	10201	101.00	-	0.15	0.015	1.372	0.02	Valid	
BH06	21.10	4	D	Par	-	102	10404	102.00	-	0.25	0.024	1.378	0.03	Valid	
BH06	24.60	6	D	Par	-	102	10404	102.00	-	1.82	0.175	1.378	0.24	Valid	
BH12	11.30	14	D	Par	-	104	10816	104.00	-	1.88	0.174	1.390	0.24	Valid	
BH12	13.35	15	D	Par	-	104	10816	104.00	-	1.12	0.104	1.390	0.14	Valid	
BH12	14.70	16	D	Par	-	103	10609	103.00	-	1.60	0.151	1.384	0.21	Valid	
BH13	26.25	31	D	Par	-	100	10000	100.00	-	0.66	0.066	1.366	0.09	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

UKAS TESTING 4043

PSL Professional Soils Laboratory

A46 Newark NNB

Contract No:

PSL21/6171

Client Ref:

784-B026948

2531

ANALYTICAL TEST REPORT

Contract no: 100635

Contract name: A46 Newark NNB

Client reference: PSL21/6171

Clients name: Professional Soils Laboratory

Clients address: 5/7 Hexthorpe Road
Doncaster
DN4 0AR

Samples received: 21 September 2021

Analysis started: 21 September 2021

Analysis completed: 28 September 2021

Report issued: 28 September 2021

Notes:
Opinions and interpretations expressed herein are outside the UKAS accreditation scope.
Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.
All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.
Methods, procedures and performance data are available on request.
Results reported herein relate only to the material supplied to the laboratory.
This report shall not be reproduced except in full, without prior written approval.
Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

Key:
U UKAS accredited test
M MCERTS & UKAS accredited test
$ Test carried out by an approved subcontractor
I/S Insufficient sample to carry out test
N/S Sample not suitable for testing

Approved by: [redacted]
Rachael Burton
Customer Support Squad Leader

Chemtech Environmental Limited

SOILS

Lab number			100635-1	100635-2	100635-3	100635-4	100635-5	100635-6
Sample id			BH06	BH12	BH12	BH13	BH13	BH43
Depth (m)			16.40-16.58	8.85-8.95	14.70-14.85	19.80-19.95	23.20-23.40	10.50-10.60
Date sampled			23/06/2021	24/06/2021	24/06/2021	29/06/2021	29/06/2021	22/06/2021
Test	**Method**	**Units**						
pH	CE004 [U]	units	7.3	8.5	8.3	8.2	8.2	-
Magnesium (2:1 water soluble)	CE061	mg/l Mg	28	31	42	58	46	-
Chloride (2:1 water soluble)	CE049 [U]	mg/l Cl	11	80	8.6	6.3	24	-
Nitrate (2:1 water soluble)	CE049 [U]	mg/l NO_3	<1	<1	2.0	<1	<1	-
Sulphate (2:1 water soluble)	CE061	mg/l SO_4	1996	3363	2713	2081	3082	-
Sulphate (total)	CE062	mg/kg SO_4	401678	205644	200068	40211	251199	-
Sulphur (total)	CE119	mg/kg S	167355	77010	69832	15344	89346	-
Sulphur (total)	CE119	% w/w S	16.74	7.70	6.98	1.53	8.93	-
Total Organic Carbon (TOC)	CE197	% w/w C	-	-	-	-	-	0.6
Estimate of OMC (calculated from TOC)	CE197	% w/w	-	-	-	-	-	1.0

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE004	pH	Based on BS 1377, pH Meter	As received	U	-	units
CE061	Magnesium (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry		1	mg/l Mg
CE049	Chloride (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l Cl
CE049	Nitrate (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l NO_3
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry		10	mg/l SO_4
CE062	Sulphate (total)	Acid extraction, ICP-OES	Dry		100	mg/kg SO_4
CE119	Sulphur (total)	Acid extraction, ICP-OES	Dry		100	mg/kg S
CE119	Sulphur (total)	Acid extraction, ICP-OES	Dry		0.01	% w/w S
CE197	Total Organic Carbon (TOC)	Carbon Analyser	Dry		0.1	% w/w C
CE197	Estimate of OMC (calculated from TOC)	Calculation from Total Organic Carbon	Dry		0.1	% w/w

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
100635-1	BH06	16.40-16.58	Y	All (EHT)
100635-2	BH12	8.85-8.95	Y	All (EHT)
100635-3	BH12	14.70-14.85	Y	All (EHT)
100635-4	BH13	19.80-19.95	Y	All (EHT)
100635-5	BH13	23.20-23.40	Y	All (EHT)
100635-6	BH43	10.50-10.60	Y	All (EHT)

LABORATORY REPORT

4043

Contract Number: PSL21/6757

Report Date: 05 October 2021

Client's Reference: 784-B026948

Client Name: Tetra Tech
54 Hagley Road
Birmingham
B16 8PE

For the attention of: Julian Carr

Contract Title: A46 Newark NNB

Date Received: 20/8/2021
Date Commenced: 20/8/2021
Date Completed: 4/10/2021

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins
(Director)

R Berriman
(Quality Manager)

S Royle
(Laboratory Manager)

[redacted]

L Knight
(Assistant Laboratory Manager)

S Eyre
(Senior Technician)

M Fennell
(Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AR
[redacted]

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH09	14	D	6.80	6.90	Reddish brown gravelly sandy very silty CLAY
BH10	4	D	5.30	5.40	Reddish mottled brown sandy very silty CLAY.
BH10	6	D	7.60	7.70	Reddish brown very silty GRAVEL.
BH38	9	B	4.00	5.00	Brown very sandy very silty GRAVEL
BH38	12	D	6.30	6.40	Brown slightly gravelly slightly sandy very silty CLAY.
BH38	13	B	7.00	8.00	Brown very sandy slightly silty GRAVEL
BH38	15	B	11.00	11.70	Brown slightly gravelly SAND.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH09	14	D	6.80	6.90	25			36	21	15	75	Intermediate Plasticity CI
BH10	4	D	5.30	5.40	29			43	26	17	100	Intermediate Plasticity CI
BH10	6	D	7.60	7.70	27				NP			
BH38	12	D	6.30	6.40	25			57	27	30	90	High Plasticity CH

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL Professional Soils Laboratory

A46 Newark NNB

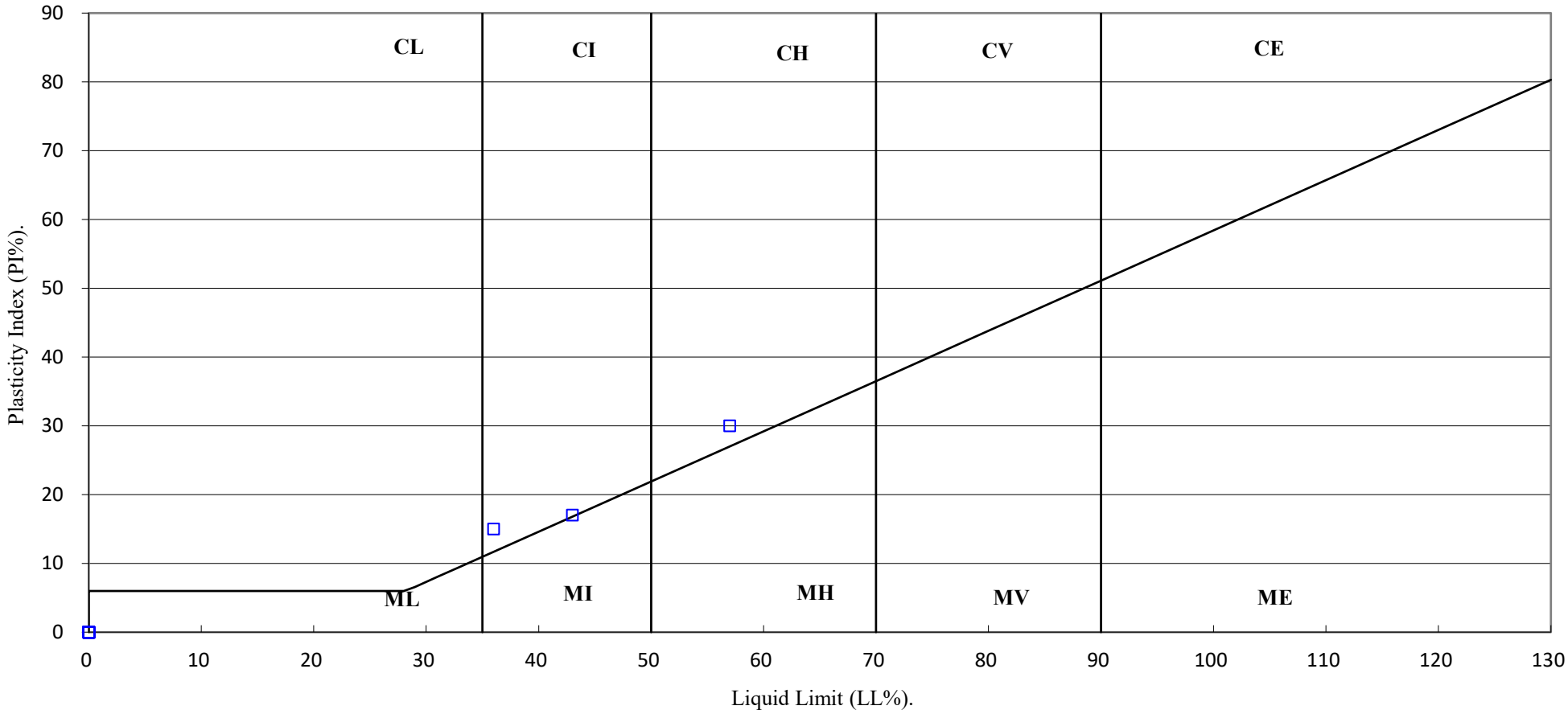
Contract No:

PSL21/6757

Client Ref:

784-B026948

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



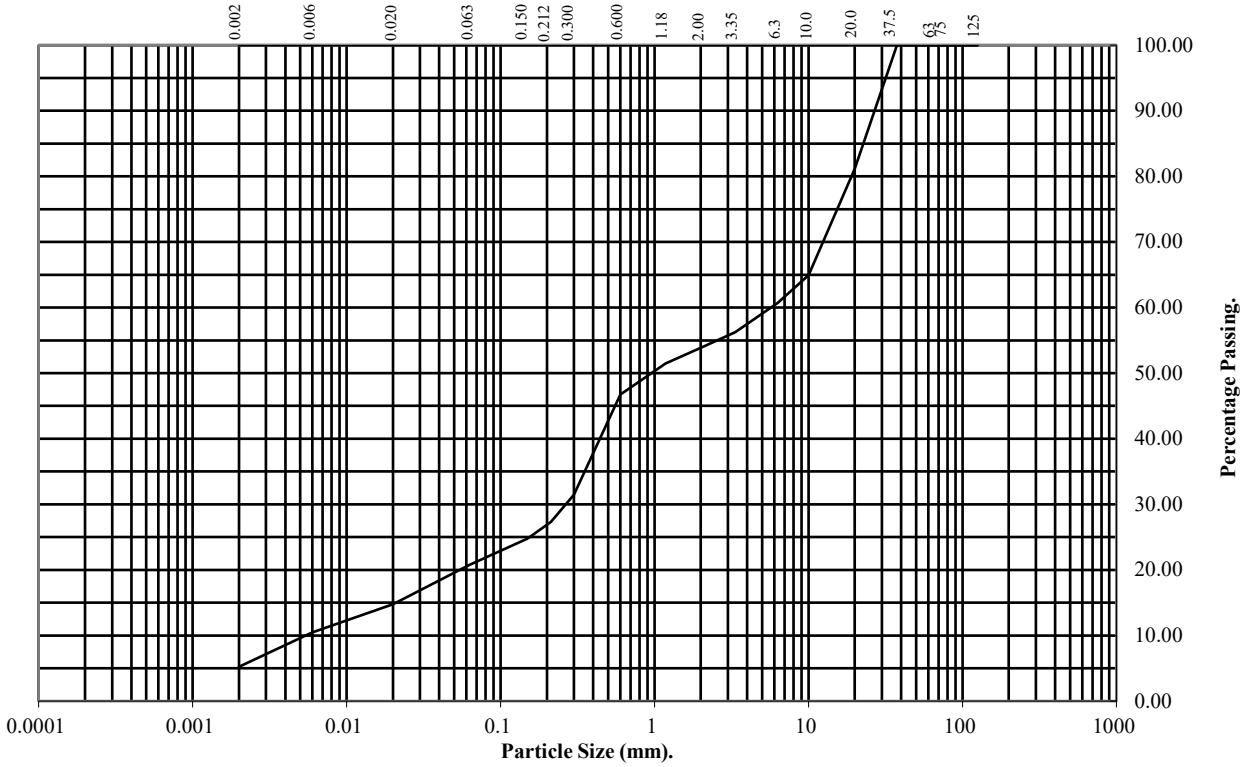
UKAS TESTING 4043	PSL Professional Soils Laboratory	A46 Newark NNB	Contract No: PSL21/6757 Client Ref: 784-B026948

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH38**	**Top Depth (m):**	**4.00**
Sample Number:	**9**	**Base Depth(m):**	**5.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	81
10	65
6.3	61
3.35	56
2	54
1.18	51
0.6	47
0.3	31
0.212	27
0.15	25
0.063	21

Particle Diameter	Percentage Passing
0.02	15
0.006	10
0.002	5

Soil Fraction	Total Percentage
Cobbles	0
Gravel	46
Sand	33
Silt	16
Clay	5

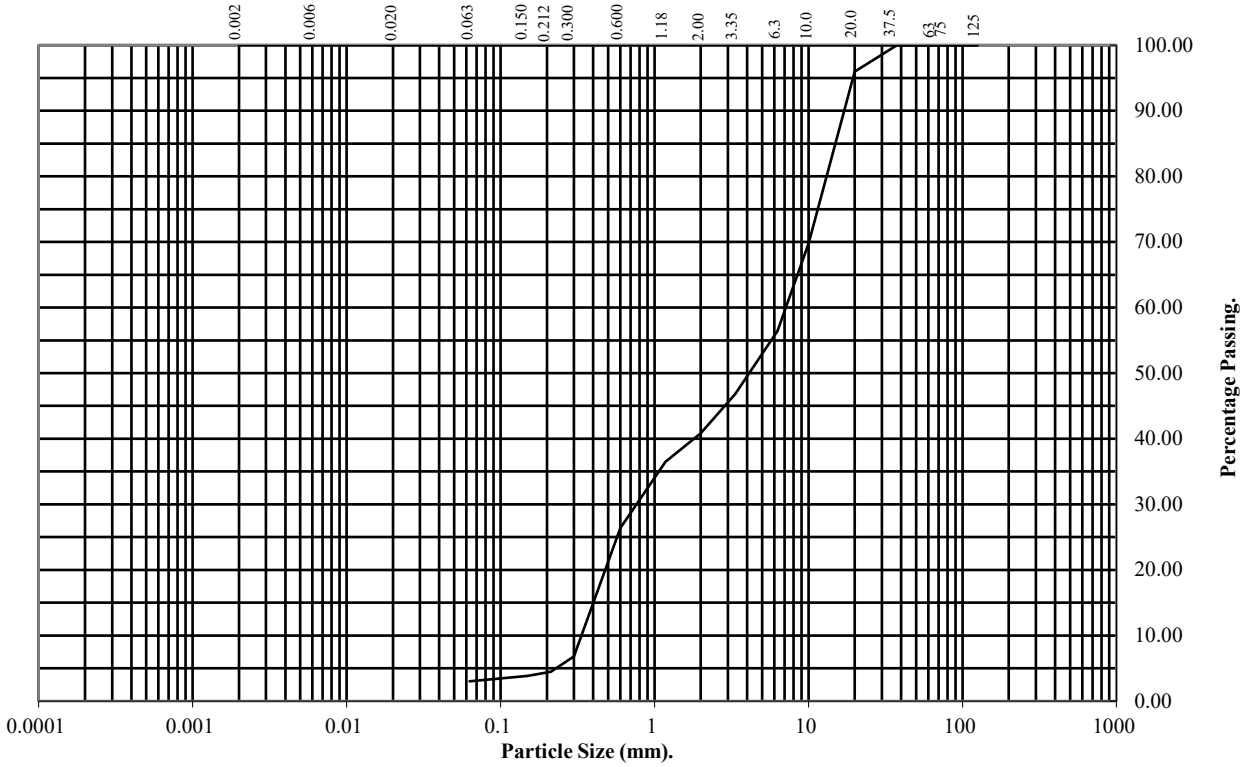
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH38**	**Top Depth (m):**	**7.00**
Sample Number:	**13**	**Base Depth(m):**	**8.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	96
10	70
6.3	56
3.35	47
2	41
1.18	36
0.6	26
0.3	7
0.212	4
0.15	4
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	59
Sand	38
Silt/Clay	3

Remarks:

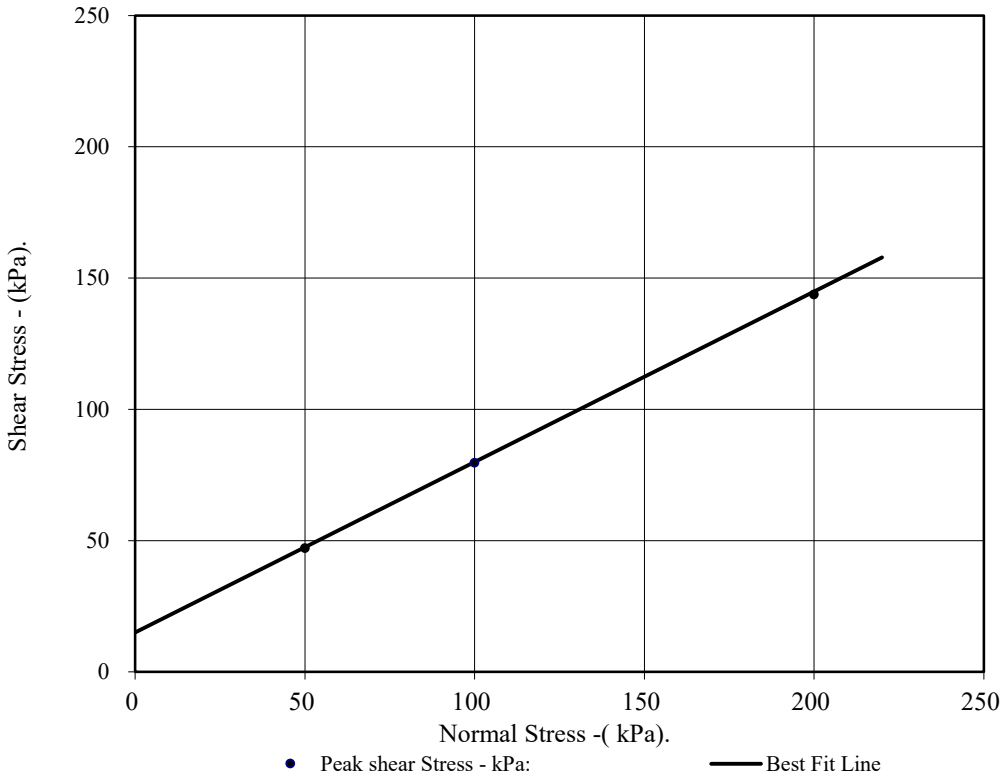
See Summary of Soil Descriptions

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH38**		Top Depth:	**9.00**
Sample Number:	**14**		Base Depth:	**10.00**
Sample Conditions:	Dry		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 2mm sieve Remoulded using hand tamped effort			
Sample Description:	**See summary of soil descriptions**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	20.05	20.05	20.05
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	17	17	17
Bulk Density - Mg/m3:	2.03	2.04	2.04
Dry Density - Mg/m3:	1.74	1.74	1.75
Voids Ratio:	0.526	0.520	0.518
Normal Pressure- kPa	50	100	200
Consolidation Stage			
Consolidated Height - mm:	19.80	19.76	19.66
Shearing Stage			
Rate of Strain (mm/min)	0.600	0.600	0.600
Displacement at peak shear stress (mm)	2.50	3.00	3.00
Peak shear Stress - kPa:	47	80	144
Final Consolidated Conditions			
Moisture Content - %:	16	16	15
Bulk Density - Mg/m3:	2.06	2.07	2.08
Dry Density - Mg/m3:	1.77	1.78	1.81
Peak			
Angle of Shearing Resistance:(~~θ~~)	**33**		
Effective Cohesion - kPa:	**15**		

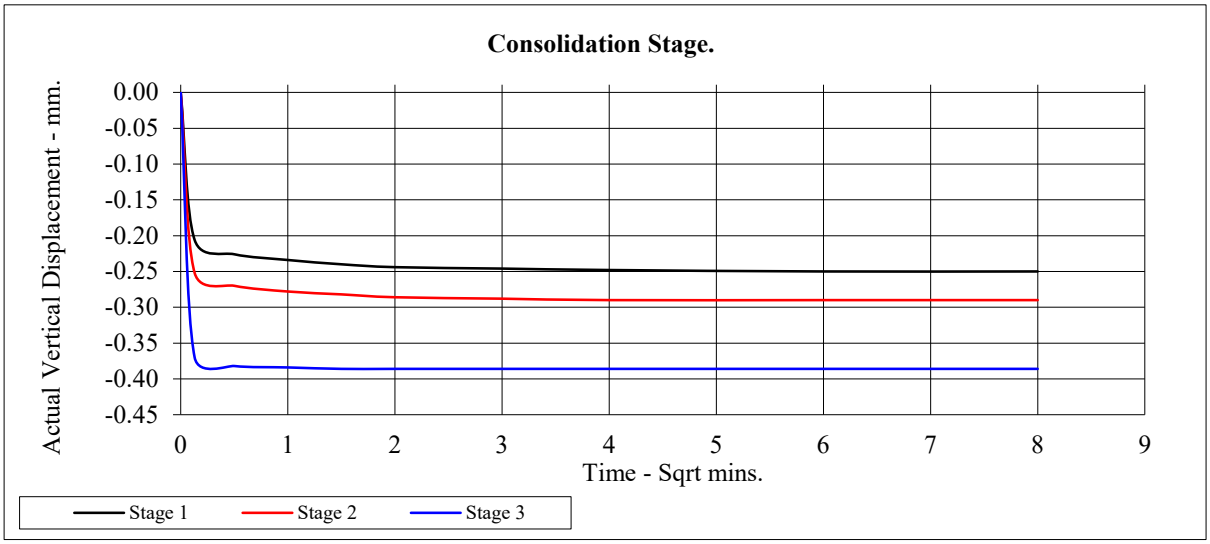


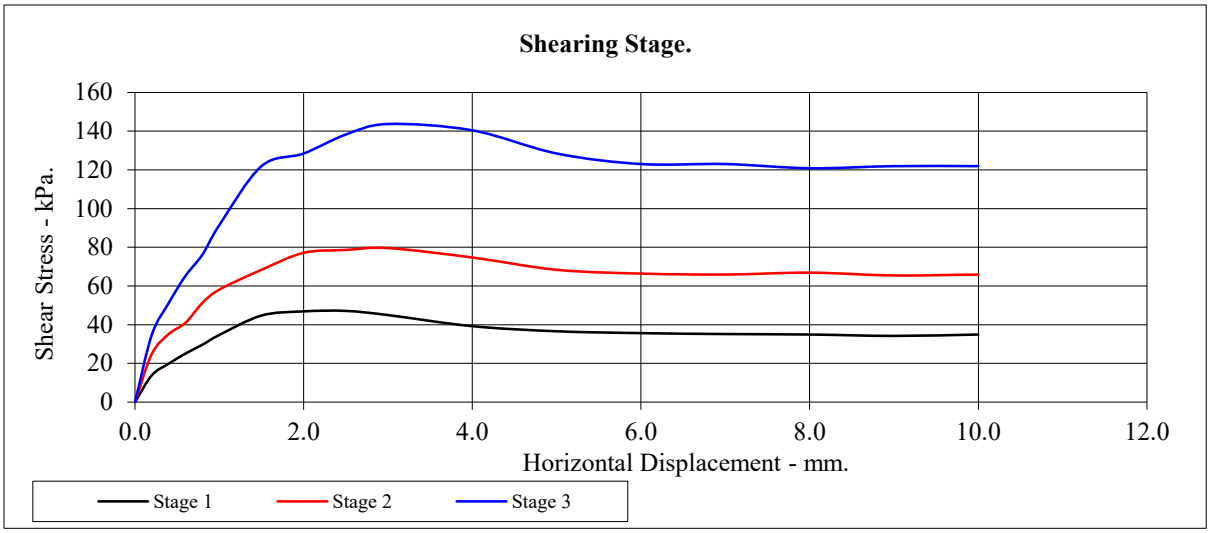
UKAS TESTING 4043	PSL Professional Soils Laboratory	**A46 Newark NNB**	**Contract No:** PSL21/6757 **Client Ref:** 784-B026948

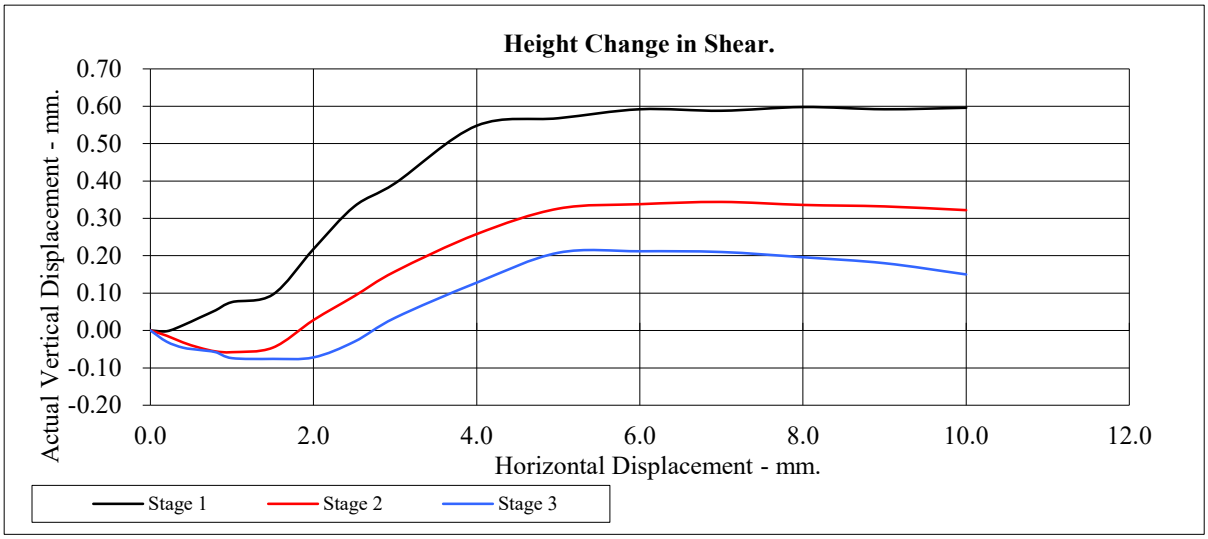
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**BH38**	Top Depth:	**9.00**
Sample Number:	**14**	Base Depth:	**10.00**







DETERMINATION OF UNCONFINED COMPRESSIVE STRENGTH

ISRM Suggested Methods, pp 111 –116, 1981.

Hole Number	Sample Number	Sample Type	Top Depth (m)	Base Depth	Sample Diameter (mm)	Sample Length (mm)	Height Ratio	Initial Mass (g)	Bulk Density (Mg/m)	Moisture Content (%)	Dry Density (Mg/m)	Load Failure (kN)	UCS (MPa)	Failure Mode	Date Tested	Remarks
BH09	17	C	9.80	10.00	103	201	2.0	3964	2.37	8.0	2.19	37.1	4.5	Brittle	28/09/21	
BH09	22	C	20.25	20.45	103	162	1.6	3035	2.25	13	1.99	4.9	0.6	Brittle	28/09/21	
BH10	7	C	9.35	9.50	104	160	1.5	3091	2.27	11	2.05	9.5	1.1	Brittle	28/09/21	
BH10	11	C	18.10	18.30	103	162	1.6	2664	1.97	12	1.76	16.0	1.9	Brittle	28/09/21	
BH12	17	C	18.45	18.70	103	201	2.0	3810	2.27	11	2.04	14.0	1.7	Brittle	28/09/21	
BH12	18	C	20.50	20.85	103	194	1.9	3598	2.23	15	1.94	15.0	1.8	Brittle	28/09/21	

Professional Soils Laboratory

A46 Newark NNB

Contract No:
PSL21/6757
Client Ref:

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		Area	D_e^2	D_e	Failure Load (P)		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	W	D	(mm2)		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH09	7.20	15	A	Perp	102	51	5202	6623.39	81.38	-	0.31	0.05	1.245	0.06	Valid	
BH09	12.30	18	A	Perp	103	22	2266	2885.16	53.71	-	0.73	0.25	1.033	0.26	Valid	
BH09	15.85	20	A	Perp	103	54	5562	7081.76	84.15	-	2.42	0.34	1.264	0.43	Valid	
BH09	17.40	21	A	Perp	102	51	5202	6623.39	81.38	-	1.62	0.24	1.245	0.30	Valid	
BH10	13.65	10	A	Perp	102	60	6120	7792.23	88.27	-	2.42	0.31	1.291	0.40	Valid	
BH10	24.30	13	A	Perp	103	33	3399	4327.74	65.79	-	2.69	0.62	1.131	0.70	Valid	
BH12	23.20	19	A	Perp	103	66	6798	8655.48	93.03	-	2.50	0.29	1.322	0.38	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

A = Axial, D = Diametral, I = Irregular

UKAS TESTING 4043

PSL Professional Soils Laboratory

A46 Newark NNB

Contract No:

PSL21/6757

Client Ref:

SUMMARY OF POINT LOAD TEST RESULTS

ISRM Suggested Methods : 2007

Borehole Number	Depth (m)	Sample Ref	Test Type	Orientation	Dimensions (mm)		D_e^2	D_e	Failure Load		I_s	Corr Fac	I_{s50}	Failure Type	Remarks
				Par / Perp	L	D		(mm)	(Mpa)	(kN)	(MPa)	F	(MPa)		
BH09	7.20	15	D	Par	-	102	10404	102.00	-	0.31	0.030	1.378	0.31	Valid	
BH09	12.30	18	D	Par	-	103	10609	103.00	-	0.73	0.069	1.384	0.10	Valid	
BH09	15.85	20	D	Par	-	103	10609	103.00	-	2.64	0.249	1.384	0.34	Valid	
BH09	17.40	21	D	Par	-	102	10404	102.00	-	0.42	0.040	1.378	0.06	Valid	
BH10	13.65	10	D	Par	-	102	10404	102.00	-	0.88	0.085	1.378	0.12	Valid	
BH10	24.30	13	D	Par	-	103	10609	103.00	-	0.27	0.025	1.384	0.04	Valid	
BH12	23.20	19	D	Par	-	103	10609	103.00	-	2.69	0.254	1.384	0.35	Valid	

Note All testing carried out on samples at as received water content

Par = parallel, Perp = perpendicular, U = Random

UKAS TESTING 4043

PSL Professional Soils Laboratory

A46 Newark NNB

Contract No:

PSL21/6757

Client Ref:

2531

ANALYTICAL TEST REPORT

Contract no: 100675

Contract name: A46 Newark NNB

Client reference: PSL21/6757

Clients name: Professional Soils Laboratory

Clients address: 5/7 Hexthorpe Road
Doncaster
DN4 0AR

Samples received: 22 September 2021

Analysis started: 22 September 2021

Analysis completed: 29 September 2021

Report issued: 29 September 2021

Notes:
Opinions and interpretations expressed herein are outside the UKAS accreditation scope.
Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.
All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.
Methods, procedures and performance data are available on request.
Results reported herein relate only to the material supplied to the laboratory.
This report shall not be reproduced except in full, without prior written approval.
Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

Key:
U UKAS accredited test
M MCERTS & UKAS accredited test
$ Test carried out by an approved subcontractor
I/S Insufficient sample to carry out test
N/S Sample not suitable for testing

Approved by: [redacted]
Rachael Burton
Customer Support Squad Leader

Chemtech Environmental Limited

SOILS

Lab number			100675-1	100675-2	100675-3
Sample id			BH09	BH10	BH12
Depth (m)			24.80-25.05	12.05-12.25	20.50-20.85
Date sampled			08/07/2021	12/07/2021	30/06/2021
Test	**Method**	**Units**			
pH	CE004 [U]	units	8.3	8.1	8.5
Magnesium (2:1 water soluble)	CE061	mg/l Mg	31	28	38
Chloride (2:1 water soluble)	CE049 [U]	mg/l Cl	76	25	75
Nitrate (2:1 water soluble)	CE049 [U]	mg/l NO_3	<1	<1	<1
Sulphate (2:1 water soluble)	CE061	mg/l SO_4	2342	2496	2701
Sulphate (total)	CE062	mg/kg SO_4	54804	308497	51761
Sulphur (total)	CE119	mg/kg S	21539	164562	23049
Sulphur (total)	CE119	% w/w S	2.15	16.46	2.30

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE004	pH	Based on BS 1377, pH Meter	As received	U	-	units
CE061	Magnesium (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry		1	mg/l Mg
CE049	Chloride (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l Cl
CE049	Nitrate (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l NO_3
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry		10	mg/l SO_4
CE062	Sulphate (total)	Acid extraction, ICP-OES	Dry		100	mg/kg SO_4
CE119	Sulphur (total)	Acid extraction, ICP-OES	Dry		100	mg/kg S
CE119	Sulphur (total)	Acid extraction, ICP-OES	Dry		0.01	% w/w S

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
100675-1	BH09	24.80-25.05	Y	All (EHT)
100675-2	BH10	12.05-12.25	Y	All (EHT)
100675-3	BH12	20.50-20.85	Y	All (EHT)

LABORATORY REPORT

4043

Contract Number: PSL21/6887

Report Date: 11 October 2021

Client's Reference: 784-B026948

Client Name: Tetra Tech
54 Hagley Road
Birmingham
B16 8PE

For the attention of: Nicholas Bool

Contract Title: A46 Newark NNB

Date Received: 26/8/2021
Date Commenced: 26/8/2021
Date Completed: 11/10/2021

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins
(Director)

R Berriman
(Quality Manager)

S Royle
(Laboratory Manager)

[redacted]

L Knight
(Assistant Laboratory Manager)

S Eyre
(Senior Technician)

M Fennell
(Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AR
[redacted]

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH05	11	B	1.20	1.65	Brown very sandy GRAVEL.
BH05	15	B	3.00	3.40	Brown mottled grey very gravelly very sandy CLAY.
BH05	18	B	3.60	4.00	Brown sandy GRAVEL.
BH05	20	B	6.00	6.45	Brown very sandy slightly silty GRAVEL.
BH05	1	U	7.50	7.95	Brown very gravelly very sandy CLAY.
BH05	25	D	9.00	9.45	Brown very gravelly very sandy CLAY.
BH31	6	B	5.00	6.00	Brown very sandy clayey GRAVEL.
BH31	8	B	9.00	10.45	Brown very sandy silty GRAVEL.
BH31	9	B	11.60	12.00	Brown gravelly sandy CLAY.
BH31	D	12	6.20	6.30	Brown CLAY.
BH45	B	14	8.10	8.60	Brown very sandy silty GRAVEL.
BH45	15	C	11.10	11.40	Very stiff brown mottled grey sandy CLAY.
BH55	2	B	0.20	0.50	Brown slightly gravelly slightly sandy CLAY.
BH55	3	UT	1.20	1.65	Brown slightly gravelly sandy CLAY.
BH55	4	D	1.65	1.90	Brown slightly gravelly sandy CLAY.
BH55	7	B	2.00	2.45	Brown very sandy silty GRAVEL.
BH55	9	B	3.00	3.45	Brown very sandy silty GRAVEL.
BH55	AMAL	B	4.00	6.45	Brown very sandy silty GRAVEL.
BH55	19	D	8.60		Brown GRAVEL.

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
BH56	1	B	0.10	1.20	Brown sandy CLAY.
BH56	2	UT	1.20	1.65	Brown slightly gravelly very sandy CLAY.
BH56	3	D	1.65	1.90	Brown sandy very silty CLAY.
BH56	9	B	4.00	4.45	Brown very sandy GRAVEL.
BH56	13	B	6.00	6.45	Reddish brown slightly gravelly sandy CLAY.
BH56	14	D	6.50	6.60	Reddish brown gravelly sandy CLAY.
BH56	16	B	7.50	7.95	Reddish brown slightly gravelly sandy CLAY.
TP08	5	B	0.50	1.00	Brown slightly gravelly sandy CLAY.
TP08	4	D	0.50	0.60	Brown slightly gravelly CLAY.
TP08	10	B	1.30	1.50	Brown slightly gravelly silty SAND.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
BH05	15	B	3.00	3.40	17			42	22	23	58	Intermediate Plasticity CI
BH05	25	D	9.00	9.45	21			28	15	13	50	Low Plasticity CL
BH31	6	B	5.00	6.00	5.4					NP		
BH31	9	B	11.60	12.00	19			44	22	22	81	Intermediate Plasticity CI
BH31	D	12	6.20	6.30	30			75	31	44	100	Very High Plasticity CV
BH55	2	B	0.20	0.50	32			72	31	41	92	Very High Plasticity CV
BH55	4	D	1.65	1.90	28			40	21	19	94	Intermediate Plasticity CI
BH55	19	D	8.60		12					NP		
BH56	3	D	1.65	1.90	33			38	22	16	100	Intermediate Plasticity CI
BH56	14	D	6.50	6.60	25			39	19	20	84	Intermediate Plasticity CI
TP08	4	D	0.50	0.60	35			75	32	43	93	Very High Plasticity CV

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL Professional Soils Laboratory

A46 Newark NBB

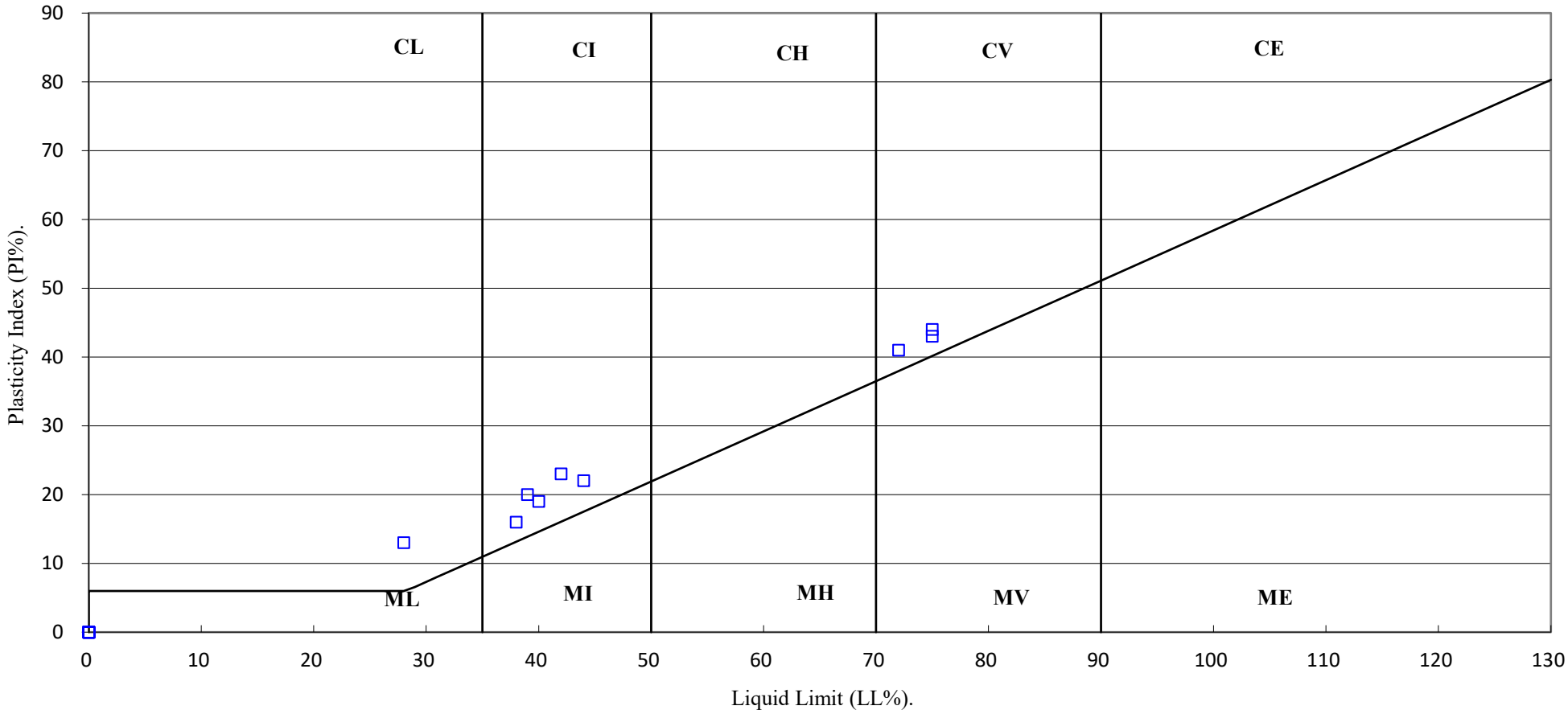
Contract No:

PSL21/6887

Client Ref:

784-B026948

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



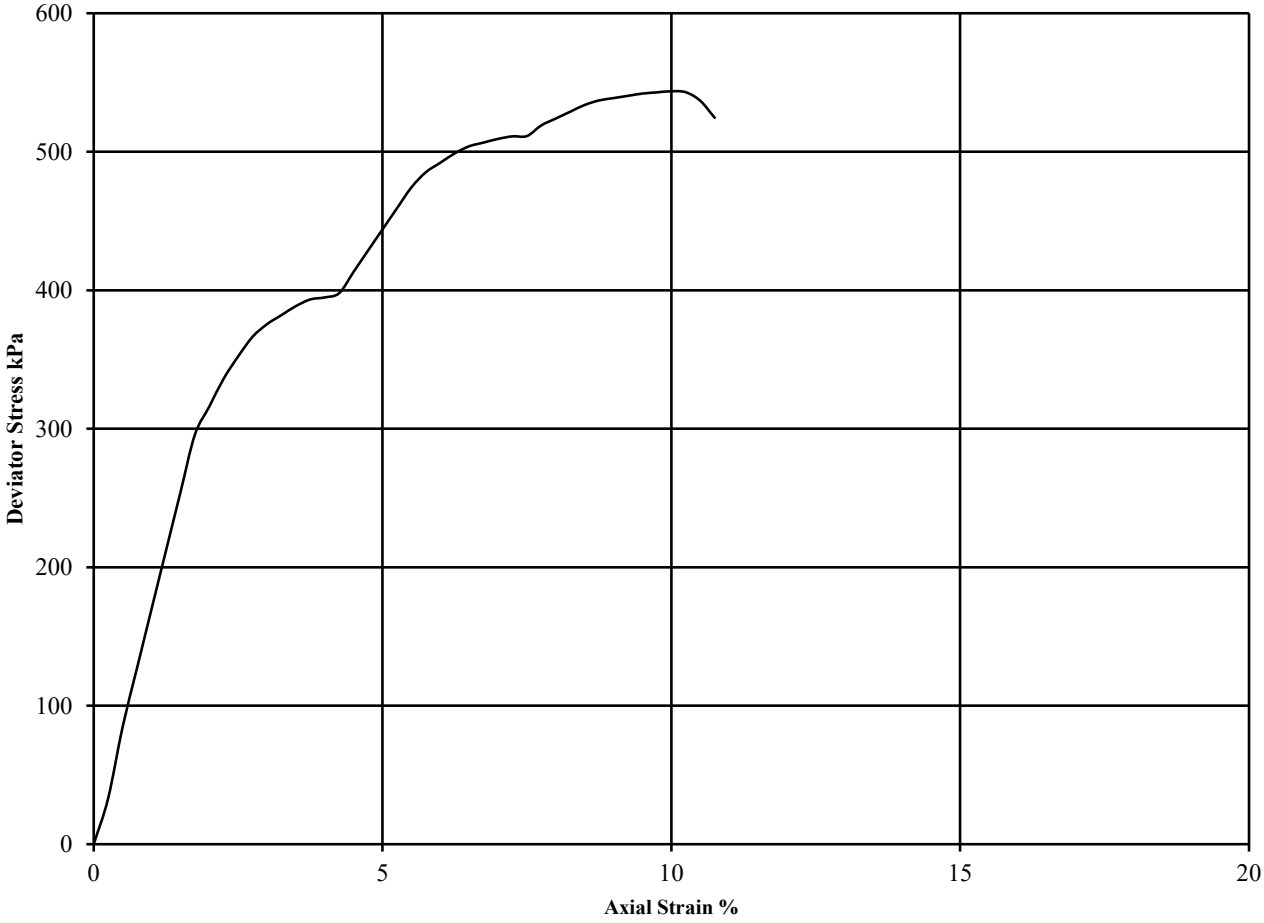
UKAS TESTING 4043	PSL Professional Soils Laboratory	A46 Newark NBB	Contract No: PSL21/6887 Client Ref: 784-B026948

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 9

Hole Number:	**BH45**	**Top Depth (m):**	**11.10**
Sample Number:	**15**	**Base Depth (m):**	**11.40**
Sample Type	**C**		



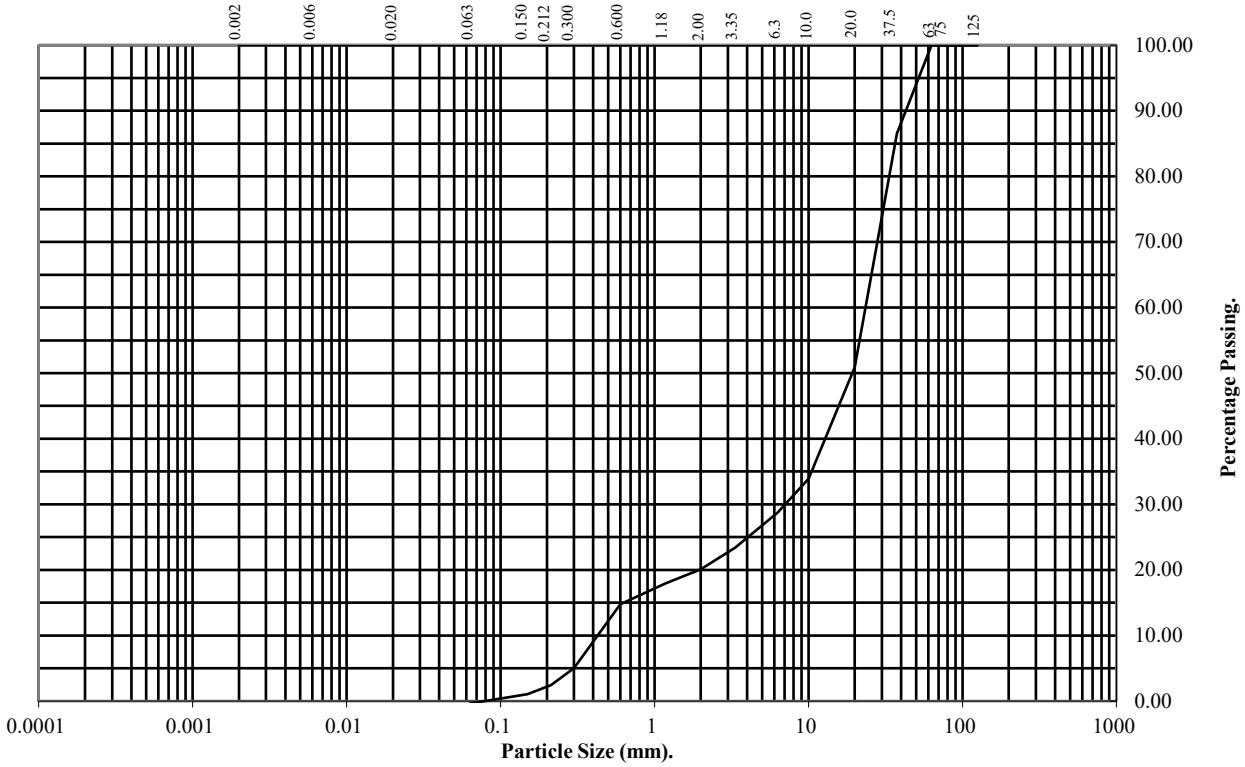
Diameter (mm):		102	Height (mm):		204	Test:	UU Multistage		Remarks
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa) θ_3	Corr. Max. Deviator Stress (kPa) $(\theta_1-\theta_3)_f$	Shear Strength Cu (kPa) $^1/_2(\theta_1-\theta_3)_f$	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick Membrane Correction applied (kPa)
1	21	2.07	1.71	100	395	197	4.0		0.37 0.36 0.35
				200	511	256	7.5		See summary of soil descriptions
				400	544	272	10.0	Brittle	

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH05**	**Top Depth (m):**	**1.20**
Sample Number:	**11**	**Base Depth(m):**	**1.65**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	87
20	51
10	34
6.3	29
3.35	23
2	20
1.18	18
0.6	15
0.3	5
0.212	2
0.15	1
0.063	0

Soil Fraction	Total Percentage
Cobbles	0
Gravel	80
Sand	20
Silt/Clay	0

Remarks:

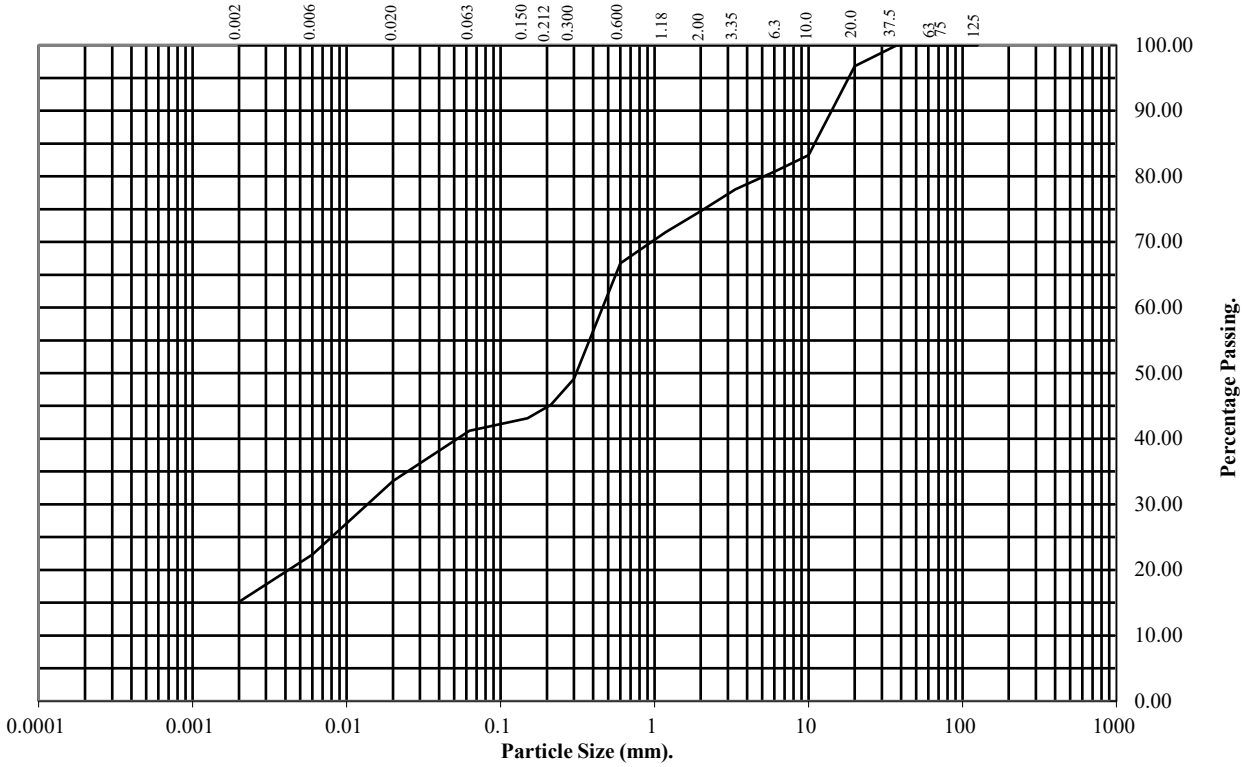
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH05**	**Top Depth (m):**	**3.00**
Sample Number:	**15**	**Base Depth(m):**	**3.40**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	97
10	83
6.3	81
3.35	78
2	75
1.18	71
0.6	67
0.3	49
0.212	45
0.15	43
0.063	41

Particle Diameter	Percentage Passing
0.02	34
0.006	22
0.002	15

Soil Fraction	Total Percentage
Cobbles	0
Gravel	25
Sand	34
Silt	26
Clay	15

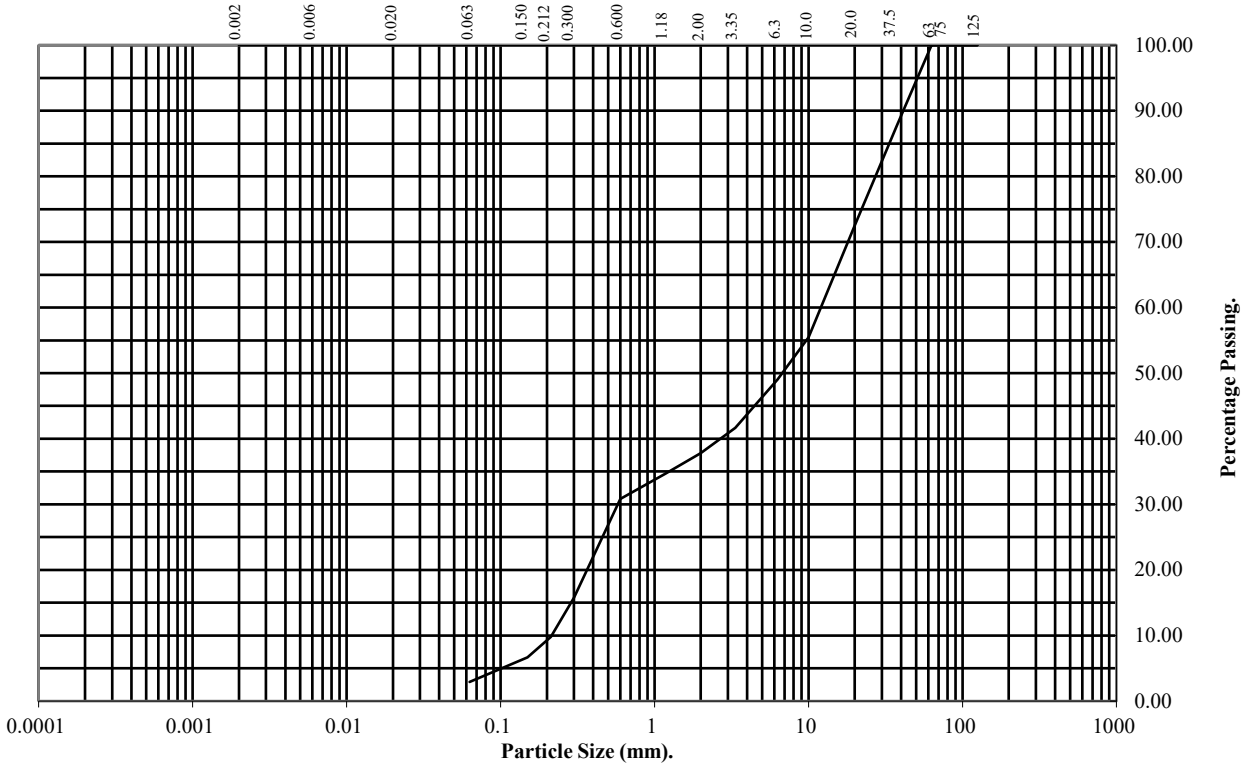
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH05**	**Top Depth (m):**	**6.00**
Sample Number:	**20**	**Base Depth(m):**	**6.45**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	88
20	72
10	55
6.3	49
3.35	42
2	38
1.18	35
0.6	31
0.3	16
0.212	10
0.15	7
0.063	3

Soil Fraction	Total Percentage
Cobbles	0
Gravel	62
Sand	35
Silt/Clay	3

Remarks:

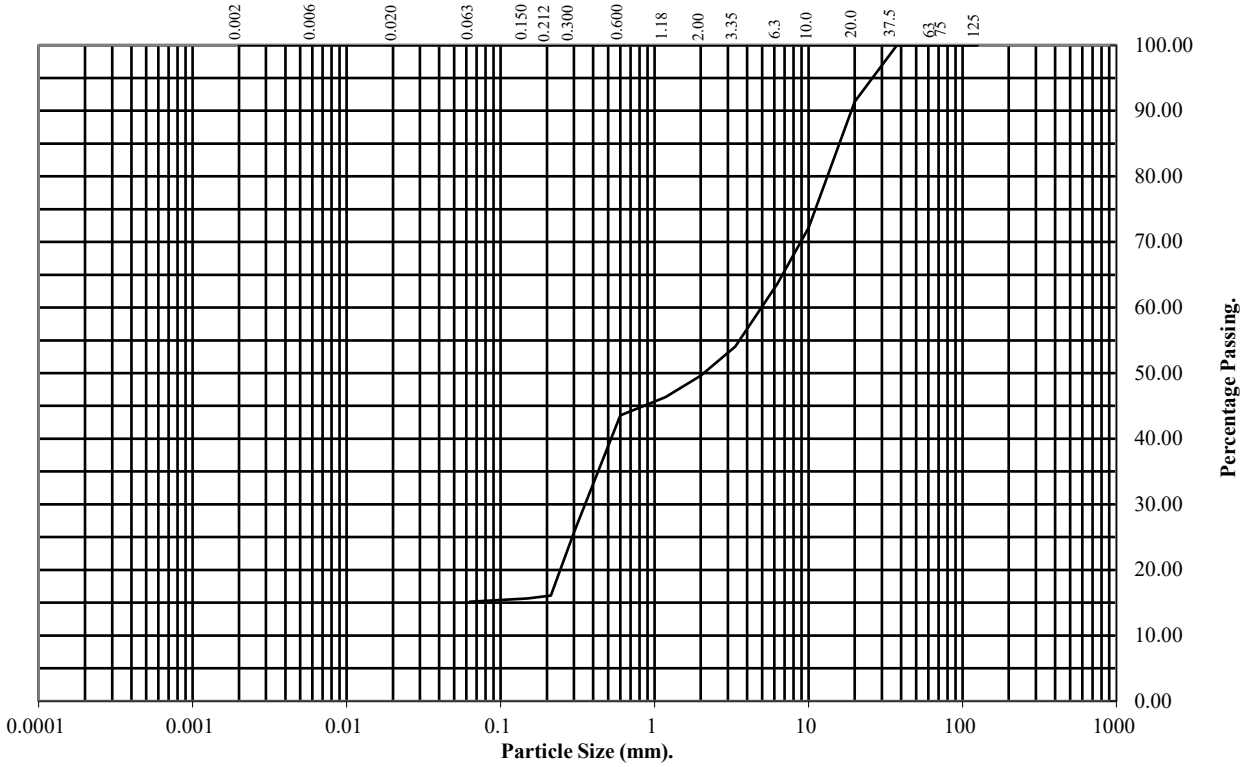
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH31**	**Top Depth (m):**	**5.00**
Sample Number:	**6**	**Base Depth(m):**	**6.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	91
10	72
6.3	64
3.35	54
2	50
1.18	46
0.6	44
0.3	26
0.212	16
0.15	16
0.063	15

Soil Fraction	Total Percentage
Cobbles	0
Gravel	50
Sand	35
Silt/Clay	15

Remarks:

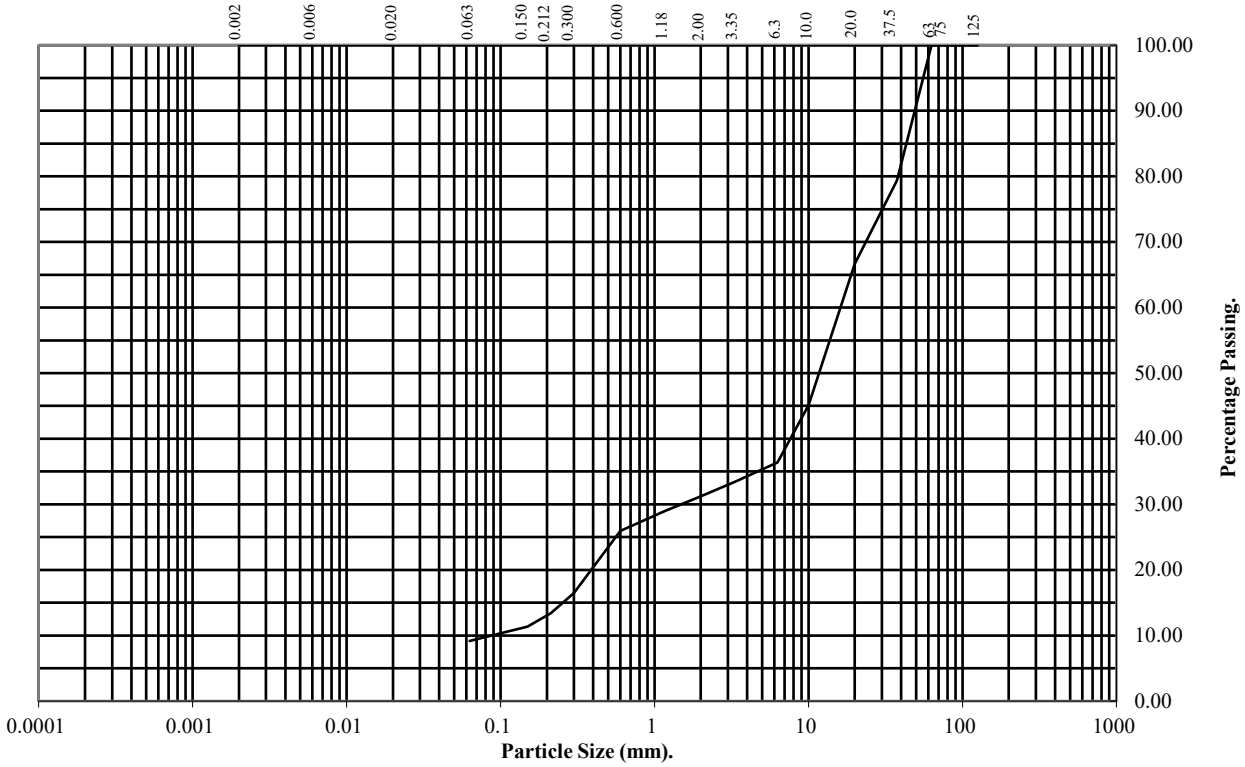
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH31**	**Top Depth (m):**	**9.00**
Sample Number:	**8**	**Base Depth(m):**	**10.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	79
20	67
10	45
6.3	36
3.35	33
2	31
1.18	29
0.6	26
0.3	16
0.212	13
0.15	11
0.063	9

Soil Fraction	Total Percentage
Cobbles	0
Gravel	69
Sand	22
Silt/Clay	9

Remarks:

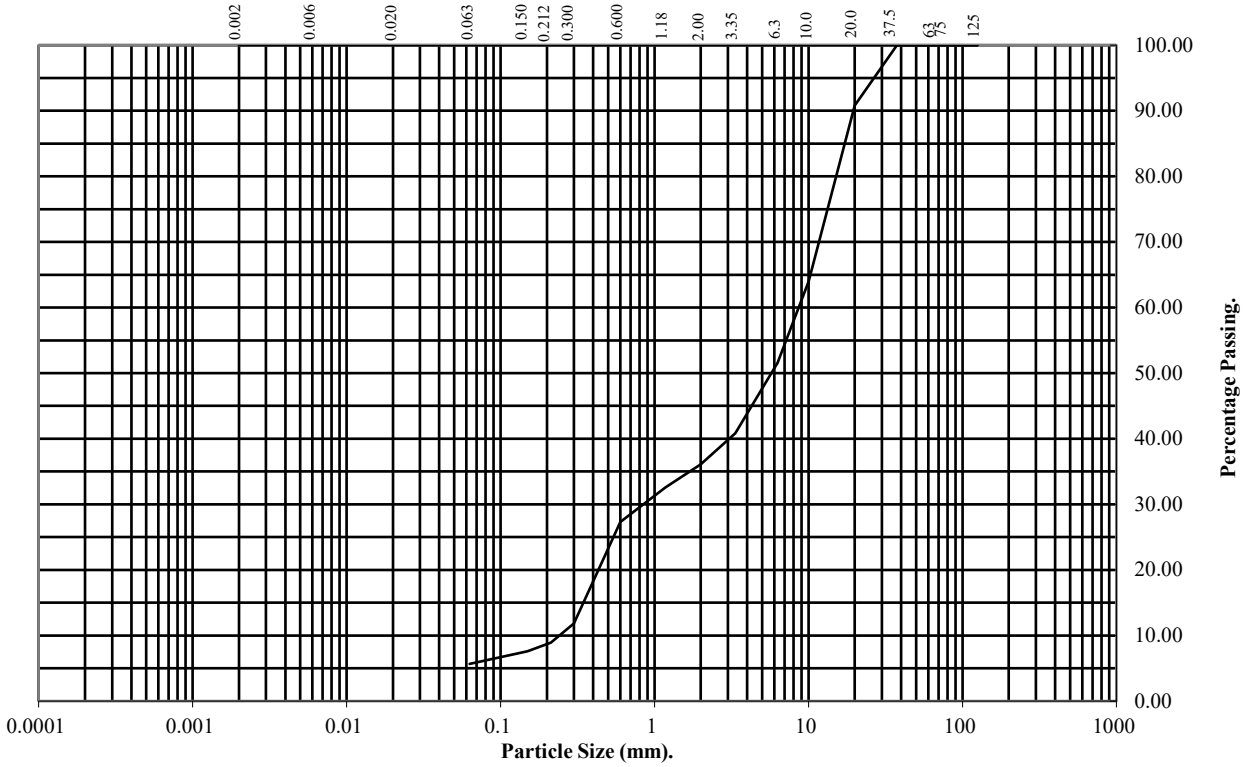
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH45**	**Top Depth (m):**	**8.10**
Sample Number:	**14**	**Base Depth(m):**	**8.80**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	91
10	64
6.3	52
3.35	41
2	36
1.18	33
0.6	27
0.3	12
0.212	9
0.15	8
0.063	6

Soil Fraction	Total Percentage
Cobbles	0
Gravel	64
Sand	30
Silt/Clay	6

Remarks:

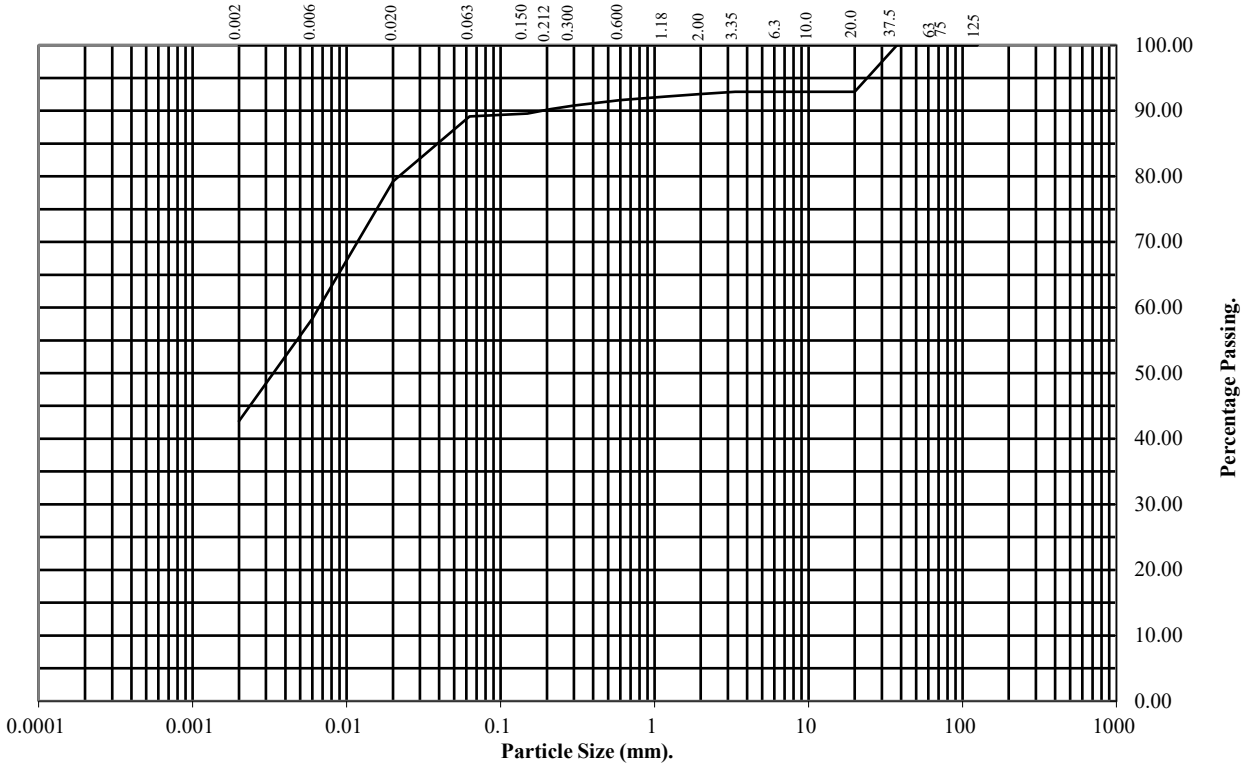
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH55**	**Top Depth (m):**	**0.20**
Sample Number:	**2**	**Base Depth(m):**	**0.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	93
10	93
6.3	93
3.35	93
2	93
1.18	92
0.6	92
0.3	91
0.212	90
0.15	90
0.063	89

Particle Diameter	Percentage Passing
0.02	79
0.006	58
0.002	43

Soil Fraction	Total Percentage
Cobbles	0
Gravel	7
Sand	4
Silt	46
Clay	43

Remarks:

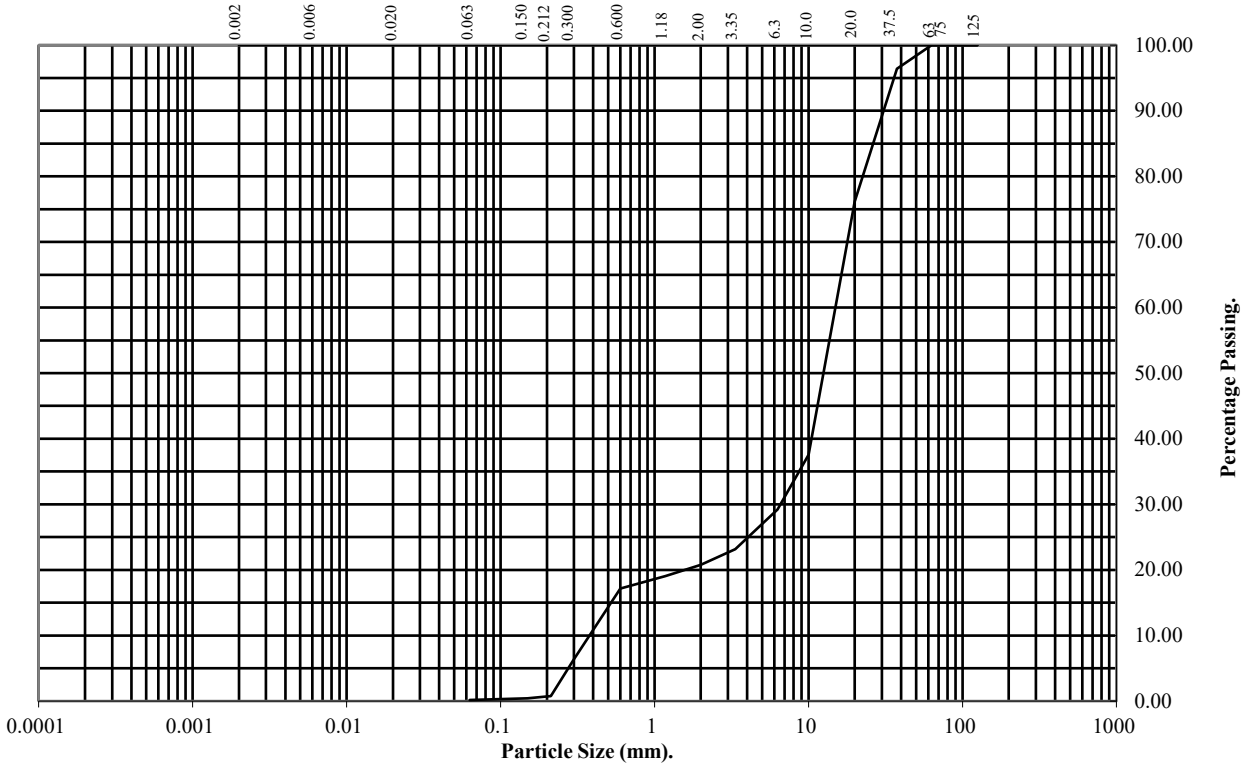
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH55**	**Top Depth (m):**	**3.00**
Sample Number:	**9**	**Base Depth(m):**	**3.45**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	96
20	76
10	38
6.3	29
3.35	23
2	21
1.18	19
0.6	17
0.3	6
0.212	1
0.15	0
0.063	0

Soil Fraction	Total Percentage
Cobbles	0
Gravel	79
Sand	21
Silt/Clay	0

Remarks:

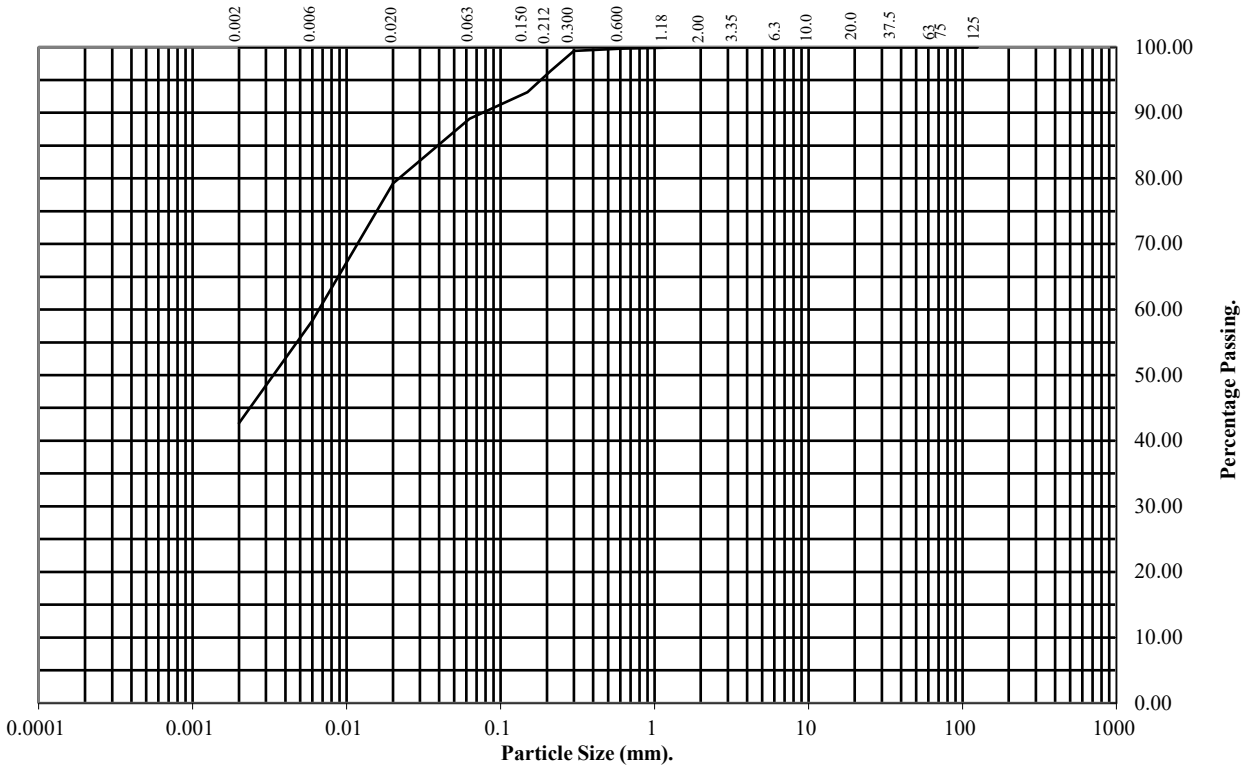
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH56**	**Top Depth (m):**	**0.10**
Sample Number:	**1**	**Base Depth(m):**	**1.20**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	100
0.3	99
0.212	96
0.15	93
0.063	89

Particle Diameter	Percentage Passing
0.02	79
0.006	58
0.002	43

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	11
Silt	46
Clay	43

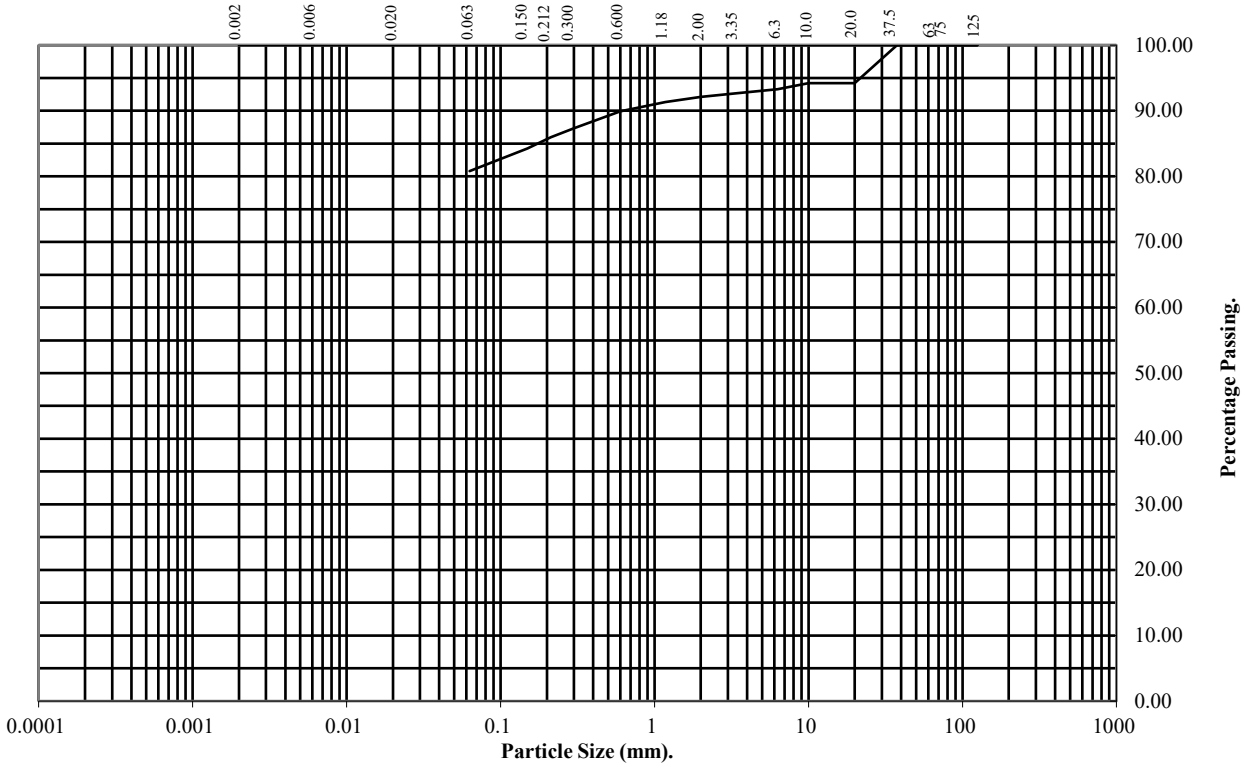
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:	**BH56**	**Top Depth (m):**	**6.00**
Sample Number:	**13**	**Base Depth(m):**	**6.45**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	94
10	94
6.3	93
3.35	93
2	92
1.18	91
0.6	90
0.3	87
0.212	86
0.15	84
0.063	81

Soil Fraction	Total Percentage
Cobbles	0
Gravel	8
Sand	11
Silt/Clay	81

Remarks:

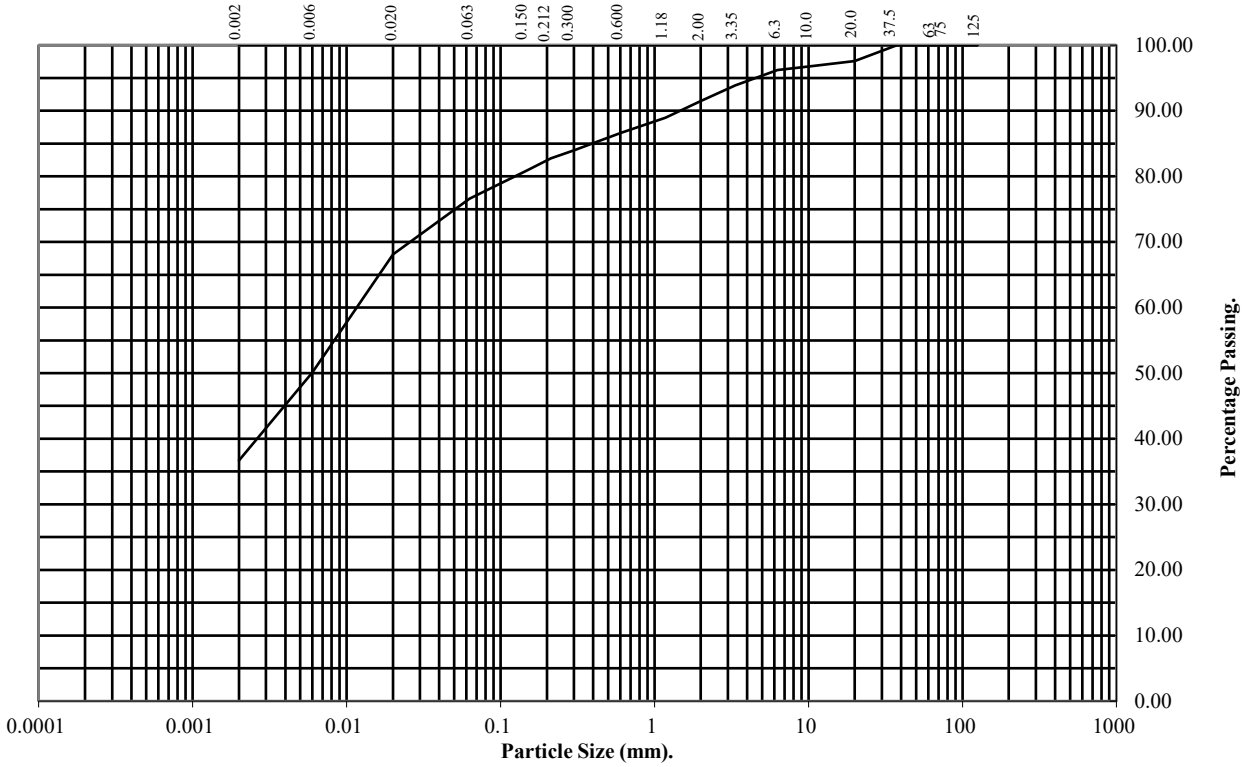
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**BH56**	**Top Depth (m):**	**7.50**
Sample Number:	**16**	**Base Depth(m):**	**7.95**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	98
10	97
6.3	96
3.35	94
2	91
1.18	89
0.6	87
0.3	84
0.212	83
0.15	81
0.063	77

Particle Diameter	Percentage Passing
0.02	68
0.006	50
0.002	37

Soil Fraction	Total Percentage
Cobbles	0
Gravel	9
Sand	14
Silt	40
Clay	37

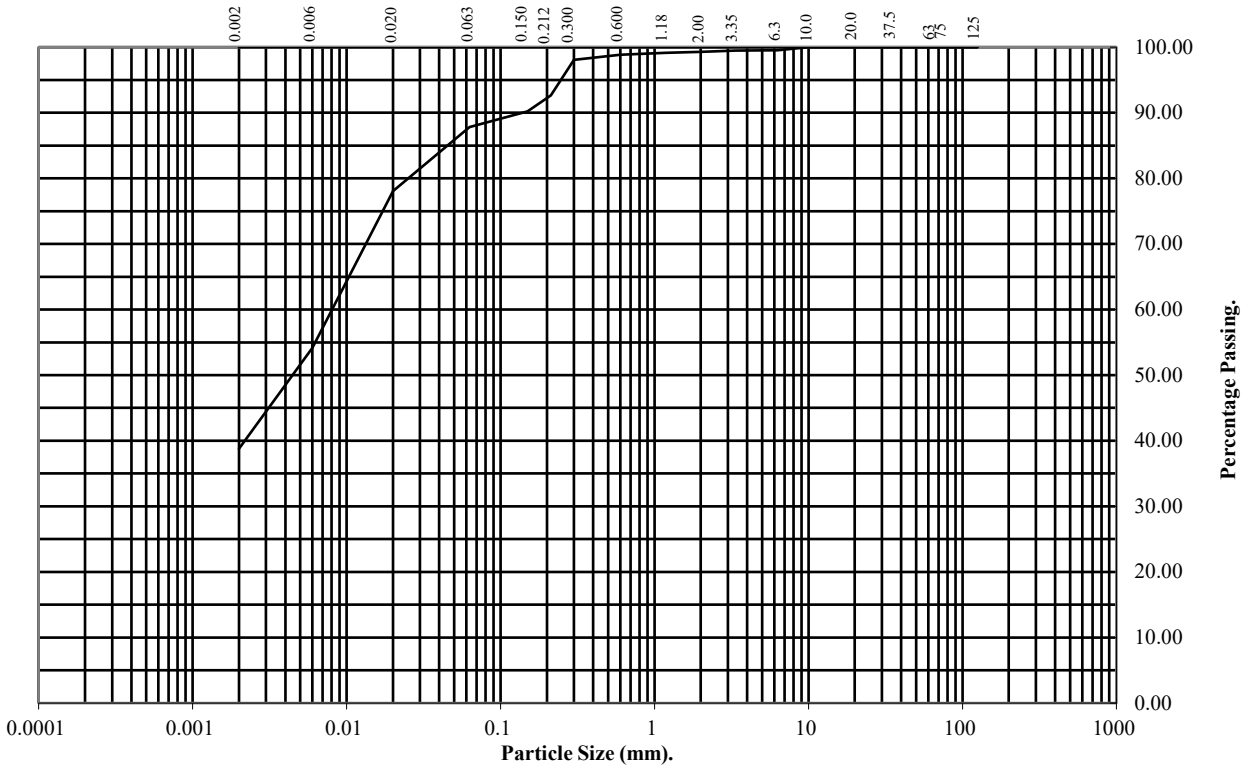
Remarks:
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**TP08**	**Top Depth (m):**	**0.50**
Sample Number:	**5**	**Base Depth(m):**	**1.00**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	99
2	99
1.18	99
0.6	99
0.3	98
0.212	93
0.15	90
0.063	88

Particle Diameter	Percentage Passing
0.02	78
0.006	54
0.002	39

Soil Fraction	Total Percentage
Cobbles	0
Gravel	1
Sand	11
Silt	49
Clay	39

Remarks:

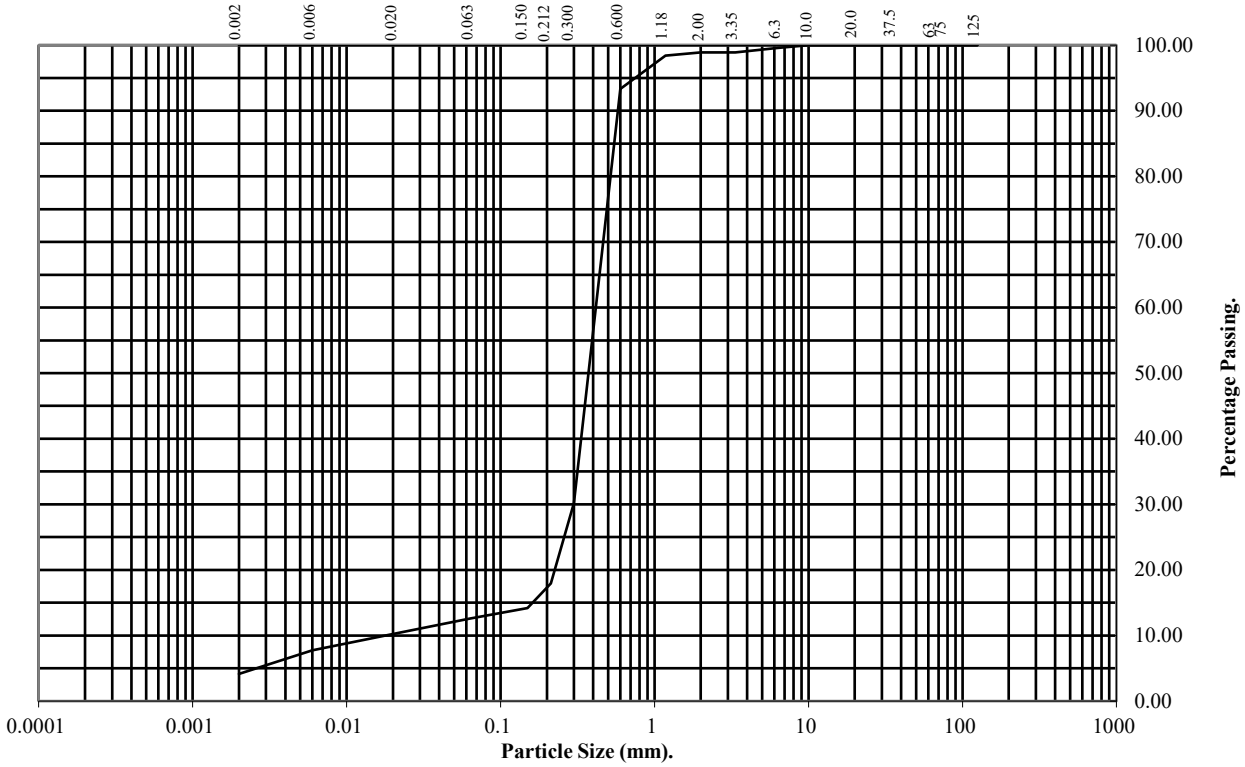
See Summary of Soil Descriptions

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number:	**TP08**	**Top Depth (m):**	**1.30**
Sample Number:	**10**	**Base Depth(m):**	**1.50**
Sample Type:	**B**		



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	99
2	99
1.18	98
0.6	93
0.3	30
0.212	18
0.15	14
0.063	13

Particle Diameter	Percentage Passing
0.02	10
0.006	8
0.002	4

Soil Fraction	Total Percentage
Cobbles	0
Gravel	1
Sand	86
Silt	9
Clay	4

Remarks:
See Summary of Soil Descriptions

ONE DIMENSIONAL CONSOLIDATION TEST

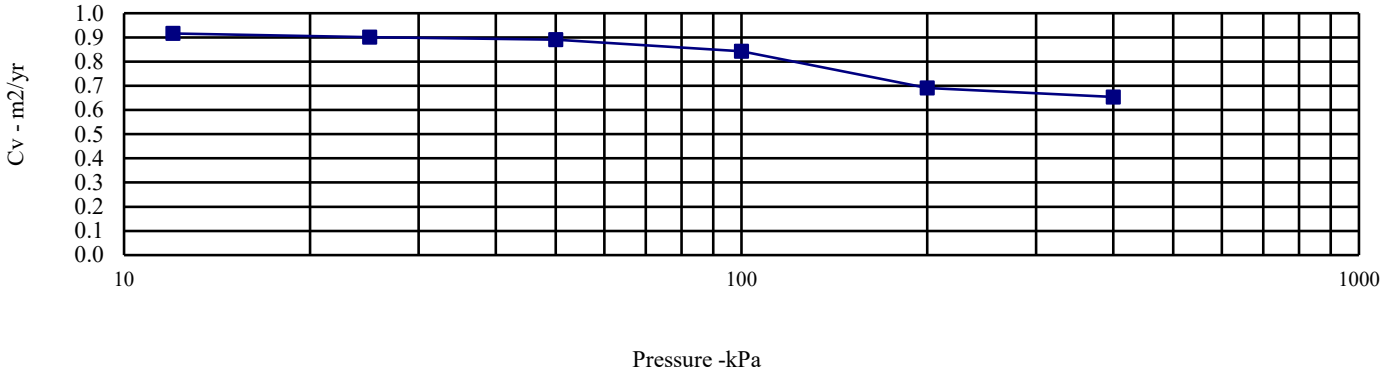
BS 1377: Part 5: 1990: Clause 3

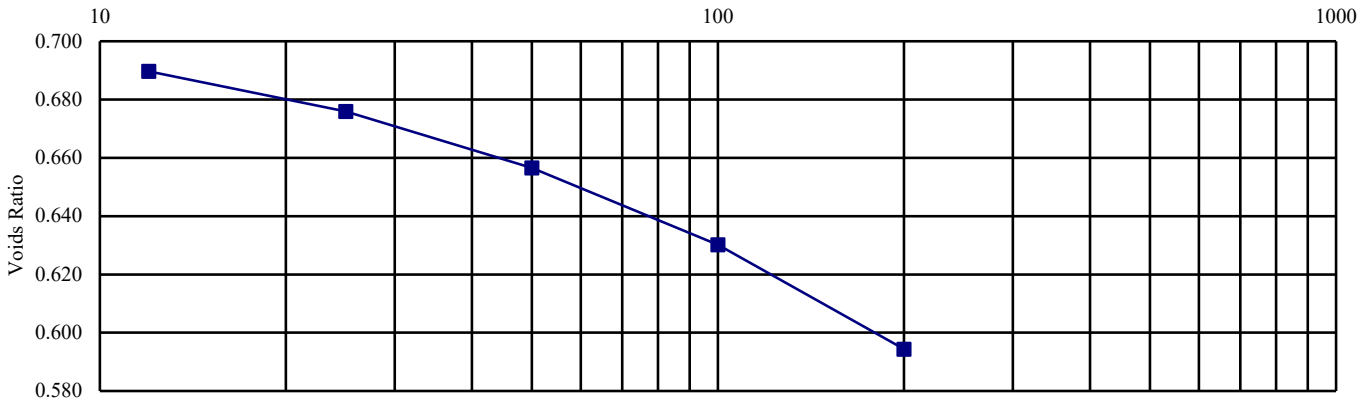
Hole Number: **BH55** **Top Depth (m):** **1.20**

Sample Number: **3** **Base Depth (m) :** **1.65**

Sample Type: **UT**

Initial Conditions		Pressure Range kPa		Mv m2/MN	Cv m2/yr	Specimen location within tube:	Top
Moisture Content (%):	26						
Bulk Density (Mg/m3):	1.96	0	12	0.585	0.916	Method used to	
Dry Density (Mg/m3):	1.56	12	25	0.629	0.902	determine CV:	T90
Voids Ratio:	0.702	25	50	0.461	0.890	Nominal temperature	
Degree of saturation:	97.0	50	100	0.319	0.843	during test ' C:	20
Height (mm):	20.09	100	200	0.219	0.691	Remarks:	
Diameter (mm)	75.07	200	400	0.150	0.654	See summary of soil descriptions	
Particle Density (Mg/m3): Assumed	2.65						



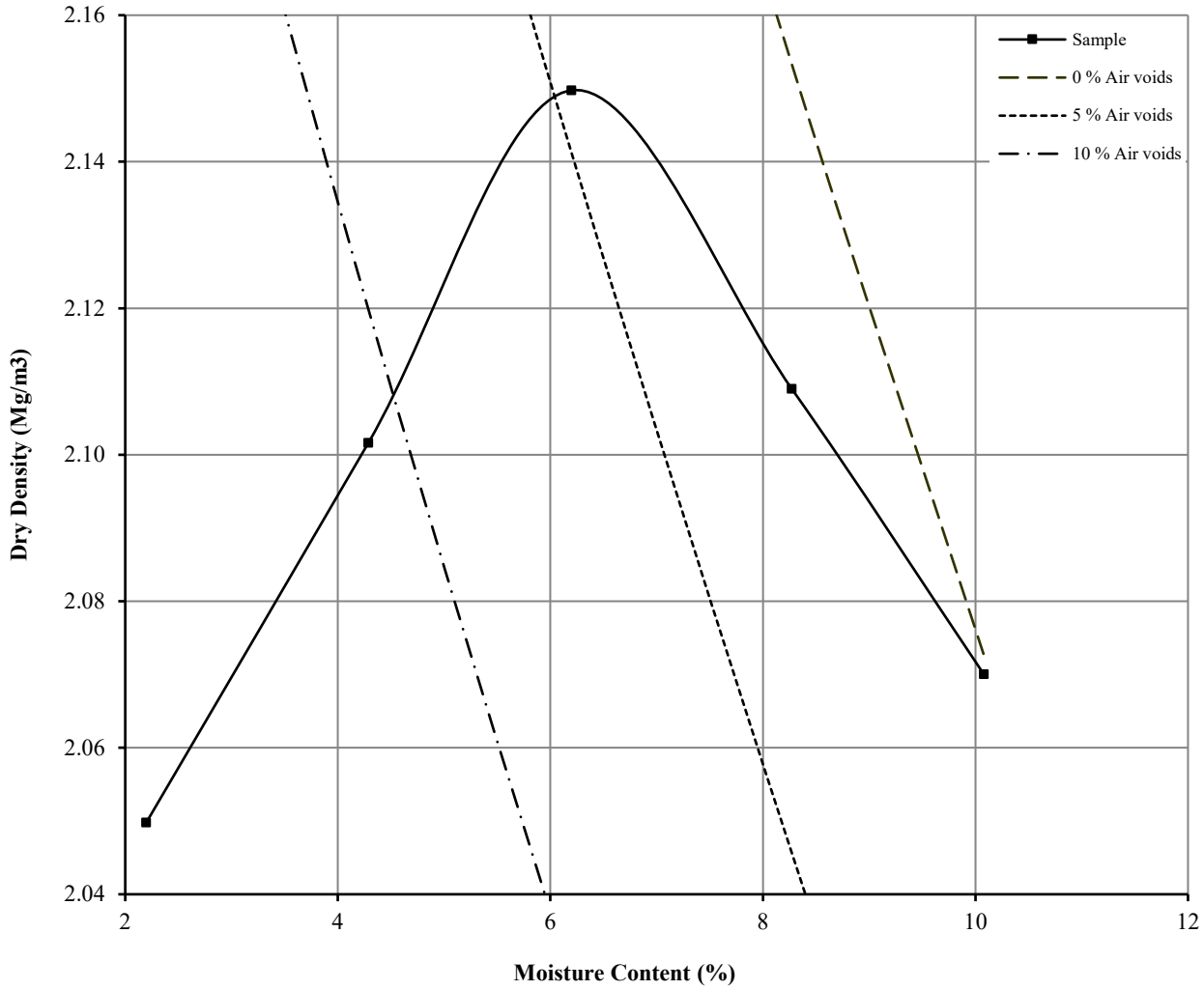


UKAS TESTING 4043	PSL Professional Soils Laboratory	**A46 Newark NNB**	**Contract No: PSL21/6887** **Client Ref: 15-173**

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.4 : 1990

Hole Number:	**BH05**	**Top Depth (m) :**	**3.60**
Sample Number:	**18**	**Base Depth (m) :**	**4.00**
Sample Type:	**B**		

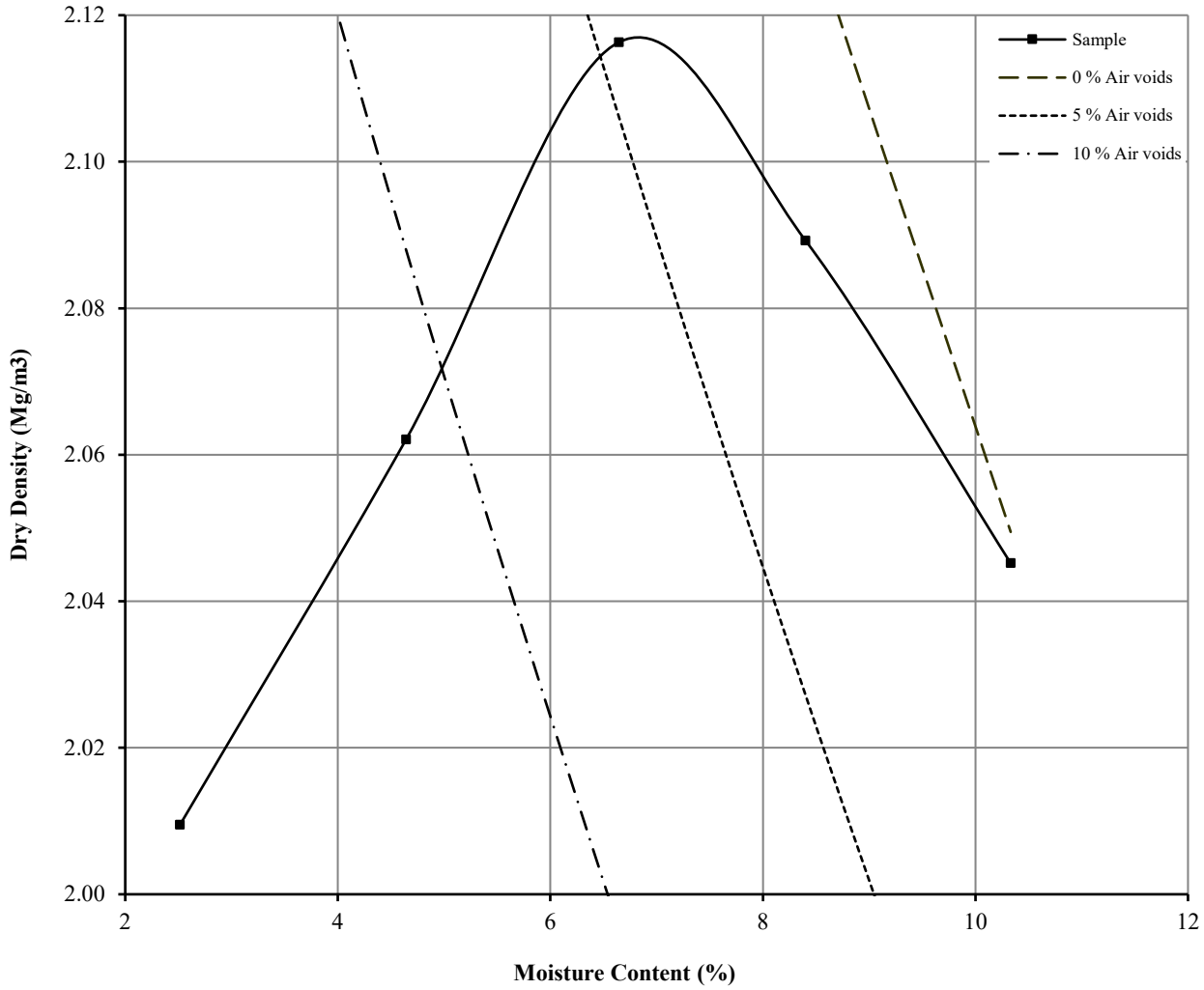


Initial Moisture Content:		4.3	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.62	Assumed	Material Retained on 37.5 mm Test Sieve (%):		6
Maximum Dry Density (Mg/m3):		2.15	Material Retained on 20.0 mm Test Sieve (%):		10
Optimum Moisture Content (%):		6			
Remarks See summary of soil descriptions					

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.4 : 1990

Hole Number:	**BH55**	**Top Depth (m) :**	**2.00**
Sample Number:	**7**	**Base Depth (m) :**	**2.45**
Sample Type:	**B**		

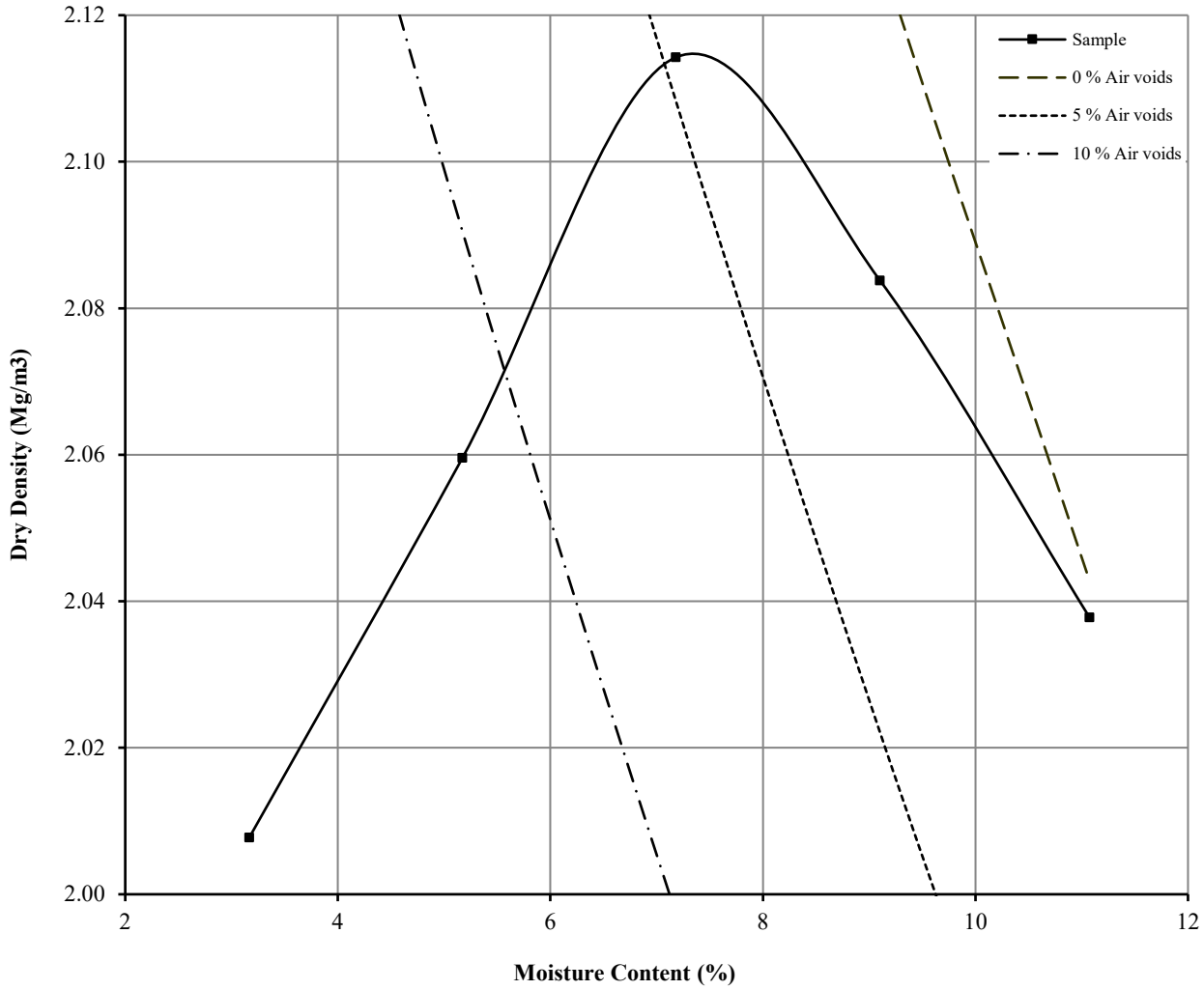


Initial Moisture Content:		4.6	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.60	Assumed	Material Retained on 37.5 mm Test Sieve (%):		3
Maximum Dry Density (Mg/m3):		2.12	Material Retained on 20.0 mm Test Sieve (%):		14
Optimum Moisture Content (%):		7			
Remarks See summary of soil descriptions					

DRY DENSITY / MOISTURE CONTENT RELATIONSHIP

BS 1377 : Part 4 : Clause 3.4 : 1990

Hole Number:	**BH56**	**Top Depth (m) :**	**4.00**
Sample Number:	**9**	**Base Depth (m) :**	**4.45**
Sample Type:	**B**		



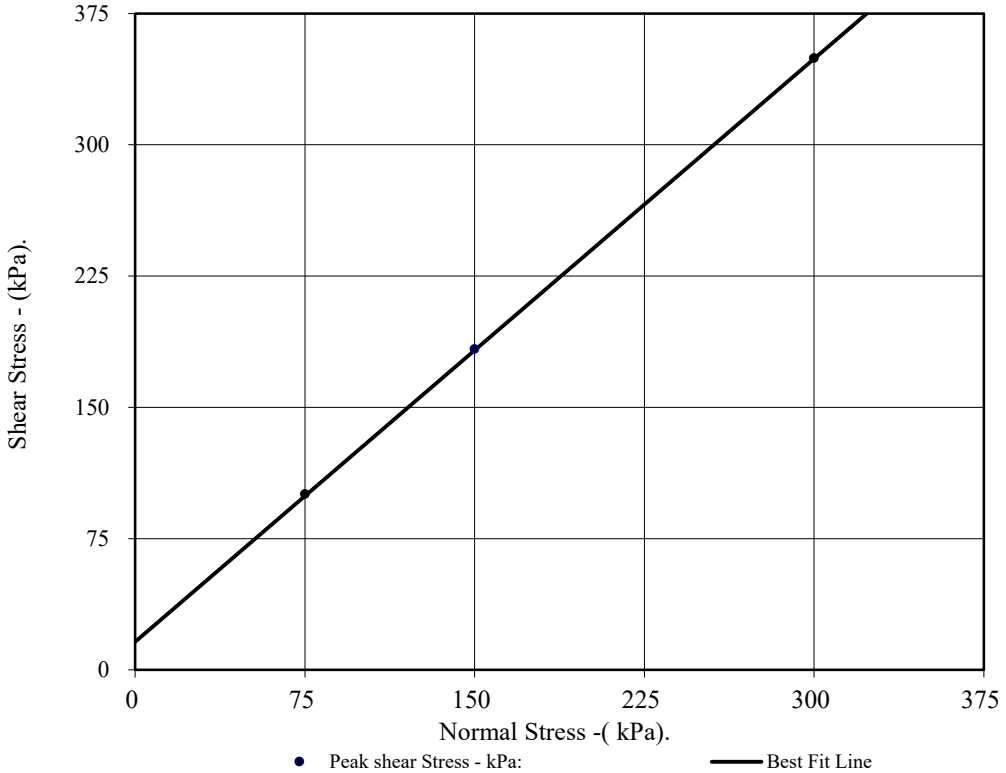
Initial Moisture Content:		3.2	Method of Compaction:	2.5kg	Separate Samples
Particle Density (Mg/m3):	2.64	Assumed	Material Retained on 37.5 mm Test Sieve (%):		10
Maximum Dry Density (Mg/m3):		2.11	Material Retained on 20.0 mm Test Sieve (%):		17
Optimum Moisture Content (%):		7			
Remarks See summary of soil descriptions					

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5

Hole Number:	**BH55**		Top Depth:	**4.00**
Sample Number:	**AMAL**		Base Depth:	**6.45**
Sample Conditions:	Dry		Sample Type	**B**
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**	
Sample Preparation:	Material tested passing 20mm sieve Remoulded using 2.5kg effort.			
Sample Description:	**Brown sandy GRAVEL.**			

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	150	150	150
Length - mm:	300	300	300
Moisture Content - %:	5.2	5.2	5.2
Bulk Density - Mg/m3:	2.10	2.10	2.10
Dry Density - Mg/m3:	2.00	2.00	2.00
Voids Ratio:	0.328	0.328	0.328
Normal Pressure- kPa	75	150	300
Consolidation Stage			
Consolidated Height - mm:	149.49	147.80	147.17
Shearing Stage			
Rate of Strain (mm/min)	1.00	1.00	1.00
Displacement at peak shear stress (mm)	50.00	50.50	49.50
Peak shear Stress - kPa:	101	183	350
Final Consolidated Conditions			
Moisture Content - %:	4.6	4.3	4.1
Bulk Density - Mg/m3:	2.11	2.13	2.14
Dry Density - Mg/m3:	2.01	2.04	2.06
Peak			
Angle of Shearing Resistance:(~~θ~~)	**48**		
Effective Cohesion - kPa:	**16**		



UKAS TESTING 4043

PSL Professional Soils Laboratory

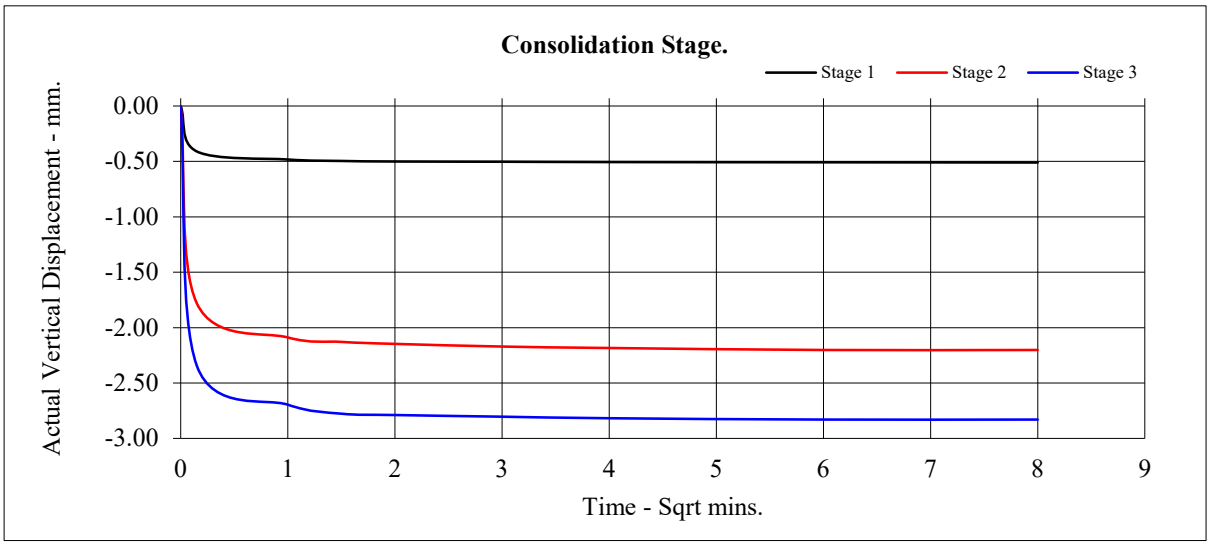
A46 Newark NNB

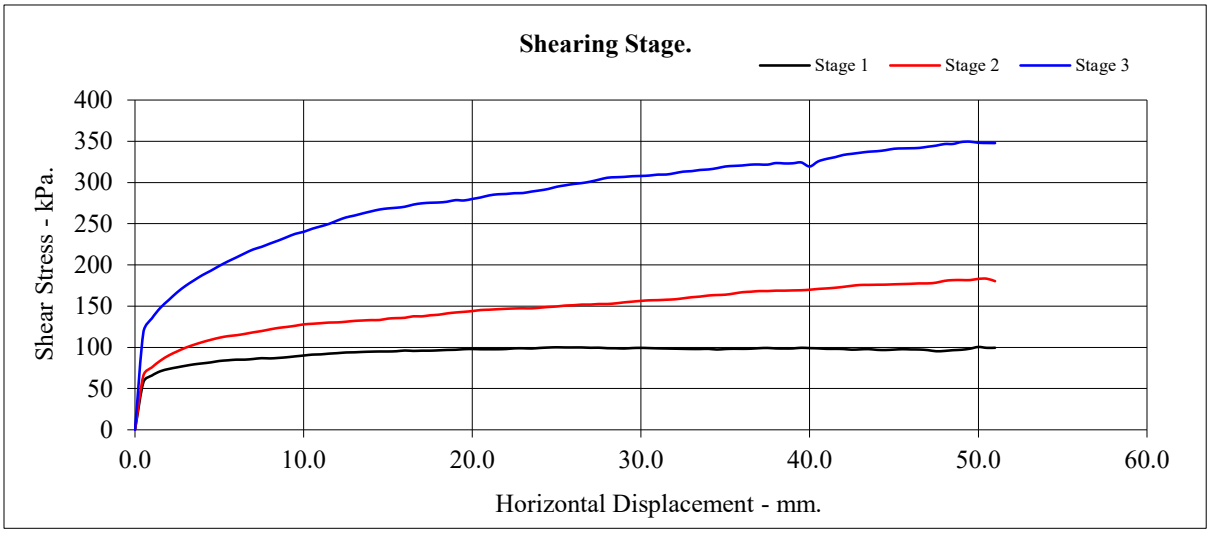
Contract No:
PSL21/6887
Client Ref:
784-B026948

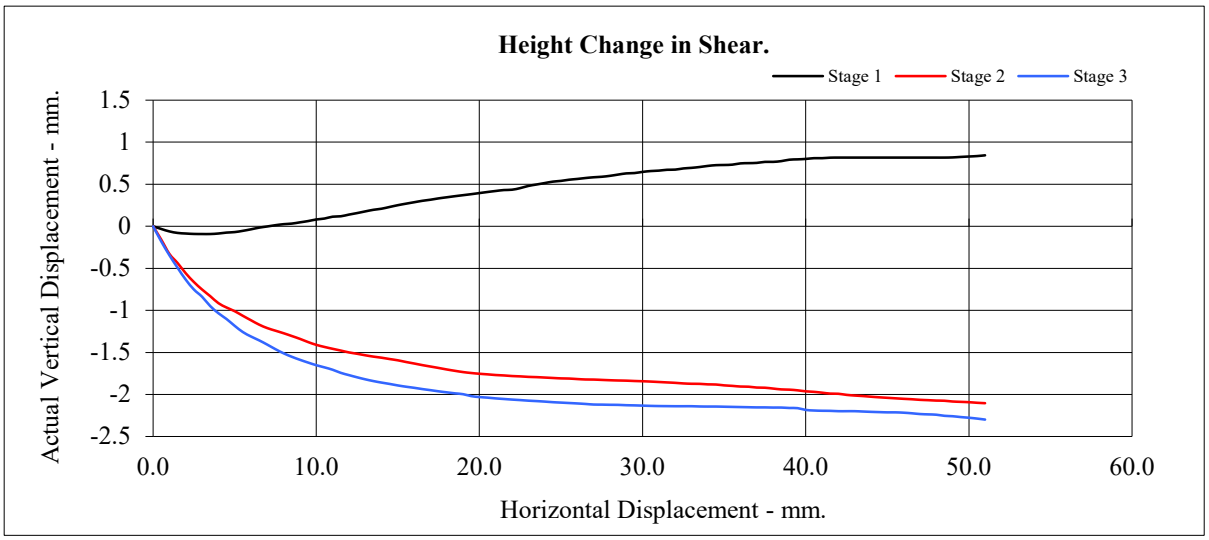
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 5

Hole Number:	**BH55**	Top Depth:	**4.00**
Sample Number:	**AMAL**	Base Depth:	**6.45**







2531

ANALYTICAL TEST REPORT

Contract no: 100674

Contract name: A46 Newark NNB

Client reference: PSL21/6887

Clients name: Professional Soils Laboratory

Clients address: 5/7 Hexthorpe Road
Doncaster
DN4 0AR

Samples received: 22 September 2021

Analysis started: 22 September 2021

Analysis completed: 29 September 2021

Report issued: 29 September 2021

Notes:
Opinions and interpretations expressed herein are outside the UKAS accreditation scope.
Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.
All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.
Methods, procedures and performance data are available on request.
Results reported herein relate only to the material supplied to the laboratory.
This report shall not be reproduced except in full, without prior written approval.
Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

Key:
U UKAS accredited test
M MCERTS & UKAS accredited test
$ Test carried out by an approved subcontractor
I/S Insufficient sample to carry out test
N/S Sample not suitable for testing

Approved by: [redacted]
Rachael Burton
Customer Support Squad Leader

Chemtech Environmental Limited

SOILS

Lab number			100674-1	100674-2	100674-3	100674-4	100674-5	100674-6
Sample id			BH05	BH05	BH05	BH05	BH31	BH45
Depth (m)			1.00-1.10	3.00-3.10	4.00-4.45	10.50-10.90	11.80-11.90	7.50-7.60
Date sampled			09/07/2021	09/07/2021	-	-	-	13/07/2021
Test	**Method**	**Units**						
pH	CE004 [U]	units	8.3	-	8.5	8.8	-	-
Magnesium (2:1 water soluble)	CE061	mg/l Mg	21	-	5.5	9.3	-	-
Chloride (2:1 water soluble)	CE049 [U]	mg/l Cl	8.3	-	5.4	5.0	-	-
Nitrate (2:1 water soluble)	CE049 [U]	mg/l NO_3	3.6	-	<1	<1	-	-
Sulphate (2:1 water soluble)	CE061	mg/l SO_4	1720	-	153	167	-	-
Sulphate (total)	CE062	mg/kg SO_4	12874	-	1505	1317	-	-
Sulphur (total)	CE119	mg/kg S	5044	-	665	512	-	-
Sulphur (total)	CE119	% w/w S	0.50	-	0.07	0.05	-	-
Total Organic Carbon (TOC)	CE197	% w/w C	-	0.9	-	-	0.5	1.2
Estimate of OMC (calculated from TOC)	CE197	% w/w	-	1.5	-	-	0.9	2.1

Chemtech Environmental Limited

SOILS

Lab number			100674-7
Sample id			TP08
Depth (m)			1.20-1.30
Date sampled			-
Test	**Method**	**Units**	
pH	CE004 [U]	units	-
Magnesium (2:1 water soluble)	CE061	mg/l Mg	-
Chloride (2:1 water soluble)	CE049 [U]	mg/l Cl	-
Nitrate (2:1 water soluble)	CE049 [U]	mg/l NO_3	-
Sulphate (2:1 water soluble)	CE061	mg/l SO_4	-
Sulphate (total)	CE062	mg/kg SO_4	-
Sulphur (total)	CE119	mg/kg S	-
Sulphur (total)	CE119	% w/w S	-
Total Organic Carbon (TOC)	CE197	% w/w C	0.3
Estimate of OMC (calculated from TOC)	CE197	% w/w	0.5

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE004	pH	Based on BS 1377, pH Meter	As received	U	-	units
CE061	Magnesium (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry		1	mg/l Mg
CE049	Chloride (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l Cl
CE049	Nitrate (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l NO_3
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry		10	mg/l SO_4
CE062	Sulphate (total)	Acid extraction, ICP-OES	Dry		100	mg/kg SO_4
CE119	Sulphur (total)	Acid extraction, ICP-OES	Dry		100	mg/kg S
CE119	Sulphur (total)	Acid extraction, ICP-OES	Dry		0.01	% w/w S
CE197	Total Organic Carbon (TOC)	Carbon Analyser	Dry		0.1	% w/w C
CE197	Estimate of OMC (calculated from TOC)	Calculation from Total Organic Carbon	Dry		0.1	% w/w

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
100674-1	BH05	1.00-1.10	Y	All (EHT)
100674-3	BH05	4.00-4.45	Y	All (NSD)
100674-4	BH05	10.50-10.90	Y	All (NSD)

APPENDIX F – ENVIRONMENTAL LABORATORY RESULTS

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	24 April 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210414-30
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	595334

We received 10 samples on Tuesday April 13, 2021 and 4 of these samples were scheduled for analysis which was completed on Saturday April 24, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210414-30	**Client Reference:**	784-B026948	**Report Number:**	595334
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24069959	NO ID	A		
24069923	WS69	ES1	0.10	08/04/2021
24069927	WS69	ES4	0.50 - 0.50	08/04/2021
24069931	WS69	ES6	1.50 - 1.50	08/04/2021
24069902	WS71	ES1	0.10 - 0.10	08/04/2021
24069909	WS71	ES4	0.70 - 0.70	08/04/2021
24069916	WS71	ES7	2.00 - 2.00	08/04/2021
24069935	WS72	ES1	0.10 - 0.10	08/04/2021
24069942	WS72	ES3	0.80 - 0.80	08/04/2021
24069949	WS72	ES7	2.00 - 2.00	08/04/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210414-30	**Client Reference:**	784-B026948	**Report Number:**	595334
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24069923		24069909		24069935			24069942		
Customer Sample Reference			WS69		WS71		WS72			WS72		
AGS Reference			ES1		ES4		ES1			ES3		
Depth (m)			0.10		0.70 - 0.70		0.10 - 0.10			0.80 - 0.80		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 2		X								X	
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1				X							
Ammonium Soil by Titration	All	NDPs: 0 Tests: 2		X								X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 2		X								X	
Anions by Kone (w)	All	NDPs: 0 Tests: 1						X					
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2	X								X		
Boron Water Soluble	All	NDPs: 0 Tests: 2		X								X	
CEN Readings	All	NDPs: 0 Tests: 2				X		X					
Coronene	All	NDPs: 0 Tests: 1							X				
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 3		X		X						X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2				X		X					
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1						X					
EPH	All	NDPs: 0 Tests: 2		X								X	
EPH by GCxGC-FID	All	NDPs: 0 Tests: 3		X					X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 2		X								X	

Validated

CERTIFICATE OF ANALYSIS

SDG:	210414-30	**Client Reference:**	784-B026948	**Report Number:**	595334
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
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RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24069923			24069909		24069935			24069942	
Customer Sample Reference			WS69			WS71		WS72			WS72	
AGS Reference			ES1			ES4		ES1			ES3	
Depth (m)			0.10			0.70 - 0.70		0.10 - 0.10			0.80 - 0.80	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S
Fluoride	All	NDPs: 0 Tests: 1						X					
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2			X								X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2		X								X	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1				X							
Mercury Dissolved	All	NDPs: 0 Tests: 2				X		X					
Metals in solid samples by OES	All	NDPs: 0 Tests: 2		X								X	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1							X				
PAH by GCMS	All	NDPs: 0 Tests: 3		X					X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 1							X				
pH	All	NDPs: 0 Tests: 2		X								X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 1				X							
Phenols by HPLC (S)	All	NDPs: 0 Tests: 2		X								X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1						X					
Sample description	All	NDPs: 0 Tests: 4		X			X		X			X	
Sulphide	All	NDPs: 0 Tests: 1				X							

CERTIFICATE OF ANALYSIS

SDG:	210414-30	**Client Reference:**	784-B026948	**Report Number:**	595334
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
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DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24069923	24069909	24069935	24069942						
Customer Sample Reference			WS69	WS71	WS72	WS72						
AGS Reference			ES1	ES4	ES1	ES3						
Depth (m)			0.10	0.70 - 0.70	0.10 - 0.10	0.80 - 0.80						
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S
Total Dissolved Solids	All	NDPs: 0 Tests: 1						X					
Total Organic Carbon	All	NDPs: 0 Tests: 3		X					X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 2		X								X	
VOC MS (S)	All	NDPs: 0 Tests: 3			X					X			X

CERTIFICATE OF ANALYSIS

SDG:	210414-30	**Client Reference:**	784-B026948	**Report Number:**	595334
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24069923	WS69	0.10	Dark Brown	Sand	Vegetation	Stones
24069909	WS71	0.70 - 0.70	Dark Brown	Sand	Vegetation	Stones
24069935	WS72	0.10 - 0.10	Dark Brown	Sand	Vegetation	Stones
24069942	WS72	0.80 - 0.80	Dark Brown	Sand	None	Stones

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210414-30	**Client Reference:**	784-B026948	**Report Number:**	595334
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS69	WS71	WS72	WS72		
			Depth (m)	0.10	0.70 - 0.70	0.10 - 0.10	0.80 - 0.80		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	08/04/2021	08/04/2021	08/04/2021	08/04/2021		
			Sample Time	.	.	.	.		
			Date Received	13/04/2021	13/04/2021	13/04/2021	13/04/2021		
			SDG Ref	210414-30	210414-30	210414-30	210414-30		
			Lab Sample No.(s)	24069923	24069909	24069935	24069942		
			AGS Reference	ES1	ES4	ES1	ES3		
Moisture Content Ratio (% of as received sample)	%	PM024		6.6	6.5	8.4	1.7		
Exchangeable Ammonia as N	<12 mg/kg	TM024		<12 M			<12 M		
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 M			<0.01 M		
Cresols	<0.01 mg/kg	TM062 (S)		0.0107 M			<0.01 M		
Xylenols	<0.015 mg/kg	TM062 (S)		<0.015 M			<0.015 M		
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 M			<0.035 M		
Organic Carbon, Total	<0.2 %	TM132				1.58 M			
Soil Organic Matter (SOM)	<0.35 %	TM132		1.64 #			<0.35 #		
pH	1 pH Units	TM133		6.96 M			7.65 M		
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #			<0.6 #		
Cyanide, Total	<1 mg/kg	TM153		<1 M			<1 M		
PCB congener 28	<0.003 mg/kg	TM168				<0.003 M			
PCB congener 52	<0.003 mg/kg	TM168				<0.003 M			
PCB congener 101	<0.003 mg/kg	TM168				<0.003 M			
PCB congener 118	<0.003 mg/kg	TM168				<0.003 M			
PCB congener 138	<0.003 mg/kg	TM168				<0.003 M			
PCB congener 153	<0.003 mg/kg	TM168				<0.003 M			
PCB congener 180	<0.003 mg/kg	TM168				<0.003 M			
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168				<0.021			
Arsenic	<0.6 mg/kg	TM181		7.62 M			1.81 M		
Cadmium	<0.02 mg/kg	TM181		0.247 M			0.0441 M		
Chromium	<0.9 mg/kg	TM181		6.14 M			2.97 M		
Copper	<1.4 mg/kg	TM181		20.3 M			3.74 M		
Iron	<1000 mg/kg	TM181		13300 #			3810 #		
Lead	<0.7 mg/kg	TM181		32.7 M			1.84 M		
Mercury	<0.1 mg/kg	TM181		<0.1 M			<0.1 M		
Nickel	<0.2 mg/kg	TM181		7.07 M			8.43 M		
Selenium	<1 mg/kg	TM181		<1 #			<1 #		
Vanadium	<0.2 mg/kg	TM181		14.5 #			5.39 #		
Zinc	<1.9 mg/kg	TM181		47 M			11.9 M		
Boron, water soluble	<1 mg/kg	TM222		<1 M			<1 M		
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.0193 M			0.0134 M		
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248		5.35			5.04		

Validated

CERTIFICATE OF ANALYSIS

SDG:	210414-30	**Client Reference:**	784-B026948	**Report Number:**	595334
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS69	WS71	WS72	WS72		
			Depth (m)	0.10	0.70 - 0.70	0.10 - 0.10	0.80 - 0.80		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	08/04/2021	08/04/2021	08/04/2021	08/04/2021		
			Sample Time	.	.	.	.		
			Date Received	13/04/2021	13/04/2021	13/04/2021	13/04/2021		
			SDG Ref	210414-30	210414-30	210414-30	210414-30		
			Lab Sample No.(s)	24069923	24069909	24069935	24069942		
			AGS Reference	ES1	ES4	ES1	ES3		
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410				<10			
Coronene	<0.2 mg/kg	TM410				<0.2			
EPH (C5-C40)	<35 mg/kg	TM415	<35				<35		
EPH Surrogate % recovery**	%	TM415	106			116	112		
EPH >C10-C40	<35 mg/kg	TM415	<35 M				<35 M		
Mineral Oil >C10-C40	<5 mg/kg	TM415				21.8			

Validated

CERTIFICATE OF ANALYSIS

SDG:	210414-30	**Client Reference:**	784-B026948	**Report Number:**	595334
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS69	WS72
			Depth (m)	0.10	0.80 - 0.80
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	08/04/2021	08/04/2021
			Sample Time	.	.
			Date Received	13/04/2021	13/04/2021
			SDG Ref	210414-30	210414-30
			Lab Sample No.(s)	24069923	24069942
			AGS Reference	ES1	ES3
Naphthalene-d8 % recovery**	%	TM218		90.1	85.1
Acenaphthene-d10 % recovery**	%	TM218		92.3	98.4
Phenanthrene-d10 % recovery**	%	TM218		87.8	96.8
Chrysene-d12 % recovery**	%	TM218		75.8	80.8
Perylene-d12 % recovery**	%	TM218		87.3	89.6
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	<0.009 M
Acenaphthylene	<0.012 mg/kg	TM218		0.0173 M	<0.012 M
Acenaphthene	<0.008 mg/kg	TM218		0.0119 M	<0.008 M
Fluorene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218		0.225 M	<0.015 M
Anthracene	<0.016 mg/kg	TM218		0.029 M	<0.016 M
Fluoranthene	<0.017 mg/kg	TM218		0.62 M	<0.017 M
Pyrene	<0.015 mg/kg	TM218		0.528 M	<0.015 M
Benz(a)anthracene	<0.014 mg/kg	TM218		0.25 M	<0.014 M
Chrysene	<0.01 mg/kg	TM218		0.265 M	<0.01 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		0.33 M	<0.015 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.138 M	<0.014 M
Benzo(a)pyrene	<0.015 mg/kg	TM218		0.28 M	<0.015 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.285 M	<0.018 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		0.0466 M	<0.023 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.232 M	<0.024 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		3.26	<0.118

Validated

CERTIFICATE OF ANALYSIS

SDG:	210414-30	**Client Reference:**	784-B026948	**Report Number:**	595334
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS69	WS72				
			Depth (m)	0.10	0.80 - 0.80				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	08/04/2021	08/04/2021				
			Sample Time	.	.				
			Date Received	13/04/2021	13/04/2021				
			SDG Ref	210414-30	210414-30				
			Lab Sample No.(s)	24069923	24069942				
			AGS Reference	ES1	ES3				
GRO Surrogate % recovery**	%	TM089		99.4	104				
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C10-C12	<1 mg/kg	TM414		<1	<1				
Aliphatics >C12-C16	<1 mg/kg	TM414		<1	<1				
Aliphatics >C16-C21	<1 mg/kg	TM414		<1	<1				
Aliphatics >C21-C35	<1 mg/kg	TM414		7.59	<1				
Aliphatics >C35-C44	<1 mg/kg	TM414		<1	<1				
Total Aliphatics >C10-C44	<5 mg/kg	TM414		7.97	<5				
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		15.3	<10				
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics > EC10-EC12	<1 mg/kg	TM414		<1	<1				
Aromatics > EC12-EC16	<1 mg/kg	TM414		<1	<1				
Aromatics > EC16-EC21	<1 mg/kg	TM414		1.36	<1				
Aromatics > EC21-EC35	<1 mg/kg	TM414		4.99	<1				
Aromatics >EC35-EC44	<1 mg/kg	TM414		<1	<1				
Aromatics > EC40-EC44	<1 mg/kg	TM414		<1	<1				
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		7.35	<5				
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		15.3	<10				
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		<0.05	<0.05				
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		<0.05	<0.05				
GRO >C5-C10	<0.02 mg/kg	TM089		<0.02	<0.02				

CERTIFICATE OF ANALYSIS

SDG:	210414-30	**Client Reference:**	784-B026948	**Report Number:**	595334
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS69	WS72	WS72			
			Depth (m)	0.10	0.10 - 0.10	0.80 - 0.80			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	08/04/2021	08/04/2021	08/04/2021			
			Sample Time	.	.	.			
			Date Received	13/04/2021	13/04/2021	13/04/2021			
			SDG Ref	210414-30	210414-30	210414-30			
			Lab Sample No.(s)	24069923	24069935	24069942			
			AGS Reference	ES1	ES1	ES3			
Dibromofluoromethane**	%	TM116		107	106	106			
Toluene-d8**	%	TM116		98.5	97.9	99.1			
4-Bromofluorobenzene**	%	TM116		96.3	97.3	99.5			
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
Benzene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M	<0.18 M			
Toluene	<0.007 mg/kg	TM116		<0.14 M	<0.14 M	<0.14 M			
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 M	<0.08 M	<0.08 M			
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #	<0.2 #			
o-Xylene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4		<0.4			
Sum of BTEX	<0.04 mg/kg	TM116		<0.8		<0.8			

CERTIFICATE OF ANALYSIS

SDG:	210414-30	**Client Reference:**	784-B026948	**Report Number:**	595334
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&+$@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS69ES1 0.10 SOLID 08/04/2021 00:00:00 13/04/2021 05:00:00 210414-30 24069923 TM048	19.04.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS72ES3 0.80 - 0.80 SOLID 08/04/2021 00:00:00 13/04/2021 05:00:00 210414-30 24069942 TM048	19/04/2021	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG:	210414-30	**Client Reference:**	784-B026948	**Report Number:**	595334
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.103	**Natural Moisture Content (%)**	14.7
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	87.2
Particle Size <4mm	>95%		

Case	
SDG	210414-30
Lab Sample Number(s)	24069935
Sampled Date	08-Apr-2021
Customer Sample Ref.	WS72 ES1
Depth (m)	0.10 - 0.10

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	1.58	3	5	6
Loss on Ignition (%)	-	-	-	-
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	21.8	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	-	-	-	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00408	<0.0005	0.0408	<0.005	0.5	2	25
Barium	0.2	<0.0002	2	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00806	<0.0003	0.0806	<0.003	2	50	100
Mercury Dissolved (CVAF)	0.000025	<0.00001	0.00025	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00111	<0.0004	0.0111	<0.004	0.4	10	40
Lead	0.00214	<0.0002	0.0214	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.138	<0.001	1.38	<0.01	4	50	200
Chloride	3.7	<2	37	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	76.9	<5	769	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	8.88	<3	88.8	<30	500	800	1000

Leach Test Information

Date Prepared	15-Apr-2021
pH (pH Units)	8.00
Conductivity (µS/cm)	94.80
Temperature (°C)	22.10
Volume Leachant (Litres)	0.887

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation

24/04/2021 08:26:40

08:26:24 24/04/2021

CERTIFICATE OF ANALYSIS

SDG:	210414-30	**Client Reference:**	784-B026948	**Report Number:**	595334
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.097	**Natural Moisture Content (%)**	8.07
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	92.5
Particle Size <4mm	>95%		

Case	
SDG	210414-30
Lab Sample Number(s)	24069909
Sampled Date	08-Apr-2021
Customer Sample Ref.	WS71 ES4
Depth (m)	0.70 - 0.70

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	0.401	<0.2	4.01	<2	-	-	-
Total Ammonium as NH4	0.516	<0.3	5.16	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	0.0000231	<0.00001	0.000231	<0.0001	-	-	-
Arsenic	0.0034	<0.0005	0.034	<0.005	-	-	-
Boron	0.0226	<0.01	0.226	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00817	<0.0003	0.0817	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.526	<0.019	5.26	<0.19	-	-	-
Lead	0.00176	<0.0002	0.0176	<0.002	-	-	-
Nickel	0.00136	<0.0004	0.0136	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	0.00294	<0.001	0.0294	<0.01	-	-	-
Zinc	0.00935	<0.001	0.0935	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	15-Apr-2021
pH (pH Units)	7.62
Conductivity (µS/cm)	80.60
Temperature (°C)	22.00
Volume Leachant (Litres)	0.893

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210414-30	**Client Reference:**	784-B026948	**Report Number:**	595334
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24069923	24069909	24069935	24069942
Customer Sample Ref.	WS69	WS71	WS72	WS72
AGS Ref.	ES1	ES4	ES1	ES3
Depth	0.10	0.70 - 0.70	0.10 - 0.10	0.80 - 0.80
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	16-Apr-2021			16-Apr-2021
Ammoniacal Nitrogen		21-Apr-2021		
Ammonium Soil by Titration	21-Apr-2021			21-Apr-2021
Anions by Kone (soil)	19-Apr-2021			18-Apr-2021
Anions by Kone (w)			19-Apr-2021	
Asbestos ID in Solid Samples	19-Apr-2021			19-Apr-2021
Boron Water Soluble	19-Apr-2021			16-Apr-2021
CEN 10:1 Leachate (1 Stage)		15-Apr-2021	15-Apr-2021	
CEN Readings		17-Apr-2021	17-Apr-2021	
Coronene			15-Apr-2021	
Cyanide Comp/Free/Total/Thiocyanate	16-Apr-2021	20-Apr-2021		16-Apr-2021
Dissolved Metals by ICP-MS		21-Apr-2021	20-Apr-2021	
Dissolved Organic/Inorganic Carbon			24-Apr-2021	
EPH	17-Apr-2021			17-Apr-2021
EPH by GCxGC-FID	16-Apr-2021		16-Apr-2021	16-Apr-2021
EPH CWG GC (S)	16-Apr-2021			16-Apr-2021
Fluoride			19-Apr-2021	
GRO by GC-FID (S)	16-Apr-2021			16-Apr-2021
Hexavalent Chromium (s)	20-Apr-2021			20-Apr-2021
Hexavalent Chromium (w)		19-Apr-2021		
Mercury Dissolved		20-Apr-2021	19-Apr-2021	
Metals in solid samples by OES	20-Apr-2021			19-Apr-2021
Moisture at 105C		15-Apr-2021	15-Apr-2021	
PAH 16 & 17 Calc			16-Apr-2021	
PAH by GCMS	16-Apr-2021		16-Apr-2021	15-Apr-2021
PCBs by GCMS			16-Apr-2021	
pH	15-Apr-2021			15-Apr-2021
pH Value of Filtered Water		20-Apr-2021		
Phenols by HPLC (S)	16-Apr-2021			16-Apr-2021
Phenols by HPLC (W)			20-Apr-2021	
Sample description	14-Apr-2021	14-Apr-2021	14-Apr-2021	14-Apr-2021
Sulphide		21-Apr-2021		
Total Dissolved Solids			20-Apr-2021	
Total Organic Carbon	20-Apr-2021		20-Apr-2021	20-Apr-2021
TPH CWG GC (S)	16-Apr-2021			16-Apr-2021
VOC MS (S)	15-Apr-2021		16-Apr-2021	15-Apr-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2493
Ammoniacal Nitrogen as N	TM099	**98.8** 91.28 : 106.64

Ammonium Soil by Titration

Component	Method Code	QC 2495	QC 2464
Exchangeable Ammonium as NH4	TM024	**101.99** 76.20 : 110.13	**89.05** 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2476
Chloride (soluble)	TM243	**144.56** 80.93 : 111.66
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**161.21** 70.00 : 130.00

Anions by Kone (w)

Component	Method Code	QC 2445
Chloride	TM184	**101.0** 92.93 : 115.43
Sulphate (soluble)	TM184	**104.4** 90.53 : 113.03

Boron Water Soluble

Component	Method Code	QC 2412	QC 2400
Water Soluble Boron	TM222	**104.0** 84.00 : 111.00	**109.5** 84.00 : 111.00

Coronene

Component	Method Code	QC 2481
Coronene RAW	TM410	**110.5** 79.43 : 137.78

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2471	QC 2481
Free Cyanide	TM153	**98.91** 79.00 : 115.00	
Free Cyanide (W)	TM227		**80.25** 91.52 : 123.82
Thiocyanate	TM153	**97.44** 94.09 : 113.89	
Thiocyanate (W)	TM227		**105.25** 90.50 : 113.00
Total Cyanide	TM153	**93.71** 73.07 : 107.47	
Total Cyanide (W)	TM227		**103.75** 91.75 : 112.75

Dissolved Metals by ICP-MS

Component	Method Code	QC 2463	QC 2447
Aluminium	TM152	**109.67** 90.78 : 110.89	**100.0** 94.21 : 111.52
Antimony	TM152	**107.33** 77.22 : 119.42	**103.33** 88.37 : 130.57
Arsenic	TM152	**105.17** 86.77 : 107.67	**99.67** 92.62 : 113.52
Barium	TM152	**103.83** 87.86 : 110.23	**102.67** 88.62 : 113.14
Beryllium	TM152	**111.83** 86.19 : 112.98	**101.5** 87.08 : 111.38
Bismuth	TM152	**104.5** 84.06 : 106.46	**100.83** 92.62 : 115.02
Borate	TM152	**111.11** 88.00 : 112.00	
Boron	TM152	**111.33** 83.92 : 114.90	**101.67** 86.31 : 120.88
Cadmium	TM152	**102.83** 88.89 : 106.69	**98.67** 93.85 : 111.65
Calcium	TM152	**112.0** 80.24 : 117.95	**100.67** 89.20 : 126.91
Chromium	TM152	**107.33** 83.22 : 110.16	**99.83** 92.50 : 113.03
Cobalt	TM152	**106.17** 82.49 : 112.36	**99.5** 85.01 : 114.87
Copper	TM152	**107.33** 83.14 : 113.00	**100.5** 89.87 : 119.73
Iron	TM152	**108.0** 88.40 : 109.24	**98.67** 93.02 : 113.86
Lead	TM152	**105.83** 83.71 : 109.58	**101.33** 91.11 : 116.98
Lithium	TM152	**111.33** 84.50 : 114.28	**99.67** 87.70 : 115.90
Magnesium	TM152	**106.67** 87.56 : 114.57	**95.33** 89.60 : 116.61
Manganese	TM152	**108.5** 90.01 : 108.72	**98.67** 93.97 : 112.46
Molybdenum	TM152	**101.67** 85.53 : 107.42	**97.33** 89.07 : 110.96

CERTIFICATE OF ANALYSIS

SDG:	210414-30	**Client Reference:**	784-B026948	**Report Number:**	595334
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Dissolved Metals by ICP-MS

		QC 2463	QC 2447
Nickel	TM152	**106.33** 88.05 : 106.42	**99.83** 93.70 : 112.15
Phosphorus	TM152	**108.5** 82.76 : 107.72	**101.33** 89.24 : 114.18
Potassium	TM152	**107.33** 88.45 : 106.42	**98.0** 93.20 : 115.55
Selenium	TM152	**105.5** 85.61 : 111.03	**99.33** 91.69 : 117.12
Silver	TM152	**101.17** 88.48 : 110.48	**100.33** 90.93 : 121.73
Sodium	TM152	**107.33** 88.32 : 106.30	**95.33** 92.42 : 113.24
Strontium	TM152	**105.67** 83.77 : 107.87	**98.67** 92.14 : 116.24
Tellurium	TM152	**102.17** 82.83 : 104.73	**98.67** 89.88 : 111.78
Thallium	TM152	**97.83** 77.47 : 113.87	**92.33** 82.43 : 113.83
Tin	TM152	**105.33** 87.36 : 109.55	**103.67** 94.62 : 107.79
Titanium	TM152	**112.33** 87.29 : 108.31	**102.83** 90.29 : 115.23
Tungsten	TM152	**103.17** 68.27 : 122.97	**100.0** 77.61 : 132.31
Uranium	TM152	**102.67** 82.46 : 105.16	**97.83** 86.97 : 115.76
Vanadium	TM152	**109.5** 88.43 : 114.30	**102.83** 89.61 : 115.48
Zinc	TM152	**107.67** 85.57 : 114.31	**100.33** 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2459
Dissolved Inorganic Carbon	TM090	**115.67** 93.58 : 112.28
Dissolved Organic Carbon	TM090	**104.17** 96.13 : 109.53

EPH by GCxGC-FID

Component	Method Code	QC 2402
EPH >C10-C40 Raw	TM415	**91.97** 59.15 : 115.05

Fluoride

Fluoride

Component	Method Code	QC 2454
Fluoride	TM104	**101.33** 96.67 : 108.67

GRO by GC-FID (S)

Component	Method Code	QC 2454
QC	TM089	**90.27** 70.75 : 114.19

Hexavalent Chromium (s)

Component	Method Code	QC 2486
Hexavalent Chromium	TM151	**104.0** 92.00 : 111.20

Hexavalent Chromium (w)

Component	Method Code	QC 2446
Hexavalent Chromium	TM241	**101.8** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2457	QC 2486
Mercury Dissolved (CVAF)	TM183	**112.0** 69.30 : 128.70	**109.0** 69.30 : 128.70

Metals in solid samples by OES

Component	Method Code	QC 2488	QC 2436
Aluminium	TM181	**92.04** 73.56 : 108.85	**83.89** 73.56 : 108.85
Antimony	TM181	**95.53** 76.89 : 111.24	**90.24** 76.89 : 111.24
Arsenic	TM181	**102.62** 88.53 : 111.01	**96.8** 88.53 : 111.01
Barium	TM181	**96.33** 77.67 : 105.35	**87.34** 77.67 : 105.35

CERTIFICATE OF ANALYSIS

SDG:	210414-30	**Client Reference:**	784-B026948	**Report Number:**	595334
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Metals in solid samples by OES

		QC 2488	QC 2436
Beryllium	TM181	**101.87** 85.44 : 109.61	**94.78** 85.44 : 109.61
Boron	TM181	**90.83** 73.51 : 104.66	**86.25** 73.51 : 104.66
Cadmium	TM181	**95.47** 77.67 : 104.12	**89.3** 77.67 : 104.12
Chromium	TM181	**86.82** 79.64 : 105.83	**84.99** 79.64 : 105.83
Cobalt	TM181	**90.88** 84.60 : 104.13	**85.85** 84.60 : 104.13
Copper	TM181	**95.95** 82.40 : 105.45	**92.08** 82.40 : 105.45
Iron	TM181	**92.86** 82.95 : 110.58	**95.24** 82.95 : 110.58
Lead	TM181	**91.44** 78.24 : 104.05	**92.34** 78.24 : 104.05
Manganese	TM181	**107.78** 94.29 : 119.51	**103.33** 94.29 : 119.51
Mercury	TM181	**97.34** 83.16 : 107.81	**93.0** 83.16 : 107.81
Molybdenum	TM181	**97.94** 87.11 : 106.87	**92.18** 87.11 : 106.87
Nickel	TM181	**93.15** 80.26 : 102.28	**87.78** 80.26 : 102.28
Phosphorus	TM181	**108.89** 94.56 : 124.28	**102.42** 94.56 : 124.28
Selenium	TM181	**100.39** 82.28 : 110.48	**95.69** 82.28 : 110.48
Strontium	TM181	**92.87** 79.13 : 102.79	**88.42** 79.13 : 102.79
Thallium	TM181	**100.88** 82.94 : 111.86	**96.46** 82.94 : 111.86
Tin	TM181	**98.48** 86.72 : 110.03	**94.68** 86.72 : 110.03
Titanium	TM181	**88.55** 66.23 : 102.06	**79.39** 66.23 : 102.06
Vanadium	TM181	**98.53** 86.19 : 109.45	**93.04** 86.19 : 109.45
Zinc	TM181	**99.59** 84.68 : 113.99	**94.05** 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2464	QC 2404	QC 2451
Acenaphthene	TM218	**90.5** 78.59 : 112.16	**85.5** 78.59 : 112.16	**88.0** 76.79 : 103.90
Acenaphthylene	TM218	**89.0** 75.11 : 109.01	**84.0** 75.11 : 109.01	**85.0** 78.40 : 108.66
Anthracene	TM218	**92.5** 73.99 : 113.85	**81.0** 73.99 : 113.85	**89.0** 70.90 : 109.22
Benz(a)anthracene	TM218	**95.0** 69.31 : 119.18	**83.5** 69.31 : 119.18	**92.5** 73.77 : 119.26
Benzo(a)pyrene	TM218	**90.5** 66.97 : 114.92	**80.0** 66.97 : 114.92	**83.0** 73.20 : 114.18

CERTIFICATE OF ANALYSIS

SDG:	210414-30	**Client Reference:**	784-B026948	**Report Number:**	595334
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

PAH by GCMS

		QC 2464	QC 2404	QC 2451
Benzo(b)fluoranthene	TM218	**93.5** 67.41 : 114.46	**83.0** 67.41 : 114.46	**84.5** 75.36 : 117.58
Benzo(ghi)perylene	TM218	**85.0** 62.92 : 114.36	**80.0** 62.92 : 114.36	**80.0** 70.73 : 116.12
Benzo(k)fluoranthene	TM218	**90.0** 69.98 : 116.49	**84.5** 69.98 : 116.49	**85.5** 75.98 : 116.59
Chrysene	TM218	**91.5** 69.86 : 114.50	**85.0** 69.86 : 114.50	**90.0** 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	**87.5** 64.54 : 115.22	**80.0** 64.54 : 115.22	**82.0** 69.17 : 115.30
Fluoranthene	TM218	**96.5** 72.56 : 111.70	**80.0** 72.56 : 111.70	**87.0** 75.88 : 112.84
Fluorene	TM218	**92.5** 79.13 : 111.49	**84.0** 79.13 : 111.49	**87.0** 76.66 : 107.56
Indeno(123cd)pyrene	TM218	**96.0** 61.22 : 113.25	**93.0** 61.22 : 113.25	**85.0** 70.26 : 117.95
Naphthalene	TM218	**85.0** 77.96 : 110.91	**87.5** 77.96 : 110.91	**85.0** 74.70 : 101.83
Phenanthrene	TM218	**96.5** 76.83 : 113.25	**81.0** 76.83 : 113.25	**88.5** 73.62 : 109.34
Pyrene	TM218	**93.5** 72.45 : 110.77	**81.0** 72.45 : 110.77	**88.5** 71.46 : 117.00

PCBs by GCMS

Component	Method Code	QC 2495
PCB congener 101	TM168	**86.9** 65.66 : 110.06
PCB congener 105	TM168	**81.2** 58.10 : 106.34
PCB congener 114	TM168	**81.3** 59.38 : 106.48
PCB congener 118	TM168	**81.9** 60.02 : 106.23
PCB congener 123	TM168	**89.0** 65.01 : 99.81
PCB congener 126	TM168	**81.5** 59.31 : 109.23
PCB congener 138	TM168	**85.8** 63.95 : 107.63
PCB congener 153	TM168	**87.8** 62.65 : 108.85
PCB congener 156	TM168	**80.3** 61.69 : 112.27
PCB congener 157	TM168	**78.1** 55.37 : 104.81
PCB congener 167	TM168	**80.9** 65.58 : 109.14
PCB congener 169	TM168	**84.3** 56.84 : 112.10
PCB congener 180	TM168	**87.5** 66.99 : 111.63
PCB congener 189	TM168	**83.1** 57.75 : 112.59

PCBs by GCMS

		QC 2495
PCB congener 28	TM168	**87.3** 73.68 : 105.96
PCB congener 52	TM168	**86.9** 67.24 : 107.62
PCB congener 77	TM168	**86.3** 64.87 : 108.49
PCB congener 81	TM168	**87.4** 70.78 : 110.80

pH

Component	Method Code	QC 2464
pH	TM133	**100.15** 98.41 : 102.48

pH Value of Filtered Water

Component	Method Code	QC 2437
pH	TM256	**100.67** 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2456	QC 2487
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**55.19** 70.71 : 116.42	**53.9** 70.71 : 116.42
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**46.78** 64.54 : 117.79	**46.2** 64.54 : 117.79
Cresols by HPLC (S)	TM062 (S)	**51.57** 74.40 : 108.98	**50.52** 74.40 : 108.98
Phenol by HPLC (S)	TM062 (S)	**53.64** 69.44 : 122.18	**52.98** 69.44 : 122.18
Xylenols by HPLC (S)	TM062 (S)	**52.08** 76.56 : 106.38	**51.46** 76.56 : 106.38

Phenols by HPLC (W)

Component	Method Code	QC 2471
2.3.5 Trimethyl-Phenol by HPLC (W)	TM259	**99.61** 77.41 : 127.55
2-Isopropyl Phenol by HPLC (W)	TM259	**93.69** 82.77 : 126.51
Cresols by HPLC (W)	TM259	**99.34** 76.60 : 126.28
Napthol by HPLC (W)	TM259	**101.56** 75.40 : 129.40
Phenol by HPLC (W)	TM259	**94.52** 85.77 : 125.91

Phenols by HPLC (W)

		QC 2471
Xylenols by HPLC (W)	TM259	**97.78** 79.09 : 131.82

Sulphide

Component	Method Code	QC 2436
Sulphide	TM101	**104.67** 88.90 : 112.50

Total Dissolved Solids

Component	Method Code	QC 2401
Total Dissolved Solids	TM123	**99.6** 97.30 : 100.92

Total Organic Carbon

Component	Method Code	QC 2464	QC 2426
Total Organic Carbon	TM132	**101.95** 87.02 : 113.45	**105.47** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2473
1,1,1,2-tetrachloroethane	TM116	**105.0** 79.10 : 119.66
1,1,1-Trichloroethane	TM116	**109.8** 84.25 : 112.57
1,1,2-Trichloroethane	TM116	**99.8** 81.29 : 113.79
1,1-Dichloroethane	TM116	**112.4** 86.77 : 122.11
1,2-Dichloroethane	TM116	**115.0** 90.04 : 132.28
1,4-Dichlorobenzene	TM116	**110.8** 80.81 : 125.07
2-Chlorotoluene	TM116	**104.4** 73.13 : 114.13
4-Chlorotoluene	TM116	**98.6** 68.66 : 109.13
Benzene	TM116	**105.8** 84.29 : 112.22
Carbon Disulphide	TM116	**101.6** 75.11 : 124.81

		QC 2473
Carbontetrachloride	TM116	**111.8** 82.35 : 126.46
Chlorobenzene	TM116	**104.6** 82.88 : 122.42
Chloroform	TM116	**112.8** 90.35 : 120.38
Chloromethane	TM116	**114.0** 67.89 : 143.51
Cis-1,2-Dichloroethene	TM116	**109.8** 78.27 : 128.90
Dibromomethane	TM116	**101.0** 76.00 : 120.73
Dichloromethane	TM116	**117.4** 92.27 : 134.36
Ethylbenzene	TM116	**97.4** 70.95 : 113.07
Hexachlorobutadiene	TM116	**93.4** 14.55 : 147.92
Isopropylbenzene	TM116	**98.4** 52.00 : 108.19
Naphthalene	TM116	**105.8** 80.29 : 135.77
o-Xylene	TM116	**93.0** 68.34 : 101.99
p/m-Xylene	TM116	**91.3** 69.47 : 97.31
Sec-Butylbenzene	TM116	**110.4** 27.03 : 135.73
Tetrachloroethene	TM116	**106.0** 81.43 : 126.65
Toluene	TM116	**96.0** 82.44 : 103.50
Trichloroethene	TM116	**103.8** 79.80 : 112.33
Trichlorofluoromethane	TM116	**109.4** 89.67 : 132.09
Vinyl Chloride	TM116	**118.4** 69.66 : 136.55

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	22 April 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210414-31
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	595149

This report has been revised and directly supersedes 595002 in its entirety.

We received 9 samples on Tuesday April 13, 2021 and 3 of these samples were scheduled for analysis which was completed on Thursday April 22, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.

Approved By:

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210414-31	**Client Reference:**	784-B026948	**Report Number:**	595149
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595002

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24071907	WS65	ES1	0.10 - 0.10	09/04/2021
24071922	WS65	ES4	0.60 - 0.60	09/04/2021
24071934	WS65	ES8	2.00 - 2.00	09/04/2021
24069952	WS67	ES1	0.10 - 0.10	09/04/2021
24071865	WS67	ES4	0.70 - 0.70	09/04/2021
24071892	WS67	ES8	1.70 - 1.70	09/04/2021
24071946	WS68	ES1	0.10 - 0.10	09/04/2021
24071960	WS68	ES4	0.60 - 0.60	09/04/2021
24071968	WS68	ES7	1.60 - 1.60	09/04/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	210414-31	**Client Reference:**	784-B026948	**Report Number:**	595149
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595002

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24071922			24071865			24071946	
Customer Sample Reference			WS65			WS67			WS68	
AGS Reference			ES4			ES4			ES1	
Depth (m)			0.60 - 0.60			0.70 - 0.70			0.10 - 0.10	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S
Acid herbicides*	All	NDPs: 0 Tests: 1							X	
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 2		X					X	
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 2	X			X				
Ammonium Soil by Titration	All	NDPs: 0 Tests: 2		X					X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 2		X					X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2	X					X		
Boron Water Soluble	All	NDPs: 0 Tests: 2		X					X	
CEN Readings	All	NDPs: 0 Tests: 2	X			X				
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 4	X	X		X			X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2	X			X				
EPH	All	NDPs: 0 Tests: 2		X					X	
EPH by GCxGC-FID	All	NDPs: 0 Tests: 2		X					X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 2		X					X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2			X					X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2		X					X	

Validated

CERTIFICATE OF ANALYSIS

SDG:	210414-31	**Client Reference:**	784-B026948	**Report Number:**	595149
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595002

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24071922			24071865			24071946	
Customer Sample Reference			WS65			WS67			WS68	
AGS Reference			ES4			ES4			ES1	
Depth (m)			0.60 - 0.60			0.70 - 0.70			0.10 - 0.10	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 2	X			X				
Mercury Dissolved	All	NDPs: 0 Tests: 2	X			X				
Metals in solid samples by OES	All	NDPs: 0 Tests: 2		X					X	
OC OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 1							X	
PAH by GCMS	All	NDPs: 0 Tests: 2		X					X	
pH	All	NDPs: 0 Tests: 2		X					X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 2	X			X				
Phenols by HPLC (S)	All	NDPs: 0 Tests: 2		X					X	
Sample description	All	NDPs: 0 Tests: 3		X			X		X	
Sulphide	All	NDPs: 0 Tests: 2	X			X				
Total Organic Carbon	All	NDPs: 0 Tests: 2		X					X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 2		X					X	
VOC MS (S)	All	NDPs: 0 Tests: 2			X					X

CERTIFICATE OF ANALYSIS

SDG:	210414-31	**Client Reference:**	784-B026948	**Report Number:**	595149
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595002

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24071922	WS65	0.60 - 0.60	Dark Brown	Loamy Sand	Stones	Vegetation
24071865	WS67	0.70 - 0.70	Dark Brown	Sandy Loam	Stones	Vegetation
24071946	WS68	0.10 - 0.10	Dark Brown	Sandy Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210414-31	**Client Reference:**	784-B026948	**Report Number:**	595149
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595002

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS65	WS67	WS68			
			Depth (m)	0.60 - 0.60	0.70 - 0.70	0.10 - 0.10			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	09/04/2021	09/04/2021	09/04/2021			
			Sample Time	.	.	.			
			Date Received	13/04/2021	13/04/2021	13/04/2021			
			SDG Ref	210414-31	210414-31	210414-31			
			Lab Sample No.(s)	24071922	24071865	24071946			
			AGS Reference	ES4	ES4	ES1			
Moisture Content Ratio (% of as received sample)	%	PM024		9.7	8	9.2			
2,4,5-T*	<0.01 mg/kg	SUB				<0.01			
2,4,5-TP (Fenoprop)*	<0.01 mg/kg	SUB				<0.01			
2,4-D*	<0.01 mg/kg	SUB				<0.01			
2,4-DB*	<0.01 mg/kg	SUB				<0.01			
2,4-Dichloroprop (2,4 DP)*	<0.01 mg/kg	SUB				<0.01			
4-Chlorophenoxyacetic acid (4-CPA)*	<0.01 mg/kg	SUB				<0.01			
Acifluorfen*	<0.01 mg/kg	SUB				<0.01			
Bentazone*	<0.01 mg/kg	SUB				<0.01			
Bromoxynil*	<0.01 mg/kg	SUB				<0.01			
Dicamba*	<0.01 mg/kg	SUB				<0.01			
Diclofop*	<0.01 mg/kg	SUB				<0.01			
Dinoseb*	<0.01 mg/kg	SUB				<0.01			
DNOC*	<0.01 mg/kg	SUB				<0.01			
Fluroxypyr*	<0.01 mg/kg	SUB				<0.01			
Ioxynil*	<0.01 mg/kg	SUB				<0.01			
2-methyl-4-Chlorophenoxyacetic acid (MCPA)*	<0.01 mg/kg	SUB				<0.01			
4-(4-Chloro-o-tolyloxy) butyric acid (MCPB)*	<0.01 mg/kg	SUB				<0.01			
Mecoprop (MCPP)*	<0.01 mg/kg	SUB				<0.01			
Propoxycarbazone-sodium*	<0.01 mg/kg	SUB				<0.01			
Triclopyr*	<0.01 mg/kg	SUB				<0.01			
Triclosan*	<0.01 mg/kg	SUB				<0.01			
Exchangeable Ammonia as N	<12 mg/kg	TM024		<12 M		<12 M			
Phenol	<0.01 mg/kg	TM062 (S)		0.0333 M		0.011 M			
Cresols	<0.01 mg/kg	TM062 (S)		0.0555 M		0.011 M			
Xylenols	<0.015 mg/kg	TM062 (S)		<0.015 M		<0.015 M			
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		0.0888 M		<0.035 M			
Soil Organic Matter (SOM)	<0.35 %	TM132		0.759 #		2.33 #			
pH	1 pH Units	TM133		8.25 M		7.64 M			
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #		<0.6 #			
Cyanide, Total	<1 mg/kg	TM153		<1 M		<1 M			
Arsenic	<0.6 mg/kg	TM181		5.58 M		10.4 M			
Cadmium	<0.02 mg/kg	TM181		0.12 M		0.205 M			

CERTIFICATE OF ANALYSIS

SDG:	210414-31	**Client Reference:**	784-B026948	**Report Number:**	595149
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595002

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS65	WS67	WS68			
			Depth (m)	0.60 - 0.60	0.70 - 0.70	0.10 - 0.10			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	09/04/2021	09/04/2021	09/04/2021			
			Sample Time	.	.	.			
			Date Received	13/04/2021	13/04/2021	13/04/2021			
			SDG Ref	210414-31	210414-31	210414-31			
			Lab Sample No.(s)	24071922	24071865	24071946			
			AGS Reference	ES4	ES4	ES1			
Chromium	<0.9 mg/kg	TM181		50.7 M		5.08 M			
Copper	<1.4 mg/kg	TM181		13.5 M		18.5 M			
Iron	<1000 mg/kg	TM181		13300 #		23400 #			
Lead	<0.7 mg/kg	TM181		24.7 M		42.9 M			
Mercury	<0.1 mg/kg	TM181		<0.1 M		<0.1 M			
Nickel	<0.2 mg/kg	TM181		7.87 M		10.8 M			
Selenium	<1 mg/kg	TM181		<1 #		<1 #			
Vanadium	<0.2 mg/kg	TM181		15 #		19.3 #			
Zinc	<1.9 mg/kg	TM181		42 M		67.5 M			
Boron, water soluble	<1 mg/kg	TM222		<1 M		<1 M			
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		<0.004 M		0.0498 M			
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248		6.42		5.11			
EPH (C5-C40)	<35 mg/kg	TM415		<35		56.5			
EPH Surrogate % recovery**	%	TM415		109		106			
EPH >C10-C40	<35 mg/kg	TM415		<35 M		56.5 M			

CERTIFICATE OF ANALYSIS

SDG:	210414-31	**Client Reference:**	784-B026948	**Report Number:**	595149
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595002

OC OP Pesticides and Triazine Herb

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	WS68
Depth (m)	0.10 - 0.10
Sample Type	Soil/Solid (S)
Date Sampled	09/04/2021
Sample Time	.
Date Received	13/04/2021
SDG Ref	210414-31
Lab Sample No.(s)	24071946
AGS Reference	ES1

Component	LOD/Units	Method	
Dichlorvos	<0.05 mg/kg	TM073	<0.05
Mevinphos	<0.05 mg/kg	TM073	<0.05
Phorate	<0.05 mg/kg	TM073	<0.05
alpha-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073	<0.05
Diazinon	<0.05 mg/kg	TM073	<0.05
gamma-Hexachlorocyclohexane (HCH / Lindane)	<0.05 mg/kg	TM073	<0.05
Disulfoton	<0.05 mg/kg	TM073	<0.05
Heptachlor	<0.05 mg/kg	TM073	<0.05
Aldrin	<0.05 mg/kg	TM073	<0.05
beta-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073	<0.05
Methyl parathion	<0.05 mg/kg	TM073	<0.05
Malathion	<0.05 mg/kg	TM073	<0.05
Fenitrothion	<0.05 mg/kg	TM073	<0.05
Heptachlor epoxide	<0.05 mg/kg	TM073	<0.05
Parathion	<0.05 mg/kg	TM073	<0.05
Endosulphan I	<0.05 mg/kg	TM073	<0.05
p,p-DDE	<0.05 mg/kg	TM073	<0.05
Dieldrin	<0.05 mg/kg	TM073	<0.05
Endrin	<0.05 mg/kg	TM073	<0.05
p,p-TDE (DDD)	<0.05 mg/kg	TM073	<0.05
Ethion	<0.05 mg/kg	TM073	<0.05
Endosulphan II	<0.05 mg/kg	TM073	<0.05
p,p-DDT	<0.05 mg/kg	TM073	<0.05
p,p-Methoxychlor	<0.05 mg/kg	TM073	<0.05
Endosulphan sulphate	<0.05 mg/kg	TM073	<0.05
Azinphos-methyl	<0.05 mg/kg	TM073	<0.05

Validated

CERTIFICATE OF ANALYSIS

SDG:	210414-31	**Client Reference:**	784-B026948	**Report Number:**	595149
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595002

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS65	WS68				
			Depth (m)	0.60 - 0.60	0.10 - 0.10				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	09/04/2021	09/04/2021				
			Sample Time	.	.				
			Date Received	13/04/2021	13/04/2021				
			SDG Ref	210414-31	210414-31				
			Lab Sample No.(s)	24071922	24071946				
			AGS Reference	ES4	ES1				
Naphthalene-d8 % recovery**	%	TM218		83.6	90.7				
Acenaphthene-d10 % recovery**	%	TM218		96.8	91.6				
Phenanthrene-d10 % recovery**	%	TM218		97.6	88				
Chrysene-d12 % recovery**	%	TM218		81.2	76.1				
Perylene-d12 % recovery**	%	TM218		86.4	88.1				
Naphthalene	<0.009 mg/kg	TM218		0.0412 M	<0.009 M				
Acenaphthylene	<0.012 mg/kg	TM218		0.017 M	0.0146 M				
Acenaphthene	<0.008 mg/kg	TM218		0.0148 M	<0.008 M				
Fluorene	<0.01 mg/kg	TM218		0.0141 M	<0.01 M				
Phenanthrene	<0.015 mg/kg	TM218		0.245 M	0.0914 M				
Anthracene	<0.016 mg/kg	TM218		0.0596 M	0.018 M				
Fluoranthene	<0.017 mg/kg	TM218		0.582 M	0.322 M				
Pyrene	<0.015 mg/kg	TM218		0.503 M	0.286 M				
Benz(a)anthracene	<0.014 mg/kg	TM218		0.273 M	0.153 M				
Chrysene	<0.01 mg/kg	TM218		0.253 M	0.184 M				
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		0.406 M	0.188 M				
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.117 M	0.0952 M				
Benzo(a)pyrene	<0.015 mg/kg	TM218		0.267 M	0.189 M				
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.242 M	0.209 M				
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		0.0392 M	0.0343 M				
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.218 M	0.165 M				
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		3.29	1.95				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210414-31	**Client Reference:**	784-B026948	**Report Number:**	595149
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595002

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS65	WS68				
			Depth (m)	0.60 - 0.60	0.10 - 0.10				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	09/04/2021	09/04/2021				
			Sample Time	.	.				
			Date Received	13/04/2021	13/04/2021				
			SDG Ref	210414-31	210414-31				
			Lab Sample No.(s)	24071922	24071946				
			AGS Reference	ES4	ES1				
GRO Surrogate % recovery**	%	TM089		101	101				
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C10-C12	<1 mg/kg	TM414		<1	<1				
Aliphatics >C12-C16	<1 mg/kg	TM414		<1	<1				
Aliphatics >C16-C21	<1 mg/kg	TM414		<1	<1				
Aliphatics >C21-C35	<1 mg/kg	TM414		5.12	13.2				
Aliphatics >C35-C44	<1 mg/kg	TM414		<1	<1				
Total Aliphatics >C10-C44	<5 mg/kg	TM414		5.24	14.5				
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		17.9	22.4				
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics > EC10-EC12	<1 mg/kg	TM414		<1	<1				
Aromatics > EC12-EC16	<1 mg/kg	TM414		<1	<1				
Aromatics > EC16-EC21	<1 mg/kg	TM414		<1	<1				
Aromatics > EC21-EC35	<1 mg/kg	TM414		10.9	6.04				
Aromatics >EC35-EC44	<1 mg/kg	TM414		<1	<1				
Aromatics > EC40-EC44	<1 mg/kg	TM414		<1	<1				
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		12.7	7.86				
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		17.9	22.4				
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		<0.05	<0.05				
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		<0.05	<0.05				
GRO >C5-C10	<0.02 mg/kg	TM089		<0.02	<0.02				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210414-31	**Client Reference:**	784-B026948	**Report Number:**	595149
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595002

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS65	WS68				
			Depth (m)	0.60 - 0.60	0.10 - 0.10				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	09/04/2021	09/04/2021				
			Sample Time	.	.				
			Date Received	13/04/2021	13/04/2021				
			SDG Ref	210414-31	210414-31				
			Lab Sample No.(s)	24071922	24071946				
			AGS Reference	ES4	ES1				
Dibromofluoromethane**	%	TM116		107	106				
Toluene-d8**	%	TM116		98.1	99.3				
4-Bromofluorobenzene**	%	TM116		99	96.7				
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Benzene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M				
Toluene	<0.007 mg/kg	TM116		<0.14 M	<0.14 M				
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 M	<0.08 M				
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #				
o-Xylene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4	<0.4				
Sum of BTEX	<0.04 mg/kg	TM116		<0.8	<0.8				

CERTIFICATE OF ANALYSIS

SDG:	210414-31	**Client Reference:**	784-B026948	**Report Number:**	595149
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595002

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&+$@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS65ES4 0.60 - 0.60 SOLID 09/04/2021 00:00:00 13/04/2021 05:00:00 210414-31 24071922 TM048	19.04.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS68ES1 0.10 - 0.10 SOLID 09/04/2021 00:00:00 13/04/2021 05:00:00 210414-31 24071946 TM048	16/04/2021	Agnieszka Chelmowska	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	210414-31	**Client Reference:**	784-B026948	**Report Number:**	595149
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595002

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.098	**Natural Moisture Content (%)**	9.04
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	91.7
Particle Size <4mm	>95%		

Case	
SDG	210414-31
Lab Sample Number(s)	24071865
Sampled Date	09-Apr-2021
Customer Sample Ref.	WS67 ES4
Depth (m)	0.70 - 0.70

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	0.0000264	<0.00001	0.000264	<0.0001	-	-	-
Arsenic	0.0038	<0.0005	0.038	<0.005	-	-	-
Boron	0.0583	<0.01	0.583	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00344	<0.0003	0.0344	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.237	<0.019	2.37	<0.19	-	-	-
Lead	0.00182	<0.0002	0.0182	<0.002	-	-	-
Nickel	0.00163	<0.0004	0.0163	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	0.00268	<0.001	0.0268	<0.01	-	-	-
Zinc	0.00796	<0.001	0.0796	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	15-Apr-2021
pH (pH Units)	8.20
Conductivity (µS/cm)	75.10
Temperature (°C)	22.10
Volume Leachant (Litres)	0.892

CERTIFICATE OF ANALYSIS

SDG:	210414-31	**Client Reference:**	784-B026948	**Report Number:**	595149
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595002

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.100	**Natural Moisture Content (%)**	10.6
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	90.4
Particle Size <4mm	>95%		

Case	
SDG	210414-31
Lab Sample Number(s)	24071922
Sampled Date	09-Apr-2021
Customer Sample Ref.	WS65 ES4
Depth (m)	0.60 - 0.60

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	0.0000163	<0.00001	0.000163	<0.0001	-	-	-
Arsenic	0.00175	<0.0005	0.0175	<0.005	-	-	-
Boron	0.0762	<0.01	0.762	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.00945	<0.001	0.0945	<0.01	-	-	-
Copper	0.00524	<0.0003	0.0524	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.667	<0.019	6.67	<0.19	-	-	-
Lead	0.00222	<0.0002	0.0222	<0.002	-	-	-
Nickel	0.00068	<0.0004	0.0068	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	0.00151	<0.001	0.0151	<0.01	-	-	-
Zinc	0.0121	<0.001	0.121	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	15-Apr-2021
pH (pH Units)	8.22
Conductivity (µS/cm)	71.70
Temperature (°C)	21.80
Volume Leachant (Litres)	0.890

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

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Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595002

Test Completion Dates

Lab Sample No(s)	24071922	24071865	24071946
Customer Sample Ref.	WS65	WS67	WS68
AGS Ref.	ES4	ES4	ES1
Depth	0.60 - 0.60	0.70 - 0.70	0.10 - 0.10
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Acid herbicides*			22-Apr-2021
Ammoniacal N as NH4 in 2:1 extract	16-Apr-2021		16-Apr-2021
Ammoniacal Nitrogen	21-Apr-2021	21-Apr-2021	
Ammonium Soil by Titration	21-Apr-2021		21-Apr-2021
Anions by Kone (soil)	18-Apr-2021		18-Apr-2021
Asbestos ID in Solid Samples	19-Apr-2021		16-Apr-2021
Boron Water Soluble	16-Apr-2021		19-Apr-2021
CEN 10:1 Leachate (1 Stage)	15-Apr-2021	15-Apr-2021	
CEN Readings	17-Apr-2021	17-Apr-2021	
Cyanide Comp/Free/Total/Thiocyanate	20-Apr-2021	20-Apr-2021	16-Apr-2021
Dissolved Metals by ICP-MS	21-Apr-2021	21-Apr-2021	
EPH	17-Apr-2021		17-Apr-2021
EPH by GCxGC-FID	16-Apr-2021		16-Apr-2021
EPH CWG GC (S)	16-Apr-2021		16-Apr-2021
GRO by GC-FID (S)	16-Apr-2021		16-Apr-2021
Hexavalent Chromium (s)	20-Apr-2021		20-Apr-2021
Hexavalent Chromium (w)	19-Apr-2021	19-Apr-2021	
Mercury Dissolved	20-Apr-2021	20-Apr-2021	
Metals in solid samples by OES	19-Apr-2021		20-Apr-2021
Moisture at 105C	15-Apr-2021	15-Apr-2021	
OC OP Pesticides and Triazine Herb			21-Apr-2021
PAH by GCMS	15-Apr-2021		16-Apr-2021
pH	15-Apr-2021		15-Apr-2021
pH Value of Filtered Water	20-Apr-2021	20-Apr-2021	
Phenols by HPLC (S)	16-Apr-2021		19-Apr-2021
Sample description	14-Apr-2021	14-Apr-2021	14-Apr-2021
Sulphide	21-Apr-2021	21-Apr-2021	
Total Organic Carbon	19-Apr-2021		20-Apr-2021
TPH CWG GC (S)	16-Apr-2021		16-Apr-2021
VOC MS (S)	15-Apr-2021		15-Apr-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2493
Ammoniacal Nitrogen as N	TM099	**98.8** 91.28 : 106.64

Ammonium Soil by Titration

Component	Method Code	QC 2495	QC 2464
Exchangeable Ammonium as NH4	TM024	**101.99** 76.20 : 110.13	**89.05** 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2433
Chloride (soluble)	TM243	**145.6** 80.93 : 111.66
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**159.35** 70.00 : 130.00

Boron Water Soluble

Component	Method Code	QC 2412	QC 2405
Water Soluble Boron	TM222	**104.0** 84.00 : 111.00	**93.0** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2461	QC 2471	QC 2481
Free Cyanide	TM153	**98.22** 79.00 : 115.00	**98.91** 79.00 : 115.00	
Free Cyanide (W)	TM227			**80.25** 91.52 : 123.82
Thiocyanate	TM153	**98.08** 94.09 : 113.89	**97.44** 94.09 : 113.89	
Thiocyanate (W)	TM227			**105.25** 90.50 : 113.00
Total Cyanide	TM153	**95.1** 73.07 : 107.47	**93.71** 73.07 : 107.47	
Total Cyanide (W)	TM227			**103.75** 91.75 : 112.75

Dissolved Metals by ICP-MS

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Dissolved Metals by ICP-MS

Component	Method Code	QC 2463	QC 2447
Aluminium	TM152	**109.67** 90.78 : 110.89	**100.0** 94.21 : 111.52
Antimony	TM152	**107.33** 77.22 : 119.42	**103.33** 88.37 : 130.57
Arsenic	TM152	**105.17** 86.77 : 107.67	**99.67** 92.62 : 113.52
Barium	TM152	**103.83** 87.86 : 110.23	**102.67** 88.62 : 113.14
Beryllium	TM152	**111.83** 86.19 : 112.98	**101.5** 87.08 : 111.38
Bismuth	TM152	**104.5** 84.06 : 106.46	**100.83** 92.62 : 115.02
Borate	TM152	**111.11** 88.00 : 112.00	
Boron	TM152	**111.33** 83.92 : 114.90	**101.67** 86.31 : 120.88
Cadmium	TM152	**102.83** 88.89 : 106.69	**98.67** 93.85 : 111.65
Calcium	TM152	**112.0** 80.24 : 117.95	**100.67** 89.20 : 126.91
Chromium	TM152	**107.33** 83.22 : 110.16	**99.83** 92.50 : 113.03
Cobalt	TM152	**106.17** 82.49 : 112.36	**99.5** 85.01 : 114.87
Copper	TM152	**107.33** 83.14 : 113.00	**100.5** 89.87 : 119.73
Iron	TM152	**108.0** 88.40 : 109.24	**98.67** 93.02 : 113.86
Lead	TM152	**105.83** 83.71 : 109.58	**101.33** 91.11 : 116.98
Lithium	TM152	**111.33** 84.50 : 114.28	**99.67** 87.70 : 115.90
Magnesium	TM152	**106.67** 87.56 : 114.57	**95.33** 89.60 : 116.61
Manganese	TM152	**108.5** 90.01 : 108.72	**98.67** 93.97 : 112.46
Molybdenum	TM152	**101.67** 85.53 : 107.42	**97.33** 89.07 : 110.96
Nickel	TM152	**106.33** 88.05 : 106.42	**99.83** 93.70 : 112.15
Phosphorus	TM152	**108.5** 82.76 : 107.72	**101.33** 89.24 : 114.18
Potassium	TM152	**107.33** 88.45 : 106.42	**98.0** 93.20 : 115.55
Selenium	TM152	**105.5** 85.61 : 111.03	**99.33** 91.69 : 117.12
Silver	TM152	**101.17** 88.48 : 110.48	**100.33** 90.93 : 121.73
Sodium	TM152	**107.33** 88.32 : 106.30	**95.33** 92.42 : 113.24
Strontium	TM152	**105.67** 83.77 : 107.87	**98.67** 92.14 : 116.24
Tellurium	TM152	**102.17** 82.83 : 104.73	**98.67** 89.88 : 111.78

Dissolved Metals by ICP-MS

		QC 2463	QC 2447
Thallium	TM152	**97.83** 77.47 : 113.87	**92.33** 82.43 : 113.83
Tin	TM152	**105.33** 87.36 : 109.55	**103.67** 94.62 : 107.79
Titanium	TM152	**112.33** 87.29 : 108.31	**102.83** 90.29 : 115.23
Tungsten	TM152	**103.17** 68.27 : 122.97	**100.0** 77.61 : 132.31
Uranium	TM152	**102.67** 82.46 : 105.16	**97.83** 86.97 : 115.76
Vanadium	TM152	**109.5** 88.43 : 114.30	**102.83** 89.61 : 115.48
Zinc	TM152	**107.67** 85.57 : 114.31	**100.33** 87.51 : 116.26

EPH by GCxGC-FID

Component	Method Code	QC 2402
EPH >C10-C40 Raw	TM415	**91.97** 59.15 : 115.05

GRO by GC-FID (S)

Component	Method Code	QC 2454
QC	TM089	**90.27** 70.75 : 114.19

Hexavalent Chromium (s)

Component	Method Code	QC 2445	QC 2485
Hexavalent Chromium	TM151	**108.0** 92.00 : 111.20	**104.0** 92.00 : 111.20

Hexavalent Chromium (w)

Component	Method Code	QC 2446
Hexavalent Chromium	TM241	**101.8** 94.17 : 106.17

Mercury Dissolved

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Mercury Dissolved

Component	Method Code	QC 2486
Mercury Dissolved (CVAF)	TM183	**109.0** 69.30 : 128.70

Metals in solid samples by OES

Component	Method Code	QC 2488	QC 2436
Aluminium	TM181	**92.04** 73.56 : 108.85	**83.89** 73.56 : 108.85
Antimony	TM181	**95.53** 76.89 : 111.24	**90.24** 76.89 : 111.24
Arsenic	TM181	**102.62** 88.53 : 111.01	**96.8** 88.53 : 111.01
Barium	TM181	**96.33** 77.67 : 105.35	**87.34** 77.67 : 105.35
Beryllium	TM181	**101.87** 85.44 : 109.61	**94.78** 85.44 : 109.61
Boron	TM181	**90.83** 73.51 : 104.66	**86.25** 73.51 : 104.66
Cadmium	TM181	**95.47** 77.67 : 104.12	**89.3** 77.67 : 104.12
Chromium	TM181	**86.82** 79.64 : 105.83	**84.99** 79.64 : 105.83
Cobalt	TM181	**90.88** 84.60 : 104.13	**85.85** 84.60 : 104.13
Copper	TM181	**95.95** 82.40 : 105.45	**92.08** 82.40 : 105.45
Iron	TM181	**92.86** 82.95 : 110.58	**95.24** 82.95 : 110.58
Lead	TM181	**91.44** 78.24 : 104.05	**92.34** 78.24 : 104.05
Manganese	TM181	**107.78** 94.29 : 119.51	**103.33** 94.29 : 119.51
Mercury	TM181	**97.34** 83.16 : 107.81	**93.0** 83.16 : 107.81
Molybdenum	TM181	**97.94** 87.11 : 106.87	**92.18** 87.11 : 106.87
Nickel	TM181	**93.15** 80.26 : 102.28	**87.78** 80.26 : 102.28
Phosphorus	TM181	**108.89** 94.56 : 124.28	**102.42** 94.56 : 124.28
Selenium	TM181	**100.39** 82.28 : 110.48	**95.69** 82.28 : 110.48
Strontium	TM181	**92.87** 79.13 : 102.79	**88.42** 79.13 : 102.79
Thallium	TM181	**100.88** 82.94 : 111.86	**96.46** 82.94 : 111.86
Tin	TM181	**98.48** 86.72 : 110.03	**94.68** 86.72 : 110.03
Titanium	TM181	**88.55** 66.23 : 102.06	**79.39** 66.23 : 102.06

Metals in solid samples by OES

		QC 2488	QC 2436
Vanadium	TM181	**98.53** 86.19 : 109.45	**93.04** 86.19 : 109.45
Zinc	TM181	**99.59** 84.68 : 113.99	**94.05** 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2464	QC 2404
Acenaphthene	TM218	**90.5** 78.59 : 112.16	**85.5** 78.59 : 112.16
Acenaphthylene	TM218	**89.0** 75.11 : 109.01	**84.0** 75.11 : 109.01
Anthracene	TM218	**92.5** 73.99 : 113.85	**81.0** 73.99 : 113.85
Benz(a)anthracene	TM218	**95.0** 69.31 : 119.18	**83.5** 69.31 : 119.18
Benzo(a)pyrene	TM218	**90.5** 66.97 : 114.92	**80.0** 66.97 : 114.92
Benzo(b)fluoranthene	TM218	**93.5** 67.41 : 114.46	**83.0** 67.41 : 114.46
Benzo(ghi)perylene	TM218	**85.0** 62.92 : 114.36	**80.0** 62.92 : 114.36
Benzo(k)fluoranthene	TM218	**90.0** 69.98 : 116.49	**84.5** 69.98 : 116.49
Chrysene	TM218	**91.5** 69.86 : 114.50	**85.0** 69.86 : 114.50
Dibenzo(ah)anthracene	TM218	**87.5** 64.54 : 115.22	**80.0** 64.54 : 115.22
Fluoranthene	TM218	**96.5** 72.56 : 111.70	**80.0** 72.56 : 111.70
Fluorene	TM218	**92.5** 79.13 : 111.49	**84.0** 79.13 : 111.49
Indeno(123cd)pyrene	TM218	**96.0** 61.22 : 113.25	**93.0** 61.22 : 113.25
Naphthalene	TM218	**85.0** 77.96 : 110.91	**87.5** 77.96 : 110.91
Phenanthrene	TM218	**96.5** 76.83 : 113.25	**81.0** 76.83 : 113.25
Pyrene	TM218	**93.5** 72.45 : 110.77	**81.0** 72.45 : 110.77

pH

Component	Method Code	QC 2492	QC 2464
pH	TM133	**100.0** 98.41 : 102.48	**100.15** 98.41 : 102.48

pH Value of Filtered Water

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pH Value of Filtered Water

Component	Method Code	QC 2435
pH	TM256	**100.4** 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2456	QC 2484
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**55.19** 70.71 : 116.42	**56.49** 70.71 : 116.42
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**46.78** 64.54 : 117.79	**48.54** 64.54 : 117.79
Cresols by HPLC (S)	TM062 (S)	**51.57** 74.40 : 108.98	**52.4** 74.40 : 108.98
Phenol by HPLC (S)	TM062 (S)	**53.64** 69.44 : 122.18	**54.97** 69.44 : 122.18
Xylenols by HPLC (S)	TM062 (S)	**52.08** 76.56 : 106.38	**52.71** 76.56 : 106.38

Sulphide

Component	Method Code	QC 2436
Sulphide	TM101	**105.33** 88.90 : 112.50

Total Organic Carbon

Component	Method Code	QC 2423	QC 2426
Total Organic Carbon	TM132	**96.48** 87.02 : 113.45	**105.47** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2473
1,1,1,2-tetrachloroethane	TM116	**105.0** 79.10 : 119.66
1,1,1-Trichloroethane	TM116	**109.8** 84.25 : 112.57
1,1,2-Trichloroethane	TM116	**99.8** 81.29 : 113.79
1,1-Dichloroethane	TM116	**112.4** 86.77 : 122.11
1,2-Dichloroethane	TM116	**115.0** 90.04 : 132.28
1,4-Dichlorobenzene	TM116	**110.8** 80.81 : 125.07

		QC 2473
2-Chlorotoluene	TM116	**104.4** 73.13 : 114.13
4-Chlorotoluene	TM116	**98.6** 68.66 : 109.13
Benzene	TM116	**105.8** 84.29 : 112.22
Carbon Disulphide	TM116	**101.6** 75.11 : 124.81
Carbontetrachloride	TM116	**111.8** 82.35 : 126.46
Chlorobenzene	TM116	**104.6** 82.88 : 122.42
Chloroform	TM116	**112.8** 90.35 : 120.38
Chloromethane	TM116	**114.0** 67.89 : 143.51
Cis-1,2-Dichloroethene	TM116	**109.8** 78.27 : 128.90
Dibromomethane	TM116	**101.0** 76.00 : 120.73
Dichloromethane	TM116	**117.4** 92.27 : 134.36
Ethylbenzene	TM116	**97.4** 70.95 : 113.07
Hexachlorobutadiene	TM116	**93.4** 14.55 : 147.92
Isopropylbenzene	TM116	**98.4** 52.00 : 108.19
Naphthalene	TM116	**105.8** 80.29 : 135.77
o-Xylene	TM116	**93.0** 68.34 : 101.99
p/m-Xylene	TM116	**91.3** 69.47 : 97.31
Sec-Butylbenzene	TM116	**110.4** 27.03 : 135.73
Tetrachloroethene	TM116	**106.0** 81.43 : 126.65
Toluene	TM116	**96.0** 82.44 : 103.50
Trichloroethene	TM116	**103.8** 79.80 : 112.33
Trichlorofluoromethane	TM116	**109.4** 89.67 : 132.09
Vinyl Chloride	TM116	**118.4** 69.66 : 136.55

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

Work Order	: **PR2133656**	Issue Date	: 22-Apr-2021
Customer	: **ALS Life Sciences Ltd**	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: [redacted]	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 210414-31	Page	: 1 of 2
Order number	: ----	Date Samples Received	: 19-Apr-2021
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 19-Apr-2021 - 22-Apr-2021
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories		*Position*
Zdeněk Jirák	[redacted]	Environmental Business Unit Manager

The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)

Analytical Results

Sub-Matrix: **SOIL**			Client sample ID	**24074965 WS68**		**----**		**----**	
			Laboratory sample ID	*PR2133656-001*		----		----	
			Client sampling date / time	14-Apr-2021 12:09		----		----	
Parameter	*Method*	*LOR*	*Unit*	**Result**	**MU**	**Result**	**MU**	**Result**	**MU**
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	**91.9**	± 6.0%	**----**	----	**----**	----
Pesticides									
2.4.5-T	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4.5-TP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-D	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
4-CPP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bentazone	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dinoseb	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Fluroxypyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPA	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Acifluorfen	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bromoxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
DNOC	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dicamba	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Diclofop	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Ioxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Propoxycarbazone-sodium	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclopyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclosan	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.
Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	*Method Descriptions*
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PESLMSA1	CZ_SOP_D06_03_182.B (CSN EN 15637, US EPA 1694) Determination of acidic herbicides and drug residues by liquid chromatography method with MS/MS detection.

A `*` symbol preceding any method indicates laboratory or subcontractor non-accredited test. In the case when a procedure belonging to an accredited method was used for non-accredited matrix, would apply that the reported results are non-accredited. Please refer to General Comment section on front page for information. If the report contains subcontracted analysis, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.
The calculation methods of summation parameters are available on request in the client service.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	24 April 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210415-72
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	595346

This report has been revised and directly supersedes 595151 in its entirety.

We received 9 samples on Thursday April 15, 2021 and 6 of these samples were scheduled for analysis which was completed on Saturday April 24, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210415-72	**Client Reference:**	784-B026948	**Report Number:**	595346
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595151

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24079319	WS64	ES1	0.10 - 0.10	12/04/2021
24079334	WS64	ES2	0.70 - 0.70	12/04/2021
24079345	WS64	ES3	1.80 - 1.80	12/04/2021
24079352	WS66	ES1	0.10 - 0.10	12/04/2021
24079365	WS66	ES2	0.90 - 0.90	12/04/2021
24079380	WS66	ES3	2.00 - 2.00	12/04/2021
24079388	WS70	ES1	0.10 - 0.10	12/04/2021
24079399	WS70	ES2	0.80 - 0.80	12/04/2021
24079416	WS70	ES3	1.70 - 1.70	12/04/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210415-72	**Client Reference:**	784-B026948	**Report Number:**	595346
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595151

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24079319	24079334		24079345			24079352			24079365			24079399	
Customer Sample Reference			WS64	WS64		WS64			WS66			WS66			WS70	
AGS Reference			ES1	ES2		ES3			ES1			ES2			ES2	
Depth (m)			0.10 - 0.10	0.70 - 0.70		1.80 - 1.80			0.10 - 0.10			0.90 - 0.90			0.80 - 0.80	
Container			250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S
Acid herbicides*	All	NDPs: 0 Tests: 2	X							X						
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 2					X						X			
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 2		X											X	
Ammonium Soil by Titration	All	NDPs: 0 Tests: 2					X						X			
Anions by Kone (soil)	All	NDPs: 0 Tests: 2					X						X			
Anions by Kone (w)	All	NDPs: 0 Tests: 1							X							
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2				X						X				
Boron Water Soluble	All	NDPs: 0 Tests: 2					X						X			
CEN Readings	All	NDPs: 0 Tests: 3		X					X						X	
Coronene	All	NDPs: 0 Tests: 1								X						
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 4		X			X						X		X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 3		X					X						X	
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1							X							
EPH	All	NDPs: 0 Tests: 2					X						X			
EPH by GCxGC-FID	All	NDPs: 0 Tests: 3					X			X			X			

Validated

CERTIFICATE OF ANALYSIS

SDG:	210415-72	**Client Reference:**	784-B026948	**Report Number:**	595346
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595151

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24079319	24079334		24079345			24079352			24079365			24079399	
Customer Sample Reference			WS64	WS64		WS64			WS66			WS66			WS70	
AGS Reference			ES1	ES2		ES3			ES1			ES2			ES2	
Depth (m)			0.10 - 0.10	0.70 - 0.70		1.80 - 1.80			0.10 - 0.10			0.90 - 0.90			0.80 - 0.80	
Container			250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S
EPH CWG GC (S)	All	NDPs: 0 Tests: 2					X						X			
Fluoride	All	NDPs: 0 Tests: 1							X							
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2						X						X		
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2					X						X			
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 2		X											X	
Mercury Dissolved	All	NDPs: 0 Tests: 3		X					X						X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 2					X						X			
OC OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 2	X							X						
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1								X						
PAH by GCMS	All	NDPs: 0 Tests: 3					X			X			X			
PCBs by GCMS	All	NDPs: 0 Tests: 1								X						
pH	All	NDPs: 0 Tests: 2					X						X			
pH Value of Filtered Water	All	NDPs: 0 Tests: 2		X											X	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 2					X						X			
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1							X							

CERTIFICATE OF ANALYSIS

SDG:	210415-72	**Client Reference:**	784-B026948	**Report Number:**	595346
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595151

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24079319	24079334		24079345			24079352			24079365			24079399
Customer Sample Reference			WS64	WS64		WS64			WS66			WS66			WS70
AGS Reference			ES1	ES2		ES3			ES1			ES2			ES2
Depth (m)			0.10 - 0.10	0.70 - 0.70		1.80 - 1.80			0.10 - 0.10			0.90 - 0.90			0.80 - 0.80
Container			250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S
Sample description	All	NDPs: 0 Tests: 6	X		X		X			X			X			X
Sulphide	All	NDPs: 0 Tests: 2		X											X	
Total Dissolved Solids	All	NDPs: 0 Tests: 1							X							
Total Organic Carbon	All	NDPs: 0 Tests: 3					X			X			X			
TPH CWG GC (S)	All	NDPs: 0 Tests: 2					X						X			
VOC MS (S)	All	NDPs: 0 Tests: 3						X			X			X		

CERTIFICATE OF ANALYSIS

SDG:	210415-72	**Client Reference:**	784-B026948	**Report Number:**	595346
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595151

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24079319	WS64	0.10 - 0.10	Dark Brown	Loamy Sand	Stones	Vegetation
24079334	WS64	0.70 - 0.70	Light Brown	Sand	Stones	Vegetation
24079345	WS64	1.80 - 1.80	Light Brown	Sand	Stones	None
24079352	WS66	0.10 - 0.10	Dark Brown	Loamy Sand	Stones	Vegetation
24079365	WS66	0.90 - 0.90	Light Brown	Sandy Loam	Stones	Vegetation
24079399	WS70	0.80 - 0.80	Dark Brown	Sandy Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210415-72	**Client Reference:**	784-B026948	**Report Number:**	595346
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595151

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS64	WS64	WS64	WS66	WS66	WS70
			Depth (m)	0.10 - 0.10	0.70 - 0.70	1.80 - 1.80	0.10 - 0.10	0.90 - 0.90	0.80 - 0.80
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	12/04/2021	12/04/2021	12/04/2021	12/04/2021	12/04/2021	12/04/2021
			Sample Time	.	.	.	.	.	.
			Date Received	15/04/2021	15/04/2021	15/04/2021	15/04/2021	15/04/2021	15/04/2021
			SDG Ref	210415-72	210415-72	210415-72	210415-72	210415-72	210415-72
			Lab Sample No.(s)	24079319	24079334	24079345	24079352	24079365	24079399
			AGS Reference	ES1	ES2	ES3	ES1	ES2	ES2
Moisture Content Ratio (% of as received sample)	%	PM024		6.1	5.6	8.5	7.1	7.4	6.8
2,4,5-T*	<0.01 mg/kg	SUB		<0.01			<0.01		
2,4,5-TP (Fenoprop)*	<0.01 mg/kg	SUB		<0.01			<0.01		
2,4-D*	<0.01 mg/kg	SUB		<0.01			<0.01		
2,4-DB*	<0.01 mg/kg	SUB		<0.01			<0.01		
2,4-Dichloroprop (2,4 DP)*	<0.01 mg/kg	SUB		<0.01			<0.01		
4-Chlorophenoxyacetic acid (4-CPA)*	<0.01 mg/kg	SUB		<0.01			<0.01		
Acifluorfen*	<0.01 mg/kg	SUB		<0.01			<0.01		
Bentazone*	<0.01 mg/kg	SUB		<0.01			<0.01		
Bromoxynil*	<0.01 mg/kg	SUB		<0.01			<0.01		
Dicamba*	<0.01 mg/kg	SUB		<0.01			<0.01		
Diclofop*	<0.01 mg/kg	SUB		<0.01			<0.01		
Dinoseb*	<0.01 mg/kg	SUB		<0.01			<0.01		
DNOC*	<0.01 mg/kg	SUB		<0.01			<0.01		
Fluroxypyr*	<0.01 mg/kg	SUB		<0.01			<0.01		
Ioxynil*	<0.01 mg/kg	SUB		<0.01			<0.01		
2-methyl-4-Chlorophenoxyacetic acid (MCPA)*	<0.01 mg/kg	SUB		<0.01			<0.01		
4-(4-Chloro-o-tolyloxy) butyric acid (MCPB)*	<0.01 mg/kg	SUB		<0.01			<0.01		
Mecoprop (MCPP)*	<0.01 mg/kg	SUB		<0.01			<0.01		
Propoxycarbazone-sodium*	<0.01 mg/kg	SUB		<0.01			<0.01		
Triclopyr*	<0.01 mg/kg	SUB		<0.01			<0.01		
Triclosan*	<0.01 mg/kg	SUB		<0.01			<0.01		
Exchangeable Ammonia as N	<12 mg/kg	TM024				<12 M		<12 M	
Phenol	<0.01 mg/kg	TM062 (S)				<0.01 M		<0.01 M	
Cresols	<0.01 mg/kg	TM062 (S)				<0.01 M		<0.01 M	
Xylenols	<0.015 mg/kg	TM062 (S)				<0.015 M		<0.015 M	
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)				<0.035 M		<0.035 M	
Organic Carbon, Total	<0.2 %	TM132					1.13 M		
Soil Organic Matter (SOM)	<0.35 %	TM132				<0.35 #		0.771 #	
pH	1 pH Units	TM133				7.99 M		7.78 M	
Chromium, Hexavalent	<0.6 mg/kg	TM151				<0.6 #		<0.6 #	
Cyanide, Total	<1 mg/kg	TM153				<1 M		<1 M	
PCB congener 28	<0.003 mg/kg	TM168					<0.003 M		

Validated

CERTIFICATE OF ANALYSIS

SDG:	210415-72	**Client Reference:**	784-B026948	**Report Number:**	595346
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595151

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS64	WS64	WS64	WS66	WS66	WS70
			Depth (m)	0.10 - 0.10	0.70 - 0.70	1.80 - 1.80	0.10 - 0.10	0.90 - 0.90	0.80 - 0.80
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	12/04/2021	12/04/2021	12/04/2021	12/04/2021	12/04/2021	12/04/2021
			Sample Time	.	.	.	.	.	.
			Date Received	15/04/2021	15/04/2021	15/04/2021	15/04/2021	15/04/2021	15/04/2021
			SDG Ref	210415-72	210415-72	210415-72	210415-72	210415-72	210415-72
			Lab Sample No.(s)	24079319	24079334	24079345	24079352	24079365	24079399
			AGS Reference	ES1	ES2	ES3	ES1	ES2	ES2
PCB congener 52	<0.003 mg/kg	TM168					<0.003 M		
PCB congener 101	<0.003 mg/kg	TM168					<0.003 M		
PCB congener 118	<0.003 mg/kg	TM168					<0.003 M		
PCB congener 138	<0.003 mg/kg	TM168					<0.003 M		
PCB congener 153	<0.003 mg/kg	TM168					<0.003 M		
PCB congener 180	<0.003 mg/kg	TM168					<0.003 M		
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168					<0.021		
Arsenic	<0.6 mg/kg	TM181				2.95 M		4.96 M	
Cadmium	<0.02 mg/kg	TM181				0.0247 M		0.0808 M	
Chromium	<0.9 mg/kg	TM181				4.48 M		7.54 M	
Copper	<1.4 mg/kg	TM181				4.28 M		8.06 M	
Iron	<1000 mg/kg	TM181				4410 #		14200 #	
Lead	<0.7 mg/kg	TM181				9.85 M		19.7 M	
Mercury	<0.1 mg/kg	TM181				<0.1 M		<0.1 M	
Nickel	<0.2 mg/kg	TM181				4.59 M		7.76 M	
Selenium	<1 mg/kg	TM181				<1 #		<1 #	
Vanadium	<0.2 mg/kg	TM181				6.73 #		13.1 #	
Zinc	<1.9 mg/kg	TM181				13.3 M		31.5 M	
Boron, water soluble	<1 mg/kg	TM222				<1 M		<1 M	
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243				<0.004 M		<0.004 M	
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248				5.25		6.55	
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410					<10		
Coronene	<0.2 mg/kg	TM410					<0.2		
EPH (C5-C40)	<35 mg/kg	TM415				<35		<35	
EPH Surrogate % recovery**	%	TM415				92.4	90.7	87.2	
EPH >C10-C40	<35 mg/kg	TM415				<35 M		<35 M	
Mineral Oil >C10-C40	<5 mg/kg	TM415					13.9		

CERTIFICATE OF ANALYSIS

SDG:	210415-72	**Client Reference:**	784-B026948	**Report Number:**	595346
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595151

OC OP Pesticides and Triazine Herb

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS64	WS66				
			Depth (m)	0.10 - 0.10	0.10 - 0.10				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	12/04/2021	12/04/2021				
			Sample Time	.	.				
			Date Received	15/04/2021	15/04/2021				
			SDG Ref	210415-72	210415-72				
			Lab Sample No.(s)	24079319	24079352				
			AGS Reference	ES1	ES1				
Dichlorvos	<0.05 mg/kg	TM073		<0.05	<0.05				
Mevinphos	<0.05 mg/kg	TM073		<0.05	<0.05				
Phorate	<0.05 mg/kg	TM073		<0.05	<0.05				
alpha-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073		<0.05	<0.05				
Diazinon	<0.05 mg/kg	TM073		<0.05	<0.05				
gamma-Hexachlorocyclohexane (HCH / Lindane)	<0.05 mg/kg	TM073		<0.05	<0.05				
Disulfoton	<0.05 mg/kg	TM073		<0.05	<0.05				
Heptachlor	<0.05 mg/kg	TM073		<0.05	<0.05				
Aldrin	<0.05 mg/kg	TM073		<0.05	<0.05				
beta-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073		<0.05	<0.05				
Methyl parathion	<0.05 mg/kg	TM073		<0.05	<0.05				
Malathion	<0.05 mg/kg	TM073		<0.05	<0.05				
Fenitrothion	<0.05 mg/kg	TM073		<0.05	<0.05				
Heptachlor epoxide	<0.05 mg/kg	TM073		<0.05	<0.05				
Parathion	<0.05 mg/kg	TM073		<0.05	<0.05				
Endosulphan I	<0.05 mg/kg	TM073		<0.05	<0.05				
p,p-DDE	<0.05 mg/kg	TM073		<0.05	<0.05				
Dieldrin	<0.05 mg/kg	TM073		<0.05	<0.05				
Endrin	<0.05 mg/kg	TM073		<0.05	<0.05				
p,p-TDE (DDD)	<0.05 mg/kg	TM073		<0.05	<0.05				
Ethion	<0.05 mg/kg	TM073		<0.05	<0.05				
Endosulphan II	<0.05 mg/kg	TM073		<0.05	<0.05				
p,p-DDT	<0.05 mg/kg	TM073		<0.05	<0.05				
p,p-Methoxychlor	<0.05 mg/kg	TM073		<0.05	<0.05				
Endosulphan sulphate	<0.05 mg/kg	TM073		<0.05	<0.05				
Azinphos-methyl	<0.05 mg/kg	TM073		<0.05	<0.05				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210415-72	**Client Reference:**	784-B026948	**Report Number:**	595346
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595151

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS64	WS66				
			Depth (m)	1.80 - 1.80	0.90 - 0.90				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	12/04/2021	12/04/2021				
			Sample Time	.	.				
			Date Received	15/04/2021	15/04/2021				
			SDG Ref	210415-72	210415-72				
			Lab Sample No.(s)	24079345	24079365				
			AGS Reference	ES3	ES2				
Naphthalene-d8 % recovery**	%	TM218		90.4	91.7				
Acenaphthene-d10 % recovery**	%	TM218		94.8	95.3				
Phenanthrene-d10 % recovery**	%	TM218		90.1	89.8				
Chrysene-d12 % recovery**	%	TM218		73.5	74.2				
Perylene-d12 % recovery**	%	TM218		82.3	80.2				
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	<0.009 M				
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 M	<0.012 M				
Acenaphthene	<0.008 mg/kg	TM218		<0.008 M	<0.008 M				
Fluorene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M				
Phenanthrene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M				
Anthracene	<0.016 mg/kg	TM218		<0.016 M	<0.016 M				
Fluoranthene	<0.017 mg/kg	TM218		<0.017 M	0.0264 M				
Pyrene	<0.015 mg/kg	TM218		<0.015 M	0.0227 M				
Benz(a)anthracene	<0.014 mg/kg	TM218		<0.014 M	<0.014 M				
Chrysene	<0.01 mg/kg	TM218		<0.01 M	0.0127 M				
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		<0.015 M	0.0203 M				
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		<0.014 M	<0.014 M				
Benzo(a)pyrene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M				
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		<0.018 M	<0.018 M				
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	<0.023 M				
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		<0.024 M	<0.024 M				
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		<0.118	<0.118				

CERTIFICATE OF ANALYSIS

SDG:	210415-72	**Client Reference:**	784-B026948	**Report Number:**	595346
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595151

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS64	WS66				
			Depth (m)	1.80 - 1.80	0.90 - 0.90				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	12/04/2021	12/04/2021				
			Sample Time	.	.				
			Date Received	15/04/2021	15/04/2021				
			SDG Ref	210415-72	210415-72				
			Lab Sample No.(s)	24079345	24079365				
			AGS Reference	ES3	ES2				
GRO Surrogate % recovery**	%	TM089		103	107				
Aliphatics >C5-C6	<0.01 mg/kg	TM089		0.0295	<0.01				
Aliphatics >C6-C8	<0.01 mg/kg	TM089		0.0372	<0.01				
Aliphatics >C8-C10	<0.01 mg/kg	TM089		0.292	<0.01				
Aliphatics >C10-C12	<1 mg/kg	TM414		<1	<1				
Aliphatics >C12-C16	<1 mg/kg	TM414		<1	<1				
Aliphatics >C16-C21	<1 mg/kg	TM414		<1	<1				
Aliphatics >C21-C35	<1 mg/kg	TM414		<1	2.54				
Aliphatics >C35-C44	<1 mg/kg	TM414		<1	<1				
Total Aliphatics >C10-C44	<5 mg/kg	TM414		<5	<5				
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		<10	<10				
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		0.195	<0.01				
Aromatics > EC10-EC12	<1 mg/kg	TM414		<1	<1				
Aromatics > EC12-EC16	<1 mg/kg	TM414		<1	<1				
Aromatics > EC16-EC21	<1 mg/kg	TM414		<1	<1				
Aromatics > EC21-EC35	<1 mg/kg	TM414		<1	<1				
Aromatics >EC35-EC44	<1 mg/kg	TM414		<1	<1				
Aromatics > EC40-EC44	<1 mg/kg	TM414		<1	<1				
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		<5	<5				
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		<10	<10				
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		0.359	<0.05				
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		0.195	<0.05				
GRO >C5-C10	<0.02 mg/kg	TM089		0.553	<0.02				

CERTIFICATE OF ANALYSIS

SDG:	210415-72	**Client Reference:**	784-B026948	**Report Number:**	595346
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595151

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS64	WS66	WS66			
			Depth (m)	1.80 - 1.80	0.10 - 0.10	0.90 - 0.90			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	12/04/2021	12/04/2021	12/04/2021			
			Sample Time	.	.	.			
			Date Received	15/04/2021	15/04/2021	15/04/2021			
			SDG Ref	210415-72	210415-72	210415-72			
			Lab Sample No.(s)	24079345	24079352	24079365			
			AGS Reference	ES3	ES1	ES2			
Dibromofluoromethane**	%	TM116		110	102	102			
Toluene-d8**	%	TM116		100	90.3	96.9			
4-Bromofluorobenzene**	%	TM116		98.4	65.8	84.3			
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 M	<0.01 M	<0.01 M			
Benzene	<0.009 mg/kg	TM116		<0.18 M	<0.009 M	<0.009 M			
Toluene	<0.007 mg/kg	TM116		<0.14 M	<0.007 M	<0.007 M			
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 M	<0.004 M	<0.004 M			
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.01 #	<0.01 #			
o-Xylene	<0.01 mg/kg	TM116		<0.2 M	<0.01 M	<0.01 M			
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4		<0.02			
Sum of BTEX	<0.04 mg/kg	TM116		<0.8		<0.04			

CERTIFICATE OF ANALYSIS

SDG:	210415-72	**Client Reference:**	784-B026948	**Report Number:**	595346
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595151

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS64ES3 1.80 - 1.80 SOLID 12/04/2021 00:00:00 15/04/2021 05:00:00 210415-72 24079345 TM048	19/04/2021	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS66ES2 0.90 - 0.90 SOLID 12/04/2021 00:00:00 15/04/2021 05:00:00 210415-72 24079365 TM048	19/04/2021	Paul Poynton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG:	210415-72	**Client Reference:**	784-B026948	**Report Number:**	595346
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595151

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.097	**Natural Moisture Content (%)**	8.22
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	92.4
Particle Size <4mm	>95%		

Case	
SDG	210415-72
Lab Sample Number(s)	24079352
Sampled Date	12-Apr-2021
Customer Sample Ref.	WS66 ES1
Depth (m)	0.10 - 0.10

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	1.13	3	5	6
Loss on Ignition (%)	-	-	-	-
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	13.9	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	-	-	-	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00212	<0.0005	0.0212	<0.005	0.5	2	25
Barium	0.00927	<0.0002	0.0927	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00411	<0.0003	0.0411	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000738	<0.0004	0.00738	<0.004	0.4	10	40
Lead	0.00068	<0.0002	0.0068	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00245	<0.001	0.0245	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	0.522	<0.5	5.22	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	101	<5	1010	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	9.8	<3	98	<30	500	800	1000

Leach Test Information

Date Prepared	16-Apr-2021
pH (pH Units)	8.31
Conductivity (µS/cm)	121.00
Temperature (°C)	15.20
Volume Leachant (Litres)	0.893

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation

24/04/2021 14:10:18

14:09:52 24/04/2021

CERTIFICATE OF ANALYSIS

SDG:	210415-72	**Client Reference:**	784-B026948	**Report Number:**	595346
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595151

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.095	**Natural Moisture Content (%)**	5.52
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	94.8
Particle Size <4mm	>95%		

Case	
SDG	210415-72
Lab Sample Number(s)	24079334
Sampled Date	12-Apr-2021
Customer Sample Ref.	WS64 ES2
Depth (m)	0.70 - 0.70

Eluate Analysis	**C_2 Conc^n in 10:1 eluate (mg/l)**		**A_2 10:1 conc^n leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	0.0000119	<0.00001	0.000119	<0.0001	-	-	-
Arsenic	0.00158	<0.0005	0.0158	<0.005	-	-	-
Boron	0.019	<0.01	0.19	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00347	<0.0003	0.0347	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.307	<0.019	3.07	<0.19	-	-	-
Lead	0.000441	<0.0002	0.00441	<0.002	-	-	-
Nickel	0.000702	<0.0004	0.00702	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	0.0029	<0.001	0.029	<0.01	-	-	-
Zinc	0.0017	<0.001	0.017	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	16-Apr-2021
pH (pH Units)	7.94
Conductivity (µS/cm)	26.80
Temperature (°C)	18.10
Volume Leachant (Litres)	0.895

CERTIFICATE OF ANALYSIS

SDG:	210415-72	**Client Reference:**	784-B026948	**Report Number:**	595346
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595151

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.097	**Natural Moisture Content (%)**	7.42
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	93.1
Particle Size <4mm	>95%		

Case	
SDG	210415-72
Lab Sample Number(s)	24079399
Sampled Date	12-Apr-2021
Customer Sample Ref.	WS70 ES2
Depth (m)	0.80 - 0.80

Eluate Analysis	**C_2 Conc^n in 10:1 eluate (mg/l)**		**A_2 10:1 conc^n leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	0.0000149	<0.00001	0.000149	<0.0001	-	-	-
Arsenic	0.00266	<0.0005	0.0266	<0.005	-	-	-
Boron	0.0191	<0.01	0.191	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00345	<0.0003	0.0345	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.941	<0.019	9.41	<0.19	-	-	-
Lead	0.00118	<0.0002	0.0118	<0.002	-	-	-
Nickel	0.000798	<0.0004	0.00798	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	0.00268	<0.001	0.0268	<0.01	-	-	-
Zinc	0.00184	<0.001	0.0184	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	16-Apr-2021
pH (pH Units)	7.16
Conductivity (µS/cm)	26.60
Temperature (°C)	19.30
Volume Leachant (Litres)	0.893

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210415-72	**Client Reference:**	784-B026948	**Report Number:**	595346
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595151

Test Completion Dates

Lab Sample No(s)	24079319	24079334	24079345	24079352	24079365	24079399
Customer Sample Ref.	WS64	WS64	WS64	WS66	WS66	WS70
AGS Ref.	ES1	ES2	ES3	ES1	ES2	ES2
Depth	0.10 - 0.10	0.70 - 0.70	1.80 - 1.80	0.10 - 0.10	0.90 - 0.90	0.80 - 0.80
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Acid herbicides*	22-Apr-2021			22-Apr-2021		
Ammoniacal N as NH4 in 2:1 extract			21-Apr-2021		21-Apr-2021	
Ammoniacal Nitrogen		21-Apr-2021				21-Apr-2021
Ammonium Soil by Titration			21-Apr-2021		21-Apr-2021	
Anions by Kone (soil)			20-Apr-2021		20-Apr-2021	
Anions by Kone (w)				19-Apr-2021		
Asbestos ID in Solid Samples			19-Apr-2021		19-Apr-2021	
Boron Water Soluble			20-Apr-2021		20-Apr-2021	
CEN 10:1 Leachate (1 Stage)		16-Apr-2021		16-Apr-2021		16-Apr-2021
CEN Readings		17-Apr-2021		17-Apr-2021		17-Apr-2021
Coronene				16-Apr-2021		
Cyanide Comp/Free/Total/Thiocyanate		20-Apr-2021	19-Apr-2021		19-Apr-2021	20-Apr-2021
Dissolved Metals by ICP-MS		20-Apr-2021		20-Apr-2021		20-Apr-2021
Dissolved Organic/Inorganic Carbon				24-Apr-2021		
EPH			19-Apr-2021		19-Apr-2021	
EPH by GCxGC-FID			19-Apr-2021	19-Apr-2021	19-Apr-2021	
EPH CWG GC (S)			19-Apr-2021		19-Apr-2021	
Fluoride				19-Apr-2021		
GRO by GC-FID (S)			16-Apr-2021		19-Apr-2021	
Hexavalent Chromium (s)			20-Apr-2021		20-Apr-2021	
Hexavalent Chromium (w)		19-Apr-2021				19-Apr-2021
Mercury Dissolved		20-Apr-2021		20-Apr-2021		20-Apr-2021
Metals in solid samples by OES			21-Apr-2021		21-Apr-2021	
Moisture at 105C		16-Apr-2021		16-Apr-2021		16-Apr-2021
OC OP Pesticides and Triazine Herb	22-Apr-2021			22-Apr-2021		
PAH 16 & 17 Calc				16-Apr-2021		
PAH by GCMS			20-Apr-2021	16-Apr-2021	20-Apr-2021	
PCBs by GCMS				19-Apr-2021		
pH			15-Apr-2021		19-Apr-2021	
pH Value of Filtered Water		20-Apr-2021				20-Apr-2021
Phenols by HPLC (S)			19-Apr-2021		19-Apr-2021	
Phenols by HPLC (W)				20-Apr-2021		
Sample description	15-Apr-2021	15-Apr-2021	15-Apr-2021	15-Apr-2021	15-Apr-2021	15-Apr-2021
Sulphide		21-Apr-2021				21-Apr-2021
Total Dissolved Solids				20-Apr-2021		
Total Organic Carbon			22-Apr-2021	20-Apr-2021	22-Apr-2021	
TPH CWG GC (S)			19-Apr-2021		19-Apr-2021	
VOC MS (S)			19-Apr-2021	19-Apr-2021	19-Apr-2021	

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2495
Ammoniacal Nitrogen as N	TM099	**94.4** 91.28 : 106.64

Ammonium Soil by Titration

Component	Method Code	QC 2495
Exchangeable Ammonium as NH4	TM024	**101.99** 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2477
Chloride (soluble)	TM243	**135.75** 80.93 : 111.66
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**156.54** 70.00 : 130.00

Anions by Kone (w)

Component	Method Code	QC 2445
Chloride	TM184	**101.0** 92.93 : 115.43
Sulphate (soluble)	TM184	**104.4** 90.53 : 113.03

Boron Water Soluble

Component	Method Code	QC 2457
Water Soluble Boron	TM222	**103.5** 84.00 : 111.00

Coronene

Component	Method Code	QC 2497
Coronene RAW	TM410	**99.0** 79.43 : 137.78

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2462	QC 2465
Free Cyanide	TM153	**91.88** 79.00 : 115.00	
Free Cyanide (W)	TM227		**79.25** 91.52 : 123.82
Thiocyanate	TM153	**100.0** 94.09 : 113.89	
Thiocyanate (W)	TM227		**105.75** 90.50 : 113.00
Total Cyanide	TM153	**95.8** 73.07 : 107.47	
Total Cyanide (W)	TM227		**104.0** 91.75 : 112.75

Dissolved Metals by ICP-MS

Component	Method Code	QC 2469
Aluminium	TM152	**106.33** 90.78 : 110.89
Antimony	TM152	**105.0** 77.22 : 119.42
Arsenic	TM152	**102.33** 86.77 : 107.67
Barium	TM152	**101.0** 87.86 : 110.23
Beryllium	TM152	**108.67** 86.19 : 112.98
Bismuth	TM152	**102.33** 84.06 : 106.46
Borate	TM152	**106.79** 88.00 : 112.00
Boron	TM152	**106.67** 83.92 : 114.90
Cadmium	TM152	**99.67** 88.89 : 106.69
Calcium	TM152	**108.67** 80.24 : 117.95
Chromium	TM152	**104.0** 83.22 : 110.16
Cobalt	TM152	**102.0** 82.49 : 112.36
Copper	TM152	**103.33** 83.14 : 113.00
Iron	TM152	**104.0** 88.40 : 109.24
Lead	TM152	**102.33** 83.71 : 109.58
Lithium	TM152	**107.83** 84.50 : 114.28
Magnesium	TM152	**102.67** 87.56 : 114.57
Manganese	TM152	**104.83** 90.01 : 108.72
Molybdenum	TM152	**97.67** 85.53 : 107.42

Dissolved Metals by ICP-MS

		QC 2469
Nickel	TM152	**102.67** 88.05 : 106.42
Phosphorus	TM152	**104.5** 82.76 : 107.72
Potassium	TM152	**104.0** 88.45 : 106.42
Selenium	TM152	**103.17** 85.61 : 111.03
Silver	TM152	**98.83** 88.48 : 110.48
Sodium	TM152	**102.67** 88.32 : 106.30
Strontium	TM152	**101.67** 83.77 : 107.87
Tellurium	TM152	**99.33** 82.83 : 104.73
Thallium	TM152	**93.67** 77.47 : 113.87
Tin	TM152	**103.0** 87.36 : 109.55
Titanium	TM152	**111.33** 87.29 : 108.31
Tungsten	TM152	**98.83** 68.27 : 122.97
Uranium	TM152	**99.17** 82.46 : 105.16
Vanadium	TM152	**105.5** 88.43 : 114.30
Zinc	TM152	**104.33** 85.57 : 114.31

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2456
Dissolved Inorganic Carbon	TM090	**103.17** 93.58 : 112.28
Dissolved Organic Carbon	TM090	**103.5** 96.13 : 109.53

EPH by GCxGC-FID

Component	Method Code	QC 2419
EPH >C10-C40 Raw	TM415	**80.84** 56.36 : 129.92

Fluoride

Fluoride

Component	Method Code	QC 2474
Fluoride	TM104	**104.0** 96.67 : 108.67

GRO by GC-FID (S)

Component	Method Code	QC 2462	QC 2417
QC	TM089	**93.04** 70.75 : 114.19	**92.73** 70.75 : 114.19

Hexavalent Chromium (s)

Component	Method Code	QC 2485	QC 2497
Hexavalent Chromium	TM151	**104.0** 92.00 : 111.20	**102.0** 92.00 : 111.20

Hexavalent Chromium (w)

Component	Method Code	QC 2459
Hexavalent Chromium	TM241	**102.2** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2486	QC 2491
Mercury Dissolved (CVAF)	TM183	**109.0** 69.30 : 128.70	**96.0** 69.30 : 128.70

Metals in solid samples by OES

Component	Method Code	QC 2416	QC 2420
Aluminium	TM181	**113.27** 77.46 : 123.98	**93.81** 77.46 : 123.98
Antimony	TM181	**103.66** 87.04 : 111.16	**96.34** 87.04 : 111.16
Arsenic	TM181	**106.1** 87.34 : 110.87	**96.8** 87.34 : 110.87
Barium	TM181	**108.26** 80.73 : 115.16	**94.5** 80.73 : 115.16

CERTIFICATE OF ANALYSIS

SDG:	210415-72	**Client Reference:**	784-B026948	**Report Number:**	595346
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595151

Metals in solid samples by OES

		QC 2416	QC 2420
Beryllium	TM181	**107.46** 89.47 : 112.97	**94.4** 89.47 : 112.97
Boron	TM181	**103.72** 76.57 : 104.15	**88.25** 76.57 : 104.15
Cadmium	TM181	**95.06** 78.94 : 102.43	**88.48** 78.94 : 102.43
Chromium	TM181	**100.0** 77.55 : 104.47	**85.8** 77.55 : 104.47
Cobalt	TM181	**95.6** 82.95 : 107.41	**86.16** 82.95 : 107.41
Copper	TM181	**101.58** 84.36 : 106.14	**92.78** 84.36 : 106.14
Iron	TM181	**109.52** 81.43 : 115.79	**94.44** 81.43 : 115.79
Lead	TM181	**101.58** 81.95 : 107.63	**92.79** 81.95 : 107.63
Manganese	TM181	**100.28** 94.29 : 119.51	**104.72** 94.29 : 119.51
Mercury	TM181	**100.24** 82.73 : 106.36	**91.06** 82.73 : 106.36
Molybdenum	TM181	**104.12** 86.61 : 111.07	**93.42** 86.61 : 111.07
Nickel	TM181	**97.07** 79.72 : 103.80	**87.04** 79.72 : 103.80
Phosphorus	TM181	**115.15** 92.65 : 125.47	**102.63** 92.65 : 125.47
Selenium	TM181	**107.06** 88.36 : 111.25	**98.43** 88.36 : 111.25
Strontium	TM181	**100.89** 78.06 : 99.91	**88.42** 78.06 : 99.91
Thallium	TM181	**107.96** 88.60 : 116.73	**96.46** 88.60 : 116.73
Tin	TM181	**101.14** 89.77 : 112.62	**94.68** 89.77 : 112.62
Titanium	TM181	**93.13** 66.29 : 105.96	**87.79** 66.29 : 105.96
Vanadium	TM181	**104.03** 75.51 : 108.87	**89.74** 75.51 : 108.87
Zinc	TM181	**108.42** 84.02 : 111.24	**95.48** 84.02 : 111.24

PAH by GCMS

Component	Method Code	QC 2441	QC 2437
Acenaphthene	TM218	**86.5** 76.79 : 103.90	**86.5** 78.59 : 112.16
Acenaphthylene	TM218	**85.5** 78.40 : 108.66	**86.5** 75.11 : 109.01
Anthracene	TM218	**91.5** 70.90 : 109.22	**82.5** 73.99 : 113.85
Benz(a)anthracene	TM218	**95.5** 73.77 : 119.26	**82.0** 69.31 : 119.18
Benzo(a)pyrene	TM218	**82.5** 73.20 : 114.18	**76.5** 66.97 : 114.92

PAH by GCMS

		QC 2441	QC 2437
Benzo(b)fluoranthene	TM218	**87.5** 75.36 : 117.58	**79.0** 67.41 : 114.46
Benzo(ghi)perylene	TM218	**82.5** 70.73 : 116.12	**77.5** 62.92 : 114.36
Benzo(k)fluoranthene	TM218	**87.0** 75.98 : 116.59	**82.5** 69.98 : 116.49
Chrysene	TM218	**91.5** 74.82 : 114.18	**79.5** 69.86 : 114.50
Dibenzo(ah)anthracene	TM218	**79.0** 69.17 : 115.30	**77.0** 64.54 : 115.22
Fluoranthene	TM218	**92.5** 75.88 : 112.84	**79.0** 72.56 : 111.70
Fluorene	TM218	**87.5** 76.66 : 107.56	**84.5** 79.13 : 111.49
Indeno(123cd)pyrene	TM218	**86.5** 70.26 : 117.95	**98.0** 61.22 : 113.25
Naphthalene	TM218	**85.0** 74.70 : 101.83	**87.0** 77.96 : 110.91
Phenanthrene	TM218	**90.5** 73.62 : 109.34	**80.5** 76.83 : 113.25
Pyrene	TM218	**94.0** 71.46 : 117.00	**80.0** 72.45 : 110.77

PCBs by GCMS

Component	Method Code	QC 2434
PCB congener 101	TM168	**84.4** 65.66 : 110.06
PCB congener 105	TM168	**80.2** 58.10 : 106.34
PCB congener 114	TM168	**80.6** 59.38 : 106.48
PCB congener 118	TM168	**80.3** 60.02 : 106.23
PCB congener 123	TM168	**88.0** 65.01 : 99.81
PCB congener 126	TM168	**80.9** 59.31 : 109.23
PCB congener 138	TM168	**84.7** 63.95 : 107.63
PCB congener 153	TM168	**85.6** 62.65 : 108.85
PCB congener 156	TM168	**82.0** 61.69 : 112.27
PCB congener 157	TM168	**77.5** 55.37 : 104.81
PCB congener 167	TM168	**81.2** 65.58 : 109.14
PCB congener 169	TM168	**83.9** 56.84 : 112.10
PCB congener 180	TM168	**84.1** 66.99 : 111.63
PCB congener 189	TM168	**84.4** 57.75 : 112.59

PCBs by GCMS

		QC 2434
PCB congener 28	TM168	**84.9** 73.68 : 105.96
PCB congener 52	TM168	**84.5** 67.24 : 107.62
PCB congener 77	TM168	**85.2** 64.87 : 108.49
PCB congener 81	TM168	**89.2** 70.78 : 110.80

pH

Component	Method Code	QC 2483	QC 2487
pH	TM133	**99.27** 98.41 : 102.48	**99.85** 97.51 : 101.32

pH Value of Filtered Water

Component	Method Code	QC 2445
pH	TM256	**101.07** 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2442	QC 2479
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**54.55** 70.71 : 116.42	**55.19** 70.71 : 116.42
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**46.78** 64.54 : 117.79	**46.2** 64.54 : 117.79
Cresols by HPLC (S)	TM062 (S)	**50.94** 74.40 : 108.98	**52.19** 74.40 : 108.98
Phenol by HPLC (S)	TM062 (S)	**54.97** 69.44 : 122.18	**55.63** 69.44 : 122.18
Xylenols by HPLC (S)	TM062 (S)	**51.04** 76.56 : 106.38	**51.87** 76.56 : 106.38

Phenols by HPLC (W)

Component	Method Code	QC 2471
2.3.5 Trimethyl-Phenol by HPLC (W)	TM259	**99.61** 77.41 : 127.55
2-Isopropyl Phenol by HPLC (W)	TM259	**93.69** 82.77 : 126.51
Cresols by HPLC (W)	TM259	**99.34** 76.60 : 126.28
Napthol by HPLC (W)	TM259	**101.56** 75.40 : 129.40
Phenol by HPLC (W)	TM259	**94.52** 85.77 : 125.91

Phenols by HPLC (W)

		QC 2471
Xylenols by HPLC (W)	TM259	**97.78** 79.09 : 131.82

Sulphide

Component	Method Code	QC 2436
Sulphide	TM101	**104.67** 88.90 : 112.50

Total Dissolved Solids

Component	Method Code	QC 2401
Total Dissolved Solids	TM123	**99.6** 97.30 : 100.92

Total Organic Carbon

Component	Method Code	QC 2456
Total Organic Carbon	TM132	**108.2** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2406	QC 2495
1,1,1,2-tetrachloroethane	TM116	**100.4** 84.84 : 116.25	**95.6** 84.84 : 116.25
1,1,1-Trichloroethane	TM116	**100.2** 73.73 : 118.05	**100.6** 73.73 : 118.05
1,1,2-Trichloroethane	TM116	**93.4** 77.12 : 116.04	**93.2** 77.12 : 116.04
1,1-Dichloroethane	TM116	**100.8** 74.46 : 129.15	**105.6** 74.46 : 129.15
1,2-Dichloroethane	TM116	**108.0** 92.38 : 131.65	**108.4** 92.38 : 131.65
1,4-Dichlorobenzene	TM116	**99.8** 83.64 : 126.18	**96.4** 83.64 : 126.18
2-Chlorotoluene	TM116	**86.8** 76.03 : 113.25	**88.2** 76.03 : 113.25
4-Chlorotoluene	TM116	**81.2** 66.90 : 112.46	**81.8** 66.90 : 112.46
Benzene	TM116	**100.0** 88.60 : 113.80	**102.6** 88.60 : 113.80
Carbon Disulphide	TM116	**94.6** 74.91 : 122.14	**92.4** 74.91 : 122.14

VOC MS (S)

		QC 2406	QC 2495
Carbontetrachloride	TM116	**104.4** 80.31 : 124.50	**106.2** 80.31 : 124.50
Chlorobenzene	TM116	**100.4** 83.81 : 114.18	**93.8** 83.81 : 114.18
Chloroform	TM116	**105.2** 87.40 : 122.49	**106.4** 87.40 : 122.49
Chloromethane	TM116	**104.6** 65.89 : 136.93	**106.8** 65.89 : 136.93
Cis-1,2-Dichloroethene	TM116	**101.0** 80.67 : 126.72	**99.0** 80.67 : 126.72
Dibromomethane	TM116	**97.0** 73.23 : 118.35	**94.0** 73.23 : 118.35
Dichloromethane	TM116	**107.6** 81.11 : 133.25	**108.0** 81.11 : 133.25
Ethylbenzene	TM116	**88.6** 75.92 : 110.41	**88.4** 75.92 : 110.41
Hexachlorobutadiene	TM116	**54.2** 12.82 : 152.73	**75.4** 12.82 : 152.73
Isopropylbenzene	TM116	**71.0** 55.79 : 97.59	**83.4** 55.79 : 97.59
Naphthalene	TM116	**99.8** 80.86 : 128.81	**93.6** 80.86 : 128.81
o-Xylene	TM116	**86.8** 69.99 : 108.74	**84.8** 69.99 : 108.74
p/m-Xylene	TM116	**82.4** 68.32 : 108.91	**84.2** 68.32 : 108.91
Sec-Butylbenzene	TM116	**59.6** 38.50 : 101.50	**84.4** 38.50 : 101.50
Tetrachloroethene	TM116	**98.6** 76.95 : 121.02	**97.4** 76.95 : 121.02
Toluene	TM116	**91.6** 74.24 : 107.42	**93.6** 74.24 : 107.42
Trichloroethene	TM116	**95.6** 85.28 : 109.36	**96.2** 85.28 : 109.36
Trichlorofluoromethane	TM116	**101.8** 84.55 : 133.27	**102.8** 84.55 : 133.27
Vinyl Chloride	TM116	**104.6** 68.02 : 143.37	**107.0** 68.02 : 143.37

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

Work Order	: **PR2133349**	Issue Date	: 22-Apr-2021
Customer	: **ALS Life Sciences Ltd**	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: [redacted]	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 210415-72	Page	: 1 of 2
Order number	: ----	Date Samples Received	: 19-Apr-2021
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 20-Apr-2021 - 22-Apr-2021
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories		*Position*
Zdeněk Jirák	[redacted]	Environmental Business Unit Manager

The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)

Analytical Results

Sub-Matrix: **SOIL**			Client sample ID	**24082304 WS64**		**24083060 WS66**		**----**	
			Laboratory sample ID	*PR2133349-001*		*PR2133349-002*		----	
			Client sampling date / time	15-Apr-2021		15-Apr-2021		----	
Parameter	*Method*	*LOR*	*Unit*	**Result**	**MU**	**Result**	**MU**	**Result**	**MU**
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	**92.8**	± 6.0%	**92.7**	± 6.0%	**----**	----
Pesticides									
2.4.5-T	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
2.4.5-TP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
2.4-D	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
2.4-DB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
2.4-DP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
4-CPP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Bentazone	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Dinoseb	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Fluroxypyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
MCPA	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
MCPB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
MCPP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Acifluorfen	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Bromoxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
DNOC	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Dicamba	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Diclofop	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Ioxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Propoxycarbazone-sodium	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Triclopyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Triclosan	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.
Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	*Method Descriptions*
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PESLMSA1	CZ_SOP_D06_03_182.B (CSN EN 15637, US EPA 1694) Determination of acidic herbicides and drug residues by liquid chromatography method with MS/MS detection.

A `*` symbol preceding any method indicates laboratory or subcontractor non-accredited test. In the case when a procedure belonging to an accredited method was used for non-accredited matrix, would apply that the reported results are non-accredited. Please refer to General Comment section on front page for information. If the report contains subcontracted analysis, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.
The calculation methods of summation parameters are available on request in the client service.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	04 May 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210415-75
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	596404

This report has been revised and directly supersedes 595347 in its entirety.

We received 15 samples on Thursday April 15, 2021 and 6 of these samples were scheduled for analysis which was completed on Tuesday May 04, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210415-75	**Client Reference:**	784-B026948	**Report Number:**	596404
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595347

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24079448	BH17	ES1	0.10 - 0.10	13/04/2021
24079536	BH17	ES4	0.40 - 0.40	13/04/2021
24079555	BH21	ES1	0.10 - 0.10	13/04/2021
24079565	BH21	ES4	0.70 - 0.70	13/04/2021
24079476	WS46	ES1	0.10 - 0.10	13/04/2021
24079489	WS46	ES4	1.00 - 1.00	13/04/2021
24079503	WS46	ES9	2.00 - 2.00	13/04/2021
24079511	WS46	ES10	2.30 - 2.30	13/04/2021
24079517	WS46	ES13	3.00 - 3.00	13/04/2021
24079524	WS46	ES16	4.00 - 4.00	13/04/2021
24079583	WS48	ES1	0.10 - 0.10	13/04/2021
24079598	WS48	ES3	0.60 - 0.60	13/04/2021
24079613	WS48	ES6	1.50 - 1.50	13/04/2021
24079623	WS48	ES8	2.50 - 2.50	13/04/2021
24079633	WS48	ES11	3.50 - 3.50	13/04/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210415-75	**Client Reference:**	784-B026948	**Report Number:**	596404
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595347

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24079536			24079511			24079517			24079598			24079613			24079623	
Customer Sample Reference			BH17			WS46			WS46			WS48			WS48			WS48	
AGS Reference			ES4			ES10			ES13			ES3			ES6			ES8	
Depth (m)			0.40 - 0.40			2.30 - 2.30			3.00 - 3.00			0.60 - 0.60			1.50 - 1.50			2.50 - 2.50	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)		1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Acid herbicides*	All	NDPs: 0 Tests: 1		X															
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 4		X			X			X			X						
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 3	X			X									X				
Ammonium Soil by Titration	All	NDPs: 0 Tests: 4		X			X			X			X						
Anions by Kone (soil)	All	NDPs: 0 Tests: 4		X			X			X			X						
Anions by Kone (w)	All	NDPs: 0 Tests: 1				X													
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 4	X			X			X			X							
Boron Water Soluble	All	NDPs: 0 Tests: 4		X			X			X			X						
CEN Readings	All	NDPs: 0 Tests: 3	X			X									X				
Clostridia Perfringens (S)*	All	NDPs: 0 Tests: 2							X									X	
Coronene	All	NDPs: 0 Tests: 1					X												
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 7	X	X		X	X			X			X		X				
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 3	X			X									X				
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1				X													
Enterococci Species (S)*	All	NDPs: 0 Tests: 2								X									X

Validated

CERTIFICATE OF ANALYSIS

SDG:	210415-75	**Client Reference:**	784-B026948	**Report Number:**	596404
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595347

Results Legend

- X Test
- N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24079536			24079511			24079517			24079598			24079613		24079623	
Customer Sample Reference			BH17			WS46			WS46			WS48			WS48		WS48	
AGS Reference			ES4			ES10			ES13			ES3			ES6		ES8	
Depth (m)			0.40 - 0.40			2.30 - 2.30			3.00 - 3.00			0.60 - 0.60			1.50 - 1.50		2.50 - 2.50	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
EPH	All	NDPs: 0 Tests: 4		X			X			X			X					
EPH by GCxGC-FID	All	NDPs: 0 Tests: 4		X			X			X			X					
EPH CWG GC (S)	All	NDPs: 0 Tests: 4		X			X			X			X					
Fluoride	All	NDPs: 0 Tests: 1				X												
GRO by GC-FID (S)	All	NDPs: 0 Tests: 4			X			X			X			X				
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 4		X			X			X			X					
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 3	X			X									X			
Mercury Dissolved	All	NDPs: 0 Tests: 3	X			X									X			
Metals in solid samples by OES	All	NDPs: 0 Tests: 4		X			X			X			X					
OC OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 1		X														
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1					X											
PAH by GCMS	All	NDPs: 0 Tests: 4		X			X			X			X					
PCBs by GCMS	All	NDPs: 0 Tests: 2					X						X					
pH	All	NDPs: 0 Tests: 4		X			X			X			X					
pH Value of Filtered Water	All	NDPs: 0 Tests: 3	X			X									X			

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Validated

CERTIFICATE OF ANALYSIS

SDG:	210415-75	**Client Reference:**	784-B026948	**Report Number:**	596404
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595347

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24079536			24079511			24079517			24079598			24079613		24079623	
Customer Sample Reference			BH17			WS46			WS46			WS48			WS48		WS48	
AGS Reference			ES4			ES10			ES13			ES3			ES6		ES8	
Depth (m)			0.40 - 0.40			2.30 - 2.30			3.00 - 3.00			0.60 - 0.60			1.50 - 1.50		2.50 - 2.50	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Phenols by HPLC (S)	All	NDPs: 0 Tests: 4		X			X			X			X					
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1				X												
Sample description	All	NDPs: 0 Tests: 6		X			X			X			X			X		X
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 3					X			X			X					
Sulphide	All	NDPs: 0 Tests: 3	X			X									X			
Total Coliforms(S)*	All	NDPs: 0 Tests: 2							X								X	
Total Dissolved Solids	All	NDPs: 0 Tests: 1				X												
Total Organic Carbon	All	NDPs: 0 Tests: 4		X			X			X			X					
TPH CWG GC (S)	All	NDPs: 0 Tests: 4		X			X			X			X					
VOC MS (S)	All	NDPs: 0 Tests: 4			X			X			X			X				

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CERTIFICATE OF ANALYSIS

SDG:	210415-75	**Client Reference:**	784-B026948	**Report Number:**	596404
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595347

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24079536	BH17	0.40 - 0.40	Light Brown	Sand	Stones	None
24079511	WS46	2.30 - 2.30	Light Brown	Sandy Loam	Stones	Vegetation
24079517	WS46	3.00 - 3.00	Light Brown	Sandy Loam	Stones	None
24079598	WS48	0.60 - 0.60	Dark Brown	Sandy Loam	Stones	Brick
24079613	WS48	1.50 - 1.50	Dark Brown	Sandy Loam	Stones	Vegetation
24079623	WS48	2.50 - 2.50	Light Brown	Sand	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210415-75	**Client Reference:**	784-B026948	**Report Number:**	596404
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595347

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH17	WS46	WS46	WS48	WS48	WS48
			Depth (m)	0.40 - 0.40	2.30 - 2.30	3.00 - 3.00	0.60 - 0.60	1.50 - 1.50	2.50 - 2.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	13/04/2021	13/04/2021	13/04/2021	13/04/2021	13/04/2021	13/04/2021
			Sample Time	.	.	.	.	.	.
			Date Received	15/04/2021	15/04/2021	15/04/2021	15/04/2021	15/04/2021	15/04/2021
			SDG Ref	210415-75	210415-75	210415-75	210415-75	210415-75	210415-75
			Lab Sample No.(s)	24079536	24079511	24079517	24079598	24079613	24079623
			AGS Reference	ES4	ES10	ES13	ES3	ES6	ES8
Moisture Content Ratio (% of as received sample)	%	PM024		5.6	31	16	15	10	11
2,4,5-T*	<0.01 mg/kg	SUB		<0.01					
Clostridia Perfringens*	CFU/G	SUB				<10			<10
Enterococcus Species (RW8)*	CFU/G	SUB				<10			7200
Total Coliforms (RW7)*	CFU/G	SUB				<10			<10
2,4,5-TP (Fenoprop)*	<0.01 mg/kg	SUB		<0.01					
2,4-D*	<0.01 mg/kg	SUB		<0.01					
2,4-DB*	<0.01 mg/kg	SUB		<0.01					
2,4-Dichloroprop (2,4 DP)*	<0.01 mg/kg	SUB		<0.01					
4-Chlorophenoxyacetic acid (4-CPA)*	<0.01 mg/kg	SUB		<0.01					
Acifluorfen*	<0.01 mg/kg	SUB		<0.01					
Bentazone*	<0.01 mg/kg	SUB		<0.01					
Bromoxynil*	<0.01 mg/kg	SUB		<0.01					
Dicamba*	<0.01 mg/kg	SUB		<0.01					
Diclofop*	<0.01 mg/kg	SUB		<0.01					
Dinoseb*	<0.01 mg/kg	SUB		<0.01					
DNOC*	<0.01 mg/kg	SUB		<0.01					
Fluroxypyr*	<0.01 mg/kg	SUB		<0.01					
Ioxynil*	<0.01 mg/kg	SUB		<0.01					
2-methyl-4-Chlorophenoxyacetic acid (MCPA)*	<0.01 mg/kg	SUB		<0.01					
4-(4-Chloro-o-tolyloxy) butyric acid (MCPB)*	<0.01 mg/kg	SUB		<0.01					
Mecoprop (MCPP)*	<0.01 mg/kg	SUB		<0.01					
Propoxycarbazone-sodium*	<0.01 mg/kg	SUB		<0.01					
Triclopyr*	<0.01 mg/kg	SUB		<0.01					
Triclosan*	<0.01 mg/kg	SUB		<0.01					
Exchangeable Ammonia as N	<12 mg/kg	TM024		<12 M	<12 M	19.6 M	<12 M		
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 M	1.58 M	<0.01 M	<0.01 M		
Cresols	<0.01 mg/kg	TM062 (S)		<0.01 M	11.7 M	<0.01 M	<0.01 M		
Xylenols	<0.015 mg/kg	TM062 (S)		<0.015 M	42.8 M	<0.015 M	<0.015 M		
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 M	56.1 M	<0.035 M	<0.035 M		
Organic Carbon, Total	<0.2 %	TM132			0.515 M				
Soil Organic Matter (SOM)	<0.35 %	TM132		<0.35 #	0.888 #	0.9 #	26.5 #		
pH	1 pH Units	TM133		7.63 M	12.5 M	3.13 M	8.24 M		

CERTIFICATE OF ANALYSIS

SDG:	210415-75	**Client Reference:**	784-B026948	**Report Number:**	596404
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595347

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH17	WS46	WS46	WS48	WS48	WS48
			Depth (m)	0.40 - 0.40	2.30 - 2.30	3.00 - 3.00	0.60 - 0.60	1.50 - 1.50	2.50 - 2.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	13/04/2021	13/04/2021	13/04/2021	13/04/2021	13/04/2021	13/04/2021
			Sample Time	.	.	.	.	.	.
			Date Received	15/04/2021	15/04/2021	15/04/2021	15/04/2021	15/04/2021	15/04/2021
			SDG Ref	210415-75	210415-75	210415-75	210415-75	210415-75	210415-75
			Lab Sample No.(s)	24079536	24079511	24079517	24079598	24079613	24079623
			AGS Reference	ES4	ES10	ES13	ES3	ES6	ES8
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #		
Cyanide, Total	<1 mg/kg	TM153		<1 M	13.6 M	17.8 M	<1 M		
PCB congener 28	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 52	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 101	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 118	<0.003 mg/kg	TM168			<0.003 M		<0.003 M		
PCB congener 138	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 153	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 180	<0.003 mg/kg	TM168			<0.003 M				
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168			<0.021				
PCB congener 81	<0.003 mg/kg	TM168			<0.003 M		<0.003 M		
PCB congener 77	<0.003 mg/kg	TM168			<0.003 M		<0.003 M		
PCB congener 123	<0.003 mg/kg	TM168			<0.003 M		<0.003 M		
PCB congener 114	<0.003 mg/kg	TM168			<0.003 M		<0.003 M		
PCB congener 105	<0.003 mg/kg	TM168			<0.003 M		<0.003 M		
PCB congener 126	<0.003 mg/kg	TM168			<0.003 M		<0.003 M		
PCB congener 167	<0.003 mg/kg	TM168			<0.003 M		<0.003 M		
PCB congener 156	<0.003 mg/kg	TM168			<0.003 M		<0.003 M		
PCB congener 157	<0.003 mg/kg	TM168			<0.003 M		<0.003 M		
PCB congener 169	<0.003 mg/kg	TM168			<0.003 M		<0.003 M		
PCB congener 189	<0.003 mg/kg	TM168			<0.003 M		<0.003 M		
Sum of detected WHO 12 PCBs	<0.036 mg/kg	TM168			<0.036		<0.036		
Arsenic	<0.6 mg/kg	TM181		5.64 M	610 M	104 M	20.5 M		
Cadmium	<0.02 mg/kg	TM181		0.0798 M	0.101 M	0.0545 M	0.534 M		
Chromium	<0.9 mg/kg	TM181		3.86 M	3.5 M	26.1 M	114 M		
Copper	<1.4 mg/kg	TM181		7.15 M	6.31 M	17.5 M	134 M		
Iron	<1000 mg/kg	TM181		14500 #	2620 #	31200 #	24300 #		
Lead	<0.7 mg/kg	TM181		11.6 M	70.8 M	16.5 M	145 M		
Mercury	<0.1 mg/kg	TM181		<0.1 M	0.579 M	<0.1 M	<0.1 M		
Nickel	<0.2 mg/kg	TM181		8.69 M	2.44 M	12.1 M	28.6 M		
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #		
Vanadium	<0.2 mg/kg	TM181		13.1 #	4.68 #	43.4 #	49.1 #		
Zinc	<1.9 mg/kg	TM181		28.3 M	51.8 M	69.8 M	287 M		

CERTIFICATE OF ANALYSIS

SDG:	210415-75	**Client Reference:**	784-B026948	**Report Number:**	596404
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595347

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH17	WS46	WS46	WS48	WS48	WS48
			Depth (m)	0.40 - 0.40	2.30 - 2.30	3.00 - 3.00	0.60 - 0.60	1.50 - 1.50	2.50 - 2.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	13/04/2021	13/04/2021	13/04/2021	13/04/2021	13/04/2021	13/04/2021
			Sample Time	.	.	.	.	.	.
			Date Received	15/04/2021	15/04/2021	15/04/2021	15/04/2021	15/04/2021	15/04/2021
			SDG Ref	210415-75	210415-75	210415-75	210415-75	210415-75	210415-75
			Lab Sample No.(s)	24079536	24079511	24079517	24079598	24079613	24079623
			AGS Reference	ES4	ES10	ES13	ES3	ES6	ES8
Boron, water soluble	<1 mg/kg	TM222		<1 M	<1 M	1.14 M	<1 M		
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		<0.004 M	1.08 M	1.02 M	0.0394 M		
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248		5.01	6.18	14.2	8.75		
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410			19100				
Coronene	<0.2 mg/kg	TM410			<0.2				
EPH (C5-C40)	<35 mg/kg	TM415		<35	20100	<35	61		
EPH Surrogate % recovery**	%	TM415		93.4	139	93.2	98.6		
EPH >C10-C40	<35 mg/kg	TM415		<35 M	20100	<35 M	61 M		
Mineral Oil >C10-C40	<5 mg/kg	TM415			305				

CERTIFICATE OF ANALYSIS

SDG:	210415-75	**Client Reference:**	784-B026948	**Report Number:**	596404
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595347

OC OP Pesticides and Triazine Herb

Results Legend

#	ISO17025 accredited.
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aq	Aqueous / settled sample.
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(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH17
Depth (m)	0.40 - 0.40
Sample Type	Soil/Solid (S)
Date Sampled	13/04/2021
Sample Time	.
Date Received	15/04/2021
SDG Ref	210415-75
Lab Sample No.(s)	24079536
AGS Reference	ES4

Component	LOD/Units	Method	
Dichlorvos	<0.05 mg/kg	TM073	<0.05
Mevinphos	<0.05 mg/kg	TM073	<0.05
Phorate	<0.05 mg/kg	TM073	<0.05
alpha-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073	<0.05
Diazinon	<0.05 mg/kg	TM073	<0.05
gamma-Hexachlorocyclohexane (HCH / Lindane)	<0.05 mg/kg	TM073	<0.05
Disulfoton	<0.05 mg/kg	TM073	<0.05
Heptachlor	<0.05 mg/kg	TM073	<0.05
Aldrin	<0.05 mg/kg	TM073	<0.05
beta-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073	<0.05
Methyl parathion	<0.05 mg/kg	TM073	<0.05
Malathion	<0.05 mg/kg	TM073	<0.05
Fenitrothion	<0.05 mg/kg	TM073	<0.05
Heptachlor epoxide	<0.05 mg/kg	TM073	<0.05
Parathion	<0.05 mg/kg	TM073	<0.05
Endosulphan I	<0.05 mg/kg	TM073	<0.05
p,p-DDE	<0.05 mg/kg	TM073	<0.05
Dieldrin	<0.05 mg/kg	TM073	<0.05
Endrin	<0.05 mg/kg	TM073	<0.05
p,p-TDE (DDD)	<0.05 mg/kg	TM073	<0.05
Ethion	<0.05 mg/kg	TM073	<0.05
Endosulphan II	<0.05 mg/kg	TM073	<0.05
p,p-DDT	<0.05 mg/kg	TM073	<0.05
p,p-Methoxychlor	<0.05 mg/kg	TM073	<0.05
Endosulphan sulphate	<0.05 mg/kg	TM073	<0.05
Azinphos-methyl	<0.05 mg/kg	TM073	<0.05

CERTIFICATE OF ANALYSIS

SDG:	210415-75	**Client Reference:**	784-B026948	**Report Number:**	596404
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595347

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
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diss.filt	Dissolved / filtered sample.
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**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH17	WS46	WS46	WS48		
			Depth (m)	0.40 - 0.40	2.30 - 2.30	3.00 - 3.00	0.60 - 0.60		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	13/04/2021	13/04/2021	13/04/2021	13/04/2021		
			Sample Time	.	.	.	.		
			Date Received	15/04/2021	15/04/2021	15/04/2021	15/04/2021		
			SDG Ref	210415-75	210415-75	210415-75	210415-75		
			Lab Sample No.(s)	24079536	24079511	24079517	24079598		
			AGS Reference	ES4	ES10	ES13	ES3		
Naphthalene-d8 % recovery**	%	TM218		86.8	240	81.1	84.2		
Acenaphthene-d10 % recovery**	%	TM218		89.3	380	82.6	90.7		
Phenanthrene-d10 % recovery**	%	TM218		84.7	440	80.1	91.2		
Chrysene-d12 % recovery**	%	TM218		70.4	340	66.1	77.5		
Perylene-d12 % recovery**	%	TM218		78.5	360	68.8	71.2		
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	19000 M	0.354 M	0.319 M		
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 M	<24 M	<0.012 M	0.0744 M		
Acenaphthene	<0.008 mg/kg	TM218		<0.008 M	<16 M	<0.008 M	0.0114 M		
Fluorene	<0.01 mg/kg	TM218		<0.01 M	<20 M	<0.01 M	0.0234 M		
Phenanthrene	<0.015 mg/kg	TM218		<0.015 M	79.6 M	<0.015 M	0.513 M		
Anthracene	<0.016 mg/kg	TM218		<0.016 M	<32 M	<0.016 M	0.143 M		
Fluoranthene	<0.017 mg/kg	TM218		<0.017 M	<34 M	<0.017 M	1.31 M		
Pyrene	<0.015 mg/kg	TM218		<0.015 M	<30 M	<0.015 M	1.18 M		
Benz(a)anthracene	<0.014 mg/kg	TM218		<0.014 M	<28 M	<0.014 M	0.776 M		
Chrysene	<0.01 mg/kg	TM218		<0.01 M	<20 M	<0.01 M	0.737 M		
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		<0.015 M	<30 M	<0.015 M	0.975 M		
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		<0.014 M	<28 M	<0.014 M	0.322 M		
Benzo(a)pyrene	<0.015 mg/kg	TM218		<0.015 M	<30 M	<0.015 M	0.612 M		
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		<0.018 M	<36 M	<0.018 M	0.426 M		
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	<46 M	<0.023 M	0.071 M		
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		<0.024 M	<48 M	<0.024 M	0.393 M		
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		<0.118	19100	0.354	7.89		

CERTIFICATE OF ANALYSIS

SDG:	210415-75	**Client Reference:**	784-B026948	**Report Number:**	596404
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595347

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS46	WS46	WS48			
			Depth (m)	2.30 - 2.30	3.00 - 3.00	0.60 - 0.60			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	13/04/2021	13/04/2021	13/04/2021			
			Sample Time	.	.	.			
			Date Received	15/04/2021	15/04/2021	15/04/2021			
			SDG Ref	210415-75	210415-75	210415-75			
			Lab Sample No.(s)	24079511	24079517	24079598			
			AGS Reference	ES10	ES13	ES3			
Phenol	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
Pentachlorophenol	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
Nitrobenzene	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
Isophorone	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
Hexachloroethane	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157		<5	<0.2	<0.1			
Hexachlorobutadiene	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
Hexachlorobenzene	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
n-Dioctyl phthalate	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
Dimethyl phthalate	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
Diethyl phthalate	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
n-Dibutyl phthalate	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
Dibenzofuran	<0.1 mg/kg	TM157		28.9	<0.1	<0.1			
Carbazole	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
Butylbenzyl phthalate	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157		<5	<0.1	0.468			
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
Azobenzene	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
4-Nitrophenol	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
4-Nitroaniline	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
4-Methylphenol	<0.1 mg/kg	TM157		8.26	<0.1	<0.1			
4-Chlorophenylphenylether	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
4-Chloroaniline	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
4-Bromophenylphenylether	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
3-Nitroaniline	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
2-Nitrophenol	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
2-Nitroaniline	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
2-Methylphenol	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
2-Chlorophenol	<0.1 mg/kg	TM157		<5	<0.1	<0.1			

CERTIFICATE OF ANALYSIS

SDG:	210415-75	**Client Reference:**	784-B026948	**Report Number:**	596404
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595347

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS46	WS46	WS48			
			Depth (m)	2.30 - 2.30	3.00 - 3.00	0.60 - 0.60			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	13/04/2021	13/04/2021	13/04/2021			
			Sample Time	.	.	.			
			Date Received	15/04/2021	15/04/2021	15/04/2021			
			SDG Ref	210415-75	210415-75	210415-75			
			Lab Sample No.(s)	24079511	24079517	24079598			
			AGS Reference	ES10	ES13	ES3			
2,6-Dinitrotoluene	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
2,4-Dinitrotoluene	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
2,4-Dimethylphenol	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
2,4-Dichlorophenol	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
1,4-Dichlorobenzene	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
1,3-Dichlorobenzene	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
1,2-Dichlorobenzene	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
2-Chloronaphthalene	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
2-Methylnaphthalene	<0.1 mg/kg	TM157		47.5	<0.1	0.48			
Acenaphthylene	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
Acenaphthene	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
Anthracene	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
Benzo(a)anthracene	<0.1 mg/kg	TM157		<5	<0.1	0.48			
Benzo(b)fluoranthene	<0.1 mg/kg	TM157		<5	<0.1	0.246			
Benzo(k)fluoranthene	<0.1 mg/kg	TM157		<5	<0.1	0.339			
Benzo(a)pyrene	<0.1 mg/kg	TM157		<5	<0.1	0.351			
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157		<5	<0.1	0.14			
Chrysene	<0.1 mg/kg	TM157		<5	<0.1	0.562			
Fluoranthene	<0.1 mg/kg	TM157		<5	<0.1	0.913			
Fluorene	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157		<5	<0.1	0.187			
Phenanthrene	<0.1 mg/kg	TM157		39.1	<0.1	0.456			
Pyrene	<0.1 mg/kg	TM157		<5	<0.1	0.924			
Naphthalene	<0.1 mg/kg	TM157		16200	0.48	0.421			
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157		<5	<0.1	<0.1			
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157		<5	<0.1	<0.1			

Validated

CERTIFICATE OF ANALYSIS

SDG:	210415-75	**Client Reference:**	784-B026948	**Report Number:**	596404
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595347

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH17	WS46	WS46	WS48		
			Depth (m)	0.40 - 0.40	2.30 - 2.30	3.00 - 3.00	0.60 - 0.60		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	13/04/2021	13/04/2021	13/04/2021	13/04/2021		
			Sample Time	.	.	.	.		
			Date Received	15/04/2021	15/04/2021	15/04/2021	15/04/2021		
			SDG Ref	210415-75	210415-75	210415-75	210415-75		
			Lab Sample No.(s)	24079536	24079511	24079517	24079598		
			AGS Reference	ES4	ES10	ES13	ES3		
GRO Surrogate % recovery**	%	TM089		94	104 3	102	71.6		
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	0.602 3	0.0372	<0.01		
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	0.53 3	0.0552	<0.01		
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	1.84 3	0.408	<0.01		
Aliphatics >C10-C12	<1 mg/kg	TM414		<1	35.3	<1	<1		
Aliphatics >C12-C16	<1 mg/kg	TM414		<1	453	<1	<1		
Aliphatics >C16-C21	<1 mg/kg	TM414		<1	270	<1	2.07		
Aliphatics >C21-C35	<1 mg/kg	TM414		<1	45.3	1.34	15.1		
Aliphatics >C35-C44	<1 mg/kg	TM414		<1	<10	<1	<1		
Total Aliphatics >C10-C44	<5 mg/kg	TM414		<5	804	<5	18.9		
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		<10	50600	<10	44.8		
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.2 3	<0.01	<0.01		
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.2 3	<0.01	<0.01		
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	1.23 3	0.272	<0.01		
Aromatics > EC10-EC12	<1 mg/kg	TM414		<1	46900	<1	<1		
Aromatics > EC12-EC16	<1 mg/kg	TM414		<1	2070	<1	1.84		
Aromatics > EC16-EC21	<1 mg/kg	TM414		<1	841	<1	3.58		
Aromatics > EC21-EC35	<1 mg/kg	TM414		<1	48.5	1.14	19		
Aromatics >EC35-EC44	<1 mg/kg	TM414		<1	<10	<1	1.38		
Aromatics > EC40-EC44	<1 mg/kg	TM414		<1	<10	<1	<1		
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		<5	49800	<5	26		
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		<10	50600	<10	44.8		
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		<0.05	2.98 3	0.5	<0.05		
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		<0.05	1.23 3	0.272	<0.05		
GRO >C5-C10	<0.02 mg/kg	TM089		<0.02	4.2 3	0.773	<0.02		

CERTIFICATE OF ANALYSIS

SDG:	210415-75	**Client Reference:**	784-B026948	**Report Number:**	596404
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595347

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH17	WS46	WS46	WS48		
			Depth (m)	0.40 - 0.40	2.30 - 2.30	3.00 - 3.00	0.60 - 0.60		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	13/04/2021	13/04/2021	13/04/2021	13/04/2021		
			Sample Time	.	.	.	.		
			Date Received	15/04/2021	15/04/2021	15/04/2021	15/04/2021		
			SDG Ref	210415-75	210415-75	210415-75	210415-75		
			Lab Sample No.(s)	24079536	24079511	24079517	24079598		
			AGS Reference	ES4	ES10	ES13	ES3		
Dibromofluoromethane**	%	TM116		109	108	113	103		
Toluene-d8**	%	TM116		100	96.8	100	98.4		
4-Bromofluorobenzene**	%	TM116		101	87.1	101	90.4		
Dichlorodifluoromethane	<0.006 mg/kg	TM116			<0.12 M	<0.12 M	<0.12 M		
Chloromethane	<0.007 mg/kg	TM116			<0.14 #	<0.14 #	<0.14 #		
Vinyl Chloride	<0.006 mg/kg	TM116			<0.12 M	<0.12 M	<0.12 M		
Bromomethane	<0.01 mg/kg	TM116			<0.2 M	<0.2 M	<0.2 M		
Chloroethane	<0.01 mg/kg	TM116			<0.2 M	<0.2 M	<0.2 M		
Trichlorofluorormethane	<0.006 mg/kg	TM116			<0.12 M	<0.12 M	<0.12 M		
1,1-Dichloroethene	<0.01 mg/kg	TM116			<0.2 #	<0.2 #	<0.2 #		
Carbon Disulphide	<0.007 mg/kg	TM116			<0.14 M	<0.14 M	<0.14 M		
Dichloromethane	<0.01 mg/kg	TM116			<0.2 #	<0.2 #	<0.2 #		
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M	<0.2 M		
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116			<0.2 M	<0.2 M	<0.2 M		
1,1-Dichloroethane	<0.008 mg/kg	TM116			<0.16 M	<0.16 M	<0.16 M		
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116			<0.12 M	<0.12 M	<0.12 M		
2,2-Dichloropropane	<0.01 mg/kg	TM116			<0.2	<0.2	<0.2		
Bromochloromethane	<0.01 mg/kg	TM116			<0.2 M	<0.2 M	<0.2 M		
Chloroform	<0.008 mg/kg	TM116			<0.16 M	<0.16 M	<0.16 M		
1,1,1-Trichloroethane	<0.007 mg/kg	TM116			<0.14 3 M	<0.14 3 M	<0.14 M		
1,1-Dichloropropene	<0.01 mg/kg	TM116			<0.2 M	<0.2 M	<0.2 M		
Carbontetrachloride	<0.01 mg/kg	TM116			<0.2 M	<0.2 M	<0.2 M		
1,2-Dichloroethane	<0.005 mg/kg	TM116			<0.1 M	<0.1 M	<0.1 M		
Benzene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M	<0.18 M	<0.18 M		
Trichloroethene	<0.009 mg/kg	TM116			<0.18 #	<0.18 #	0.28 #		
1,2-Dichloropropane	<0.01 mg/kg	TM116			<0.2 M	<0.2 M	<0.2 M		
Dibromomethane	<0.009 mg/kg	TM116			<0.18 M	<0.18 M	<0.18 M		
Bromodichloromethane	<0.007 mg/kg	TM116			<0.14 M	<0.14 M	<0.14 M		
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116			<0.2 M	<0.2 M	<0.2 M		
Toluene	<0.007 mg/kg	TM116		<0.14 M	<0.14 M	<0.14 M	<0.14 M		
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116			<0.2	<0.2	<0.2		
1,1,2-Trichloroethane	<0.01 mg/kg	TM116			<0.2 M	<0.2 M	<0.2 M		
1,3-Dichloropropane	<0.007 mg/kg	TM116			<0.14 M	<0.14 M	<0.14 M		

CERTIFICATE OF ANALYSIS

SDG:	210415-75	**Client Reference:**	784-B026948	**Report Number:**	596404
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595347

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH17	WS46	WS46	WS48		
			Depth (m)	0.40 - 0.40	2.30 - 2.30	3.00 - 3.00	0.60 - 0.60		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	13/04/2021	13/04/2021	13/04/2021	13/04/2021		
			Sample Time	.	.	.	.		
			Date Received	15/04/2021	15/04/2021	15/04/2021	15/04/2021		
			SDG Ref	210415-75	210415-75	210415-75	210415-75		
			Lab Sample No.(s)	24079536	24079511	24079517	24079598		
			AGS Reference	ES4	ES10	ES13	ES3		
Tetrachloroethene	<0.005 mg/kg	TM116			<0.1 M	<0.1 M	<0.1 M		
Dibromochloromethane	<0.01 mg/kg	TM116			<0.2 M	<0.2 M	<0.2 M		
1,2-Dibromoethane	<0.01 mg/kg	TM116			<0.2 M	<0.2 M	<0.2 M		
Chlorobenzene	<0.005 mg/kg	TM116			<0.1 M	<0.1 M	<0.1 M		
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116			<0.2 M	<0.2 M	<0.2 M		
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 M	<0.08 M	<0.08 M	<0.08 M		
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #	<0.2 #	<0.2 #		
o-Xylene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M	<0.2 M		
Styrene	<0.01 mg/kg	TM116			<0.2 #	<0.2 #	<0.2 #		
Bromoform	<0.01 mg/kg	TM116			<0.2 M	<0.2 M	<0.2 M		
Isopropylbenzene	<0.005 mg/kg	TM116			<0.1 #	<0.1 #	<0.1 #		
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116			<0.2 #	<0.2 #	<0.2 #		
1,2,3-Trichloropropane	<0.016 mg/kg	TM116			<0.32 M	<0.32 M	<0.32 M		
Bromobenzene	<0.01 mg/kg	TM116			<0.2 M	<0.2 M	<0.2 M		
Propylbenzene	<0.01 mg/kg	TM116			<0.2 M	<0.2 M	<0.2 M		
2-Chlorotoluene	<0.009 mg/kg	TM116			<0.18 M	<0.18 M	<0.18 M		
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116			<0.16 M	<0.16 M	<0.16 M		
4-Chlorotoluene	<0.01 mg/kg	TM116			<0.2 M	<0.2 M	<0.2 M		
tert-Butylbenzene	<0.014 mg/kg	TM116			<0.28 M	<0.28 M	<0.28 M		
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116			<0.18 #	<0.18 #	<0.18 #		
sec-Butylbenzene	<0.01 mg/kg	TM116			<0.2	<0.2	<0.2		
4-Isopropyltoluene	<0.01 mg/kg	TM116			<0.2 M	<0.2 M	<0.2 M		
1,3-Dichlorobenzene	<0.008 mg/kg	TM116			<0.16 M	<0.16 M	<0.16 M		
1,4-Dichlorobenzene	<0.005 mg/kg	TM116			<0.1 M	<0.1 M	<0.1 M		
n-Butylbenzene	<0.011 mg/kg	TM116			<0.22	<0.22	<0.22		
1,2-Dichlorobenzene	<0.01 mg/kg	TM116			<0.2 M	<0.2 M	<0.2 M		
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116			<0.28 M	<0.28 M	<0.28 M		
Tert-amyl methyl ether	<0.01 mg/kg	TM116			<0.2 #	<0.2 #	<0.2 #		
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116			<0.4	<0.4	<0.4		
Hexachlorobutadiene	<0.02 mg/kg	TM116			<0.4	<0.4	<0.4		
Naphthalene	<0.013 mg/kg	TM116			>550 3 M	7.94 M	<0.26 M		
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116			<0.4 #	<0.4 #	<0.4 #		
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116			<0.4	<0.4	<0.4		

CERTIFICATE OF ANALYSIS

SDG:	210415-75	**Client Reference:**	784-B026948	**Report Number:**	596404
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595347

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH17	WS46	WS46	WS48		
			Depth (m)	0.40 - 0.40	2.30 - 2.30	3.00 - 3.00	0.60 - 0.60		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	13/04/2021	13/04/2021	13/04/2021	13/04/2021		
			Sample Time	.	.	.	.		
			Date Received	15/04/2021	15/04/2021	15/04/2021	15/04/2021		
			SDG Ref	210415-75	210415-75	210415-75	210415-75		
			Lab Sample No.(s)	24079536	24079511	24079517	24079598		
			AGS Reference	ES4	ES10	ES13	ES3		
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4	<0.4	<0.4	<0.4		
Sum of BTEX	<0.04 mg/kg	TM116		<0.8	<0.8	<0.8	<0.8		

CERTIFICATE OF ANALYSIS

SDG:	210415-75	**Client Reference:**	784-B026948	**Report Number:**	596404
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595347

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&+$@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH17ES4 0.40 - 0.40 SOLID 13/04/2021 00:00:00 15/04/2021 05:00:00 210415-75 24079536 TM048	19/04/2021	Paul Poynton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS46ES10 2.30 - 2.30 SOLID 13/04/2021 00:00:00 15/04/2021 05:00:00 210415-75 24079511 TM048	19/04/2021	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS46ES13 3.00 - 3.00 SOLID 13/04/2021 00:00:00 15/04/2021 05:00:00 210415-75 24079517 TM048	19/04/2021	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS48ES3 0.60 - 0.60 SOLID 13/04/2021 00:00:00 15/04/2021 05:00:00 210415-75 24079598 TM048	20/04/2021	Agnieszka Chelmowska	Loose fibres in soil	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG:	210415-75	**Client Reference:**	784-B026948	**Report Number:**	596404
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595347

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.164	**Natural Moisture Content (%)**	80.3
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	55.5
Particle Size <4mm	>95%		

Case	
SDG	210415-75
Lab Sample Number(s)	24079511
Sampled Date	13-Apr-2021
Customer Sample Ref.	WS46 ES10
Depth (m)	2.30 - 2.30

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.515	3	5	6
Loss on Ignition (%)	-	-	-	-
Sum of BTEX (mg/kg)	<0.8	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	305	500	-	-
PAH Sum of 17 (mg/kg)	19100	100	-	-
pH (pH Units)	12.5	-	>6	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.0662	<0.0005	0.662	<0.005	0.5	2	25
Barium	0.125	<0.0002	1.25	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.0015	<0.001	0.015	<0.01	0.5	10	70
Copper	0.0728	<0.0003	0.728	<0.003	2	50	100
Mercury Dissolved (CVAF)	-	-	-	-	0.01	0.2	2
Molybdenum	0.00341	<0.003	0.0341	<0.03	0.5	10	30
Nickel	0.0155	<0.0004	0.155	<0.004	0.4	10	40
Lead	0.0486	<0.0002	0.486	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	0.00518	<0.001	0.0518	<0.01	0.1	0.5	7
Zinc	0.0193	<0.001	0.193	<0.01	4	50	200
Chloride	119	<2	1190	<20	800	15000	25000
Fluoride	0.885	<0.5	8.85	<5	10	150	500
Sulphate (soluble)	1040	<10	10400	<100	1000	20000	50000
Total Dissolved Solids	9350	<25	93500	<250	4000	60000	100000
Total Monohydric Phenols (W)	14.4	<0.16	144	<1.6	1	-	-
Dissolved Organic Carbon	103	<3	1030	<30	500	800	1000

Leach Test Information

Date Prepared	16-Apr-2021
pH (pH Units)	12.42
Conductivity (µS/cm)	8,190.00
Temperature (°C)	18.40
Volume Leachant (Litres)	0.826

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation

04/05/2021 16:13:34

16:11:40 04/05/2021

CERTIFICATE OF ANALYSIS

SDG:	210415-75	**Client Reference:**	784-B026948	**Report Number:**	596404
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595347

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.164	**Natural Moisture Content (%)**	80.3
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	55.5
Particle Size <4mm	>95%		

Case	
SDG	210415-75
Lab Sample Number(s)	24079511
Sampled Date	13-Apr-2021
Customer Sample Ref.	WS46 ES10
Depth (m)	2.30 - 2.30

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	0.0463	<0.03	0.463	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	0.48	<0.05	4.8	<0.5	-	-	-
Mercury Dissolved (CVAF)	0.000869	<0.00001	0.00869	<0.0001	-	-	-
Arsenic	0.0669	<0.0005	0.669	<0.005	-	-	-
Boron	<0.01	<0.01	<0.1	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.00144	<0.001	0.0144	<0.01	-	-	-
Copper	0.0739	<0.0003	0.739	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.167	<0.019	1.67	<0.19	-	-	-
Lead	0.0486	<0.0002	0.486	<0.002	-	-	-
Nickel	0.015	<0.0004	0.15	<0.004	-	-	-
Selenium	0.00521	<0.001	0.0521	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0194	<0.001	0.194	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	16-Apr-2021
pH (pH Units)	12.42
Conductivity (µS/cm)	8,190.00
Temperature (°C)	18.40
Volume Leachant (Litres)	0.826

CERTIFICATE OF ANALYSIS

SDG:	210415-75	**Client Reference:**	784-B026948	**Report Number:**	596404
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595347

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.095	**Natural Moisture Content (%)**	5.6
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	94.7
Particle Size <4mm	>95%		

Case	
SDG	210415-75
Lab Sample Number(s)	24079536
Sampled Date	13-Apr-2021
Customer Sample Ref.	BH17 ES4
Depth (m)	0.40 - 0.40

Eluate Analysis	**C_2 Conc^n in 10:1 eluate (mg/l)**		**A_2 10:1 conc^n leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.00129	<0.0005	0.0129	<0.005	-	-	-
Boron	0.0139	<0.01	0.139	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00208	<0.0003	0.0208	<0.003	-	-	-
Iron (Dis.Filt) mg/l	1.6	<0.019	16	<0.19	-	-	-
Lead	0.00105	<0.0002	0.0105	<0.002	-	-	-
Nickel	0.000867	<0.0004	0.00867	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	0.00165	<0.001	0.0165	<0.01	-	-	-
Zinc	0.0103	<0.001	0.103	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	16-Apr-2021
pH (pH Units)	7.29
Conductivity (µS/cm)	15.80
Temperature (°C)	19.10
Volume Leachant (Litres)	0.895

CERTIFICATE OF ANALYSIS

SDG:	210415-75	**Client Reference:**	784-B026948	**Report Number:**	596404
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595347

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.101	**Natural Moisture Content (%)**	12
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	89.3
Particle Size <4mm	>95%		

Case	
SDG	210415-75
Lab Sample Number(s)	24079613
Sampled Date	13-Apr-2021
Customer Sample Ref.	WS48 ES6
Depth (m)	1.50 - 1.50

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	0.0000179	<0.00001	0.000179	<0.0001	-	-	-
Arsenic	0.00352	<0.0005	0.0352	<0.005	-	-	-
Boron	0.0398	<0.01	0.398	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.0017	<0.001	0.017	<0.01	-	-	-
Copper	0.00313	<0.0003	0.0313	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.0416	<0.019	0.416	<0.19	-	-	-
Lead	0.000444	<0.0002	0.00444	<0.002	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	0.00291	<0.001	0.0291	<0.01	-	-	-
Zinc	0.00219	<0.001	0.0219	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	16-Apr-2021
pH (pH Units)	8.27
Conductivity (µS/cm)	99.90
Temperature (°C)	19.40
Volume Leachant (Litres)	0.889

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210415-75	**Client Reference:**	784-B026948	**Report Number:**	596404
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595347

Test Completion Dates

Lab Sample No(s)	24079536	24079511	24079517	24079598	24079613	24079623
Customer Sample Ref.	BH17	WS46	WS46	WS48	WS48	WS48
AGS Ref.	ES4	ES10	ES13	ES3	ES6	ES8
Depth	0.40 - 0.40	2.30 - 2.30	3.00 - 3.00	0.60 - 0.60	1.50 - 1.50	2.50 - 2.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Acid herbicides*	22-Apr-2021					
Ammoniacal N as NH4 in 2:1 extract	21-Apr-2021	21-Apr-2021	21-Apr-2021	21-Apr-2021		
Ammoniacal Nitrogen	21-Apr-2021	21-Apr-2021			21-Apr-2021	
Ammonium Soil by Titration	21-Apr-2021	21-Apr-2021	21-Apr-2021	21-Apr-2021		
Anions by Kone (soil)	20-Apr-2021	20-Apr-2021	20-Apr-2021	20-Apr-2021		
Anions by Kone (w)		19-Apr-2021				
Asbestos ID in Solid Samples	19-Apr-2021	19-Apr-2021	19-Apr-2021	20-Apr-2021		
Boron Water Soluble	20-Apr-2021	20-Apr-2021	20-Apr-2021	20-Apr-2021		
CEN 10:1 Leachate (1 Stage)	16-Apr-2021	16-Apr-2021			16-Apr-2021	
CEN Readings	17-Apr-2021	17-Apr-2021			17-Apr-2021	
Clostridia Perfringens (S)*			04-May-2021			04-May-2021
Coronene		16-Apr-2021				
Cyanide Comp/Free/Total/Thiocyanate	20-Apr-2021	20-Apr-2021	19-Apr-2021	19-Apr-2021	20-Apr-2021	
Dissolved Metals by ICP-MS	20-Apr-2021	21-Apr-2021			20-Apr-2021	
Dissolved Organic/Inorganic Carbon		24-Apr-2021				
Enterococci Species (S)*			04-May-2021			04-May-2021
EPH	19-Apr-2021	19-Apr-2021	19-Apr-2021	19-Apr-2021		
EPH by GCxGC-FID	19-Apr-2021	19-Apr-2021	19-Apr-2021	19-Apr-2021		
EPH CWG GC (S)	19-Apr-2021	19-Apr-2021	19-Apr-2021	19-Apr-2021		
Fluoride		19-Apr-2021				
GRO by GC-FID (S)	16-Apr-2021	19-Apr-2021	16-Apr-2021	16-Apr-2021		
Hexavalent Chromium (s)	20-Apr-2021	20-Apr-2021	20-Apr-2021	20-Apr-2021		
Hexavalent Chromium (w)	19-Apr-2021	19-Apr-2021			19-Apr-2021	
Mercury Dissolved	20-Apr-2021	22-Apr-2021			20-Apr-2021	
Metals in solid samples by OES	20-Apr-2021	21-Apr-2021	21-Apr-2021	21-Apr-2021		
Moisture at 105C	16-Apr-2021	16-Apr-2021			16-Apr-2021	
OC OP Pesticides and Triazine Herb	22-Apr-2021					
PAH 16 & 17 Calc		19-Apr-2021				
PAH by GCMS	20-Apr-2021	19-Apr-2021	20-Apr-2021	16-Apr-2021		
PCBs by GCMS		19-Apr-2021		19-Apr-2021		
pH	15-Apr-2021	16-Apr-2021	16-Apr-2021	16-Apr-2021		
pH Value of Filtered Water	20-Apr-2021	20-Apr-2021			20-Apr-2021	
Phenols by HPLC (S)	19-Apr-2021	20-Apr-2021	19-Apr-2021	20-Apr-2021		
Phenols by HPLC (W)		22-Apr-2021				
Sample description	15-Apr-2021	15-Apr-2021	15-Apr-2021	15-Apr-2021	15-Apr-2021	15-Apr-2021
Semi Volatile Organic Compounds		21-Apr-2021	20-Apr-2021	21-Apr-2021		
Sulphide	21-Apr-2021	21-Apr-2021			21-Apr-2021	
Total Coliforms(S)*			04-May-2021			04-May-2021
Total Dissolved Solids		20-Apr-2021				
Total Organic Carbon	20-Apr-2021	22-Apr-2021	22-Apr-2021	20-Apr-2021		
TPH CWG GC (S)	19-Apr-2021	19-Apr-2021	19-Apr-2021	19-Apr-2021		
VOC MS (S)	19-Apr-2021	19-Apr-2021	16-Apr-2021	16-Apr-2021		

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2495
Ammoniacal Nitrogen as N	TM099	**94.4** 91.28 : 106.64

Ammonium Soil by Titration

Component	Method Code	QC 2495	QC 2464
Exchangeable Ammonium as NH4	TM024	**101.99** 76.20 : 110.13	**89.05** 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2477
Chloride (soluble)	TM243	**135.75** 80.93 : 111.66
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**156.54** 70.00 : 130.00

Anions by Kone (w)

Component	Method Code	QC 2445
Chloride	TM184	**101.0** 92.93 : 115.43
Sulphate (soluble)	TM184	**104.4** 90.53 : 113.03

Boron Water Soluble

Component	Method Code	QC 2457
Water Soluble Boron	TM222	**103.5** 84.00 : 111.00

Coronene

Component	Method Code	QC 2497
Coronene RAW	TM410	**99.0** 79.43 : 137.78

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2462	QC 2465
Free Cyanide	TM153	**91.88** 79.00 : 115.00	
Free Cyanide (W)	TM227		**79.25** 91.52 : 123.82
Thiocyanate	TM153	**100.0** 94.09 : 113.89	
Thiocyanate (W)	TM227		**105.75** 90.50 : 113.00
Total Cyanide	TM153	**95.8** 73.07 : 107.47	
Total Cyanide (W)	TM227		**104.0** 91.75 : 112.75

Dissolved Metals by ICP-MS

Component	Method Code	QC 2463	QC 2469	QC 2447
Aluminium	TM152	**109.67** 90.78 : 110.89	**106.33** 90.78 : 110.89	**100.0** 94.21 : 111.52
Antimony	TM152	**107.33** 77.22 : 119.42	**105.0** 77.22 : 119.42	**103.33** 88.37 : 130.57
Arsenic	TM152	**105.17** 86.77 : 107.67	**102.33** 86.77 : 107.67	**99.67** 92.62 : 113.52
Barium	TM152	**103.83** 87.86 : 110.23	**101.0** 87.86 : 110.23	**102.67** 88.62 : 113.14
Beryllium	TM152	**111.83** 86.19 : 112.98	**108.67** 86.19 : 112.98	**101.5** 87.08 : 111.38
Bismuth	TM152	**104.5** 84.06 : 106.46	**102.33** 84.06 : 106.46	**100.83** 92.62 : 115.02
Borate	TM152	**111.11** 88.00 : 112.00	**106.79** 88.00 : 112.00	
Boron	TM152	**111.33** 83.92 : 114.90	**106.67** 83.92 : 114.90	**101.67** 86.31 : 120.88
Cadmium	TM152	**102.83** 88.89 : 106.69	**99.67** 88.89 : 106.69	**98.67** 93.85 : 111.65
Calcium	TM152	**112.0** 80.24 : 117.95	**108.67** 80.24 : 117.95	**100.67** 89.20 : 126.91
Chromium	TM152	**107.33** 83.22 : 110.16	**104.0** 83.22 : 110.16	**99.83** 92.50 : 113.03
Cobalt	TM152	**106.17** 82.49 : 112.36	**102.0** 82.49 : 112.36	**99.5** 85.01 : 114.87
Copper	TM152	**107.33** 83.14 : 113.00	**103.33** 83.14 : 113.00	**100.5** 89.87 : 119.73
Iron	TM152	**108.0** 88.40 : 109.24	**104.0** 88.40 : 109.24	**98.67** 93.02 : 113.86
Lead	TM152	**105.83** 83.71 : 109.58	**102.33** 83.71 : 109.58	**101.33** 91.11 : 116.98
Lithium	TM152	**111.33** 84.50 : 114.28	**107.83** 84.50 : 114.28	**99.67** 87.70 : 115.90
Magnesium	TM152	**106.67** 87.56 : 114.57	**102.67** 87.56 : 114.57	**95.33** 89.60 : 116.61
Manganese	TM152	**108.5** 90.01 : 108.72	**104.83** 90.01 : 108.72	**98.67** 93.97 : 112.46
Molybdenum	TM152	**101.67** 85.53 : 107.42	**97.67** 85.53 : 107.42	**97.33** 89.07 : 110.96

Dissolved Metals by ICP-MS

		QC 2463	QC 2469	QC 2447
Nickel	TM152	**106.33** 88.05 : 106.42	**102.67** 88.05 : 106.42	**99.83** 93.70 : 112.15
Phosphorus	TM152	**108.5** 82.76 : 107.72	**104.5** 82.76 : 107.72	**101.33** 89.24 : 114.18
Potassium	TM152	**107.33** 88.45 : 106.42	**104.0** 88.45 : 106.42	**98.0** 93.20 : 115.55
Selenium	TM152	**105.5** 85.61 : 111.03	**103.17** 85.61 : 111.03	**99.33** 91.69 : 117.12
Silver	TM152	**101.17** 88.48 : 110.48	**98.83** 88.48 : 110.48	**100.33** 90.93 : 121.73
Sodium	TM152	**107.33** 88.32 : 106.30	**102.67** 88.32 : 106.30	**95.33** 92.42 : 113.24
Strontium	TM152	**105.67** 83.77 : 107.87	**101.67** 83.77 : 107.87	**98.67** 92.14 : 116.24
Tellurium	TM152	**102.17** 82.83 : 104.73	**99.33** 82.83 : 104.73	**98.67** 89.88 : 111.78
Thallium	TM152	**97.83** 77.47 : 113.87	**93.67** 77.47 : 113.87	**92.33** 82.43 : 113.83
Tin	TM152	**105.33** 87.36 : 109.55	**103.0** 87.36 : 109.55	**103.67** 94.62 : 107.79
Titanium	TM152	**112.33** 87.29 : 108.31	**111.33** 87.29 : 108.31	**102.83** 90.29 : 115.23
Tungsten	TM152	**103.17** 68.27 : 122.97	**98.83** 68.27 : 122.97	**100.0** 77.61 : 132.31
Uranium	TM152	**102.67** 82.46 : 105.16	**99.17** 82.46 : 105.16	**97.83** 86.97 : 115.76
Vanadium	TM152	**109.5** 88.43 : 114.30	**105.5** 88.43 : 114.30	**102.83** 89.61 : 115.48
Zinc	TM152	**107.67** 85.57 : 114.31	**104.33** 85.57 : 114.31	**100.33** 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2456
Dissolved Inorganic Carbon	TM090	**103.17** 93.58 : 112.28
Dissolved Organic Carbon	TM090	**103.5** 96.13 : 109.53

EPH by GCxGC-FID

Component	Method Code	QC 2419
EPH >C10-C40 Raw	TM415	**80.84** 56.36 : 129.92

EPH CWG GC (S)

CERTIFICATE OF ANALYSIS

SDG:	210415-75	**Client Reference:**	784-B026948	**Report Number:**	596404
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595347

EPH CWG GC (S)

Component	Method Code	QC 2471
EPH >C8-C40 Raw	TM414	**92.64** 67.87 : 120.05
Total Aliphatics Raw	TM414	**98.55** 66.68 : 120.89
Total Aromatics Raw	TM414	**102.38** 61.16 : 129.42

Fluoride

Component	Method Code	QC 2474
Fluoride	TM104	**104.0** 96.67 : 108.67

GRO by GC-FID (S)

Component	Method Code	QC 2462	QC 2417
QC	TM089	**93.04** 70.75 : 114.19	**92.73** 70.75 : 114.19

Hexavalent Chromium (s)

Component	Method Code	QC 2485	QC 2497
Hexavalent Chromium	TM151	**104.0** 92.00 : 111.20	**102.0** 92.00 : 111.20

Hexavalent Chromium (w)

Component	Method Code	QC 2459	QC 2472
Hexavalent Chromium	TM241	**102.2** 94.17 : 106.17	**101.0** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2491	QC 2498
Mercury Dissolved (CVAF)	TM183	**96.0** 69.30 : 128.70	**107.0** 69.30 : 128.70

Metals in solid samples by OES

CERTIFICATE OF ANALYSIS

SDG:	210415-75	**Client Reference:**	784-B026948	**Report Number:**	596404
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595347

Metals in solid samples by OES

Component	Method Code	QC 2440	QC 2416	QC 2420
Aluminium	TM181	**103.54** 73.56 : 108.85	**113.27** 77.46 : 123.98	**93.81** 77.46 : 123.98
Antimony	TM181	**90.24** 76.89 : 111.24	**103.66** 87.04 : 111.16	**96.34** 87.04 : 111.16
Arsenic	TM181	**95.93** 88.53 : 111.01	**106.1** 87.34 : 110.87	**96.8** 87.34 : 110.87
Barium	TM181	**90.73** 77.67 : 105.35	**108.26** 80.73 : 115.16	**94.5** 80.73 : 115.16
Beryllium	TM181	**94.78** 85.44 : 109.61	**107.46** 89.47 : 112.97	**94.4** 89.47 : 112.97
Boron	TM181	**85.1** 73.51 : 104.66	**103.72** 76.57 : 104.15	**88.25** 76.57 : 104.15
Cadmium	TM181	**91.36** 77.67 : 104.12	**95.06** 78.94 : 102.43	**88.48** 78.94 : 102.43
Chromium	TM181	**84.18** 79.64 : 105.83	**100.0** 77.55 : 104.47	**85.8** 77.55 : 104.47
Cobalt	TM181	**85.85** 84.60 : 104.13	**95.6** 82.95 : 107.41	**86.16** 82.95 : 107.41
Copper	TM181	**90.85** 82.40 : 105.45	**101.58** 84.36 : 106.14	**92.78** 84.36 : 106.14
Iron	TM181	**101.59** 82.95 : 110.58	**109.52** 81.43 : 115.79	**94.44** 81.43 : 115.79
Lead	TM181	**89.86** 78.24 : 104.05	**101.58** 81.95 : 107.63	**92.79** 81.95 : 107.63
Manganese	TM181	**102.5** 94.29 : 119.51	**100.28** 94.29 : 119.51	**104.72** 94.29 : 119.51
Mercury	TM181	**92.75** 83.16 : 107.81	**100.24** 82.73 : 106.36	**91.06** 82.73 : 106.36
Molybdenum	TM181	**92.59** 87.11 : 106.87	**104.12** 86.61 : 111.07	**93.42** 86.61 : 111.07
Nickel	TM181	**87.29** 80.26 : 102.28	**97.07** 79.72 : 103.80	**87.04** 79.72 : 103.80
Phosphorus	TM181	**100.81** 94.56 : 124.28	**115.15** 92.65 : 125.47	**102.63** 92.65 : 125.47
Selenium	TM181	**95.69** 82.28 : 110.48	**107.06** 88.36 : 111.25	**98.43** 88.36 : 111.25
Strontium	TM181	**88.2** 79.13 : 102.79	**100.89** 78.06 : 99.91	**88.42** 78.06 : 99.91
Thallium	TM181	**95.58** 82.94 : 111.86	**107.96** 88.60 : 116.73	**96.46** 88.60 : 116.73
Tin	TM181	**96.58** 86.72 : 110.03	**101.14** 89.77 : 112.62	**94.68** 89.77 : 112.62
Titanium	TM181	**79.39** 66.23 : 102.06	**93.13** 66.29 : 105.96	**87.79** 66.29 : 105.96
Vanadium	TM181	**92.67** 86.19 : 109.45	**104.03** 75.51 : 108.87	**89.74** 75.51 : 108.87
Zinc	TM181	**93.84** 84.68 : 113.99	**108.42** 84.02 : 111.24	**95.48** 84.02 : 111.24

PAH by GCMS

PAH by GCMS

Component	Method Code	QC 2441	QC 2422
Acenaphthene	TM218	**86.5** 76.79 : 103.90	**84.0** 76.79 : 103.90
Acenaphthylene	TM218	**85.5** 78.40 : 108.66	**81.5** 74.19 : 106.17
Anthracene	TM218	**91.5** 70.90 : 109.22	**83.0** 70.90 : 109.22
Benz(a)anthracene	TM218	**95.5** 73.77 : 119.26	**85.0** 73.77 : 119.26
Benzo(a)pyrene	TM218	**82.5** 73.20 : 114.18	**85.5** 73.20 : 114.18
Benzo(b)fluoranthene	TM218	**87.5** 75.36 : 117.58	**82.0** 75.36 : 117.58
Benzo(ghi)perylene	TM218	**82.5** 70.73 : 116.12	**84.5** 70.73 : 116.12
Benzo(k)fluoranthene	TM218	**87.0** 75.98 : 116.59	**84.5** 75.98 : 116.59
Chrysene	TM218	**91.5** 74.82 : 114.18	**85.0** 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	**79.0** 69.17 : 115.30	**87.0** 69.17 : 115.30
Fluoranthene	TM218	**92.5** 75.88 : 112.84	**79.5** 66.06 : 114.63
Fluorene	TM218	**87.5** 76.66 : 107.56	**83.0** 76.66 : 107.56
Indeno(123cd)pyrene	TM218	**86.5** 70.26 : 117.95	**81.5** 70.26 : 117.95
Naphthalene	TM218	**85.0** 74.70 : 101.83	**84.0** 74.70 : 101.83
Phenanthrene	TM218	**90.5** 73.62 : 109.34	**82.0** 73.62 : 109.34
Pyrene	TM218	**94.0** 71.46 : 117.00	**81.0** 71.46 : 117.00

PCBs by GCMS

Component	Method Code	QC 2434
PCB congener 101	TM168	**84.4** 65.66 : 110.06
PCB congener 105	TM168	**80.2** 58.10 : 106.34
PCB congener 114	TM168	**80.6** 59.38 : 106.48
PCB congener 118	TM168	**80.3** 60.02 : 106.23
PCB congener 123	TM168	**88.0** 65.01 : 99.81
PCB congener 126	TM168	**80.9** 59.31 : 109.23
PCB congener 138	TM168	**84.7** 63.95 : 107.63
PCB congener 153	TM168	**85.6** 62.65 : 108.85
PCB congener 156	TM168	**82.0** 61.69 : 112.27

PCBs by GCMS

		QC 2434
PCB congener 157	TM168	**77.5** 55.37 : 104.81
PCB congener 167	TM168	**81.2** 65.58 : 109.14
PCB congener 169	TM168	**83.9** 56.84 : 112.10
PCB congener 180	TM168	**84.1** 66.99 : 111.63
PCB congener 189	TM168	**84.4** 57.75 : 112.59
PCB congener 28	TM168	**84.9** 73.68 : 105.96
PCB congener 52	TM168	**84.5** 67.24 : 107.62
PCB congener 77	TM168	**85.2** 64.87 : 108.49
PCB congener 81	TM168	**89.2** 70.78 : 110.80

pH

Component	Method Code	QC 2483	QC 2418
pH	TM133	**99.27** 98.41 : 102.48	**100.15** 98.41 : 102.48

pH Value of Filtered Water

Component	Method Code	QC 2445	QC 2447
pH	TM256	**101.07** 99.33 : 102.54	**101.07** 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2442	QC 2479	QC 2484
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**54.55** 70.71 : 116.42	**55.19** 70.71 : 116.42	**50.65** 70.71 : 116.42
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**46.78** 64.54 : 117.79	**46.2** 64.54 : 117.79	**42.69** 64.54 : 117.79
Cresols by HPLC (S)	TM062 (S)	**50.94** 74.40 : 108.98	**52.19** 74.40 : 108.98	**47.39** 74.40 : 108.98
Phenol by HPLC (S)	TM062 (S)	**54.97** 69.44 : 122.18	**55.63** 69.44 : 122.18	**49.67** 69.44 : 122.18
Xylenols by HPLC (S)	TM062 (S)	**51.04** 76.56 : 106.38	**51.87** 76.56 : 106.38	**47.71** 76.56 : 106.38

Phenols by HPLC (W)

Phenols by HPLC (W)

Component	Method Code	QC 2471
2.3.5 Trimethyl-Phenol by HPLC (W)	TM259	**99.61** 77.41 : 127.55
2-Isopropyl Phenol by HPLC (W)	TM259	**93.69** 82.77 : 126.51
Cresols by HPLC (W)	TM259	**99.34** 76.60 : 126.28
Napthol by HPLC (W)	TM259	**101.56** 75.40 : 129.40
Phenol by HPLC (W)	TM259	**94.52** 85.77 : 125.91
Xylenols by HPLC (W)	TM259	**97.78** 79.09 : 131.82

Semi Volatile Organic Compounds

Component	Method Code	QC 2464
4-Bromophenylphenylether (Soil)	TM157	**95.0** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**98.0** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**94.5** 68.25 : 126.75
Naphthalene (Soil)	TM157	**95.5** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**90.5** 66.50 : 123.50
Phenol (Soil)	TM157	**94.5** 69.92 : 114.02

Sulphide

Component	Method Code	QC 2436
Sulphide	TM101	**104.67** 88.90 : 112.50

Total Dissolved Solids

Component	Method Code	QC 2401
Total Dissolved Solids	TM123	**99.6** 97.30 : 100.92

Total Organic Carbon

Total Organic Carbon

Component	Method Code	QC 2464	QC 2456
Total Organic Carbon	TM132	**101.95** 87.02 : 113.45	**108.2** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2493	QC 2406	QC 2495
1,1,1,2-tetrachloroethane	TM116	**103.8** 79.10 : 119.66	**100.4** 84.84 : 116.25	**95.6** 84.84 : 116.25
1,1,1-Trichloroethane	TM116	**108.8** 84.25 : 112.57	**100.2** 73.73 : 118.05	**100.6** 73.73 : 118.05
1,1,2-Trichloroethane	TM116	**98.6** 81.29 : 113.79	**93.4** 77.12 : 116.04	**93.2** 77.12 : 116.04
1,1-Dichloroethane	TM116	**115.4** 86.77 : 122.11	**100.8** 74.46 : 129.15	**105.6** 74.46 : 129.15
1,2-Dichloroethane	TM116	**112.4** 90.04 : 132.28	**108.0** 92.38 : 131.65	**108.4** 92.38 : 131.65
1,4-Dichlorobenzene	TM116	**109.2** 80.81 : 125.07	**99.8** 83.64 : 126.18	**96.4** 83.64 : 126.18
2-Chlorotoluene	TM116	**96.2** 73.13 : 114.13	**86.8** 76.03 : 113.25	**88.2** 76.03 : 113.25
4-Chlorotoluene	TM116	**92.6** 68.66 : 109.13	**81.2** 66.90 : 112.46	**81.8** 66.90 : 112.46
Benzene	TM116	**104.0** 84.29 : 112.22	**100.0** 88.60 : 113.80	**102.6** 88.60 : 113.80
Carbon Disulphide	TM116	**109.8** 75.11 : 124.81	**94.6** 74.91 : 122.14	**92.4** 74.91 : 122.14
Carbontetrachloride	TM116	**108.6** 82.35 : 126.46	**104.4** 80.31 : 124.50	**106.2** 80.31 : 124.50
Chlorobenzene	TM116	**104.6** 82.88 : 122.42	**100.4** 83.81 : 114.18	**93.8** 83.81 : 114.18
Chloroform	TM116	**113.2** 90.35 : 120.38	**105.2** 87.40 : 122.49	**106.4** 87.40 : 122.49
Chloromethane	TM116	**128.8** 67.89 : 143.51	**104.6** 65.89 : 136.93	**106.8** 65.89 : 136.93
Cis-1,2-Dichloroethene	TM116	**111.2** 78.27 : 128.90	**101.0** 80.67 : 126.72	**99.0** 80.67 : 126.72
Dibromomethane	TM116	**98.2** 76.00 : 120.73	**97.0** 73.23 : 118.35	**94.0** 73.23 : 118.35
Dichloromethane	TM116	**116.2** 92.27 : 134.36	**107.6** 81.11 : 133.25	**108.0** 81.11 : 133.25
Ethylbenzene	TM116	**89.8** 70.95 : 113.07	**88.6** 75.92 : 110.41	**88.4** 75.92 : 110.41
Hexachlorobutadiene	TM116	**56.4** 14.55 : 147.92	**54.2** 12.82 : 152.73	**75.4** 12.82 : 152.73
Isopropylbenzene	TM116	**80.6** 52.00 : 108.19	**71.0** 55.79 : 97.59	**83.4** 55.79 : 97.59
Naphthalene	TM116	**100.8** 80.29 : 135.77	**99.8** 80.86 : 128.81	**93.6** 80.86 : 128.81
o-Xylene	TM116	**88.0** 68.34 : 101.99	**86.8** 69.99 : 108.74	**84.8** 69.99 : 108.74

VOC MS (S)

		QC 2493	QC 2406	QC 2495
p/m-Xylene	TM116	**83.8** 69.47 : 97.31	**82.4** 68.32 : 108.91	**84.2** 68.32 : 108.91
Sec-Butylbenzene	TM116	**70.4** 27.03 : 135.73	**59.6** 38.50 : 101.50	**84.4** 38.50 : 101.50
Tetrachloroethene	TM116	**99.8** 81.43 : 126.65	**98.6** 76.95 : 121.02	**97.4** 76.95 : 121.02
Toluene	TM116	**93.0** 82.44 : 103.50	**91.6** 74.24 : 107.42	**93.6** 74.24 : 107.42
Trichloroethene	TM116	**101.2** 79.80 : 112.33	**95.6** 85.28 : 109.36	**96.2** 85.28 : 109.36
Trichlorofluoromethane	TM116	**110.4** 89.67 : 132.09	**101.8** 84.55 : 133.27	**102.8** 84.55 : 133.27
Vinyl Chloride	TM116	**124.6** 69.66 : 136.55	**104.6** 68.02 : 143.37	**107.0** 68.02 : 143.37

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

Work Order	: **PR2133350**	Issue Date	: 22-Apr-2021
Customer	: **ALS Life Sciences Ltd**	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: [redacted]	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 210415-75	Page	: 1 of 2
Order number	: ----	Date Samples Received	: 19-Apr-2021
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 20-Apr-2021 - 22-Apr-2021
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories		*Position*
Zdeněk Jirák	[redacted]	Environmental Business Unit Manager

The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)

Analytical Results

Sub-Matrix: **SOIL**			Client sample ID	**24082881 BH17**		**----**		**----**	
			Laboratory sample ID	*PR2133350-001*		----		----	
			Client sampling date / time	15-Apr-2021		----		----	
Parameter	*Method*	*LOR*	*Unit*	**Result**	**MU**	**Result**	**MU**	**Result**	**MU**
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	**94.7**	± 6.0%	**----**	----	**----**	----
Pesticides									
2.4.5-T	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4.5-TP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-D	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
4-CPP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bentazone	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dinoseb	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Fluroxypyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPA	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Acifluorfen	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bromoxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
DNOC	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dicamba	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Diclofop	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Ioxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Propoxycarbazone-sodium	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclopyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclosan	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.
Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	*Method Descriptions*
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PESLMSA1	CZ_SOP_D06_03_182.B (CSN EN 15637, US EPA 1694) Determination of acidic herbicides and drug residues by liquid chromatography method with MS/MS detection.

A `*` symbol preceding any method indicates laboratory or subcontractor non-accredited test. In the case when a procedure belonging to an accredited method was used for non-accredited matrix, would apply that the reported results are non-accredited. Please refer to General Comment section on front page for information. If the report contains subcontracted analysis, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.
The calculation methods of summation parameters are available on request in the client service.

ALS Environmental Ltd
Torrington Avenue
Coventry
CV4 9GU

T: +44 (0)24 7642 1213
F: +44 (0)24 7685 6575
[redacted]

Subcon Results
ALS Life Sciences Limited
Torrington Avenue
Tile Hill CV4 9GU

04 May 2021

Test Report: COV/2120157/2021

Dear Subcon Results

Analysis of your sample(s) received on 16 April 2021 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using ALS Environmental Ltd and we look forward to receiving your next samples.

Yours Sincerely,

Signed: [redacted]

Name: P. Patel

Title: Inorganic Team Leader

Report Summary

ANALYSED BY

1314

Hawarden Subcon Results
ALS Life Sciences Limited
Torrington Avenue
Tile Hill
CV4 9GU

Date of Issue: **04 May 2021**

Report Number: **COV/2120157/2021** Issue **2**

This issue replaces all previous issues

Job Description: 2020 Analysis

Job Location: 210415-75

Number of Samples included in this report **6**

Job Received: **16 April 2021**

Number of Test Results included in this report **8**

Analysis Commenced: **21 April 2021**

Signed: [redacted]

Name: **P. Patel** Date: **04 May 2021**

Title: **Inorganic Team Leader**

ALS Environmental Ltd was not responsible for sampling unless otherwise stated.

Information on the methods of analysis and performance characteristics are available on request.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. The results relate only to the items tested and where relevant sampled.
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.
This test report is not a statement of conformity to any specification or standard.

Certificate of Analysis

ANALYSED BY

1314

Report Number:	**COV/2120157/2021**	Issue	**2**
Laboratory Number:	**20339534**	Sample	**1** of **6**
Sample Source:	**ALS Life Sciences Limited**		
Sample Point Description:			
Sample Description:	**24083786 WS46**		
Sample Matrix:	**Soil**		
Sample Date/Time:	**13 April 2021**		
Sample Received:	**16 April 2021**		
Analysis Complete:	**04 May 2021**		
SDG:	**210415-75**		
Sample Reference:	**WS46**		

Test Description	Result	Units	Analysis Date	Accreditation		Method
Enterococcus species	<10	cfu/g	23/04/2021	N	Cov	W32
Solids, Total at 105c, sludge.	83.0	%	27/04/2021	Y	Cov	CON10

Analyst Comments for 20339534: This sample has been analysed for Solids, Total at 105c, sludge. outside recommended stability times. It is therefore possible that the results provided may be compromised.

This issue replaces all previous issues
Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: [redacted]

Name: **P. Patel** Date: **04 May 2021**

Title: **Inorganic Team Leader**

Certificate of Analysis

ANALYSED BY

1314

Report Number:	**COV/2120157/2021**	Issue	**2**
Laboratory Number:	**20339535**	Sample	**2** of **6**
Sample Source:	**ALS Life Sciences Limited**		
Sample Point Description:			
Sample Description:	**24084335 WS46**		
Sample Matrix:	**Soil**		
Sample Date/Time:	**13 April 2021**		
Sample Received:	**16 April 2021**		
Analysis Complete:	**04 May 2021**		
SDG:	**210415-75**		
Sample Reference:	**WS46**		

Test Description	Result	Units	Analysis Date	Accreditation	Method
Total Coliforms	<10	cfu/g	22/04/2021	N Cov	W32

Analyst Comments for 20339535: No Analyst Comment

This issue replaces all previous issues
Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: [redacted]

Name: **P. Patel** Date: **04 May 2021**

Title: **Inorganic Team Leader**

Certificate of Analysis

ANALYSED BY

1314

Report Number:	**COV/2120157/2021**	Issue	**2**
Laboratory Number:	**20339536**	Sample	**3** of **6**
Sample Source:	**ALS Life Sciences Limited**		
Sample Point Description:			
Sample Description:	**24084358 WS46**		
Sample Matrix:	**Soil**		
Sample Date/Time:	**13 April 2021**		
Sample Received:	**16 April 2021**		
Analysis Complete:	**04 May 2021**		
SDG:	**210415-75**		
Sample Reference:	**WS46**		

Test Description	Result	Units	Analysis Date	Accreditation	Method
Clostridia perfringens	<10	cfu/g	22/04/2021	N Cov	W32

Analyst Comments for 20339536: No Analyst Comment

This issue replaces all previous issues
Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: [redacted]

Name: **P. Patel** Date: **04 May 2021**

Title: **Inorganic Team Leader**

ALS Environmental Ltd
Torrington Avenue, Coventry, CV4 9GU
Tel:+44 (0)24 7642 1213 Fax:+44 (0)24 7685 6575

Certificate of Analysis

ANALYSED BY

1314

Report Number:	**COV/2120157/2021**	Issue	**2**
Laboratory Number:	**20339537**	Sample	**4** of **6**

Sample Source:	**ALS Life Sciences Limited**
Sample Point Description:	
Sample Description:	**24083167 WS48**
Sample Matrix:	**Soil**
Sample Date/Time:	**13 April 2021**
Sample Received:	**16 April 2021**
Analysis Complete:	**04 May 2021**
SDG:	**210415-75**
Sample Reference:	**WS48**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Total Coliforms	<10	cfu/g	22/04/2021	N Cov	W32

Analyst Comments for 20339537: No Analyst Comment

This issue replaces all previous issues
Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: [redacted]

Name: **P. Patel** Date: **04 May 2021**

Title: **Inorganic Team Leader**

Certificate of Analysis

ANALYSED BY

1314

Report Number:	**COV/2120157/2021**	Issue	**2**
Laboratory Number:	**20339538**	Sample	**5** of **6**

Sample Source:	**ALS Life Sciences Limited**
Sample Point Description:	
Sample Description:	**24083302 WS48**
Sample Matrix:	**Soil**
Sample Date/Time:	**13 April 2021**
Sample Received:	**16 April 2021**
Analysis Complete:	**04 May 2021**
SDG:	**210415-75**
Sample Reference:	**WS48**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Clostridia perfringens	<10	cfu/g	22/04/2021	N Cov	W32

Analyst Comments for 20339538: No Analyst Comment

This issue replaces all previous issues
Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: [redacted]

Name: **P. Patel** Date: **04 May 2021**

Title: **Inorganic Team Leader**

Certificate of Analysis

ANALYSED BY

1314

Report Number:	**COV/2120157/2021**	Issue	**2**
Laboratory Number:	**20339539**	Sample	**6** of **6**
Sample Source:	**ALS Life Sciences Limited**		
Sample Point Description:			
Sample Description:	**24083462 WS48**		
Sample Matrix:	**Soil**		
Sample Date/Time:	**13 April 2021**		
Sample Received:	**16 April 2021**		
Analysis Complete:	**04 May 2021**		
SDG:	**210415-75**		
Sample Reference:	**WS48**		

Test Description	Result	Units	Analysis Date	Accreditation		Method
Enterococcus species	7195	cfu/g	02/05/2021	N	Cov	W32
Solids, Total at 105c, sludge.	11.0	%	27/04/2021	Y	Cov	CON10

Analyst Comments for 20339539: This sample has been analysed for Solids, Total at 105c, sludge. outside recommended stability times. It is therefore possible that the results provided may be compromised.

This issue replaces all previous issues
Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: [redacted]

Name: **P. Patel** Date: **04 May 2021**

Title: **Inorganic Team Leader**

ANALYST COMMENTS FOR REPORT COV/2120157/2021 Issue 2

This issue replaces all previous issues

Date of Issue: **04 May 2021**

Sample No	Analysis Comments
20339534	This sample has been analysed for Solids, Total at 105c, sludge. outside recommended stability times. It is therefore possible that the results provided may be compromised.
20339535	
20339536	
20339537	
20339538	
20339539	This sample has been analysed for Solids, Total at 105c, sludge. outside recommended stability times. It is therefore possible that the results provided may be compromised.

Signed: [redacted]

Name: **P. Patel** Date: **04 May 2021**

Title: **Inorganic Team Leader**

DETERMINAND COMMENTS FOR REPORT COV/2120157/2021

ISSUE 2

This issue replaces all previous issues

Date of Issue: 04 May 2021

Sample No	Description	Determinand	Comments

Signed: [redacted]

Name: **P. Patel** Date: **04 May 2021**

Title: **Inorganic Team Leader**

Report Changes

Job Changes

Field Changed	Before Value	After Value

Sample Changes

Sample Number	Field Changed	Before Value	After Value
20339537	comment	24084358 WS48	24083167 WS48

Result Changes

Sample Number	Det	Before Value	After Value

Moved Samples

Sample Number	Added/Removed

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	07 May 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210417-40
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	596971

This report has been revised and directly supersedes 595318 in its entirety.

We received 11 samples on Friday April 16, 2021 and 6 of these samples were scheduled for analysis which was completed on Tuesday May 04, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210417-40	**Client Reference:**	784-B026948	**Report Number:**	596971
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595318

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24094732	TP47	ES1	0.10 - 0.10	14/04/2021
24094746	TP47	ES3	0.80 - 0.80	14/04/2021
24094716	WS50	ES1	0.10 - 0.10	14/04/2021
24094804	WS54	ES1	0.10 - 0.10	14/04/2021
24094819	WS54	ES3	0.60 - 0.60	14/04/2021
24094838	WS54	ES5	1.50 - 1.50	14/04/2021
24094847	WS54	ES9	3.00 - 3.00	14/04/2021
24094758	WS50A	ES1	0.10 - 0.10	14/04/2021
24094772	WS50A	ES3	0.70 - 0.70	14/04/2021
24094787	WS50A	ES6	1.50 - 1.50	14/04/2021
24094794	WS50A	ES9	2.50 - 2.50	14/04/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	210417-40	**Client Reference:**	784-B026948	**Report Number:**	596971
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595318

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24094819	24094838	24094847	24094772	24094787	24094794						
Customer Sample Reference			WS54	WS54	WS54	WS50A	WS50A	WS50A						
AGS Reference			ES3	ES5	ES9	ES3	ES6	ES9						
Depth (m)			0.60 - 0.60	1.50 - 1.50	3.00 - 3.00	0.70 - 0.70	1.50 - 1.50	2.50 - 2.50						
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 2		X						X				
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 2				X			X					
Ammonium Soil by Titration	All	NDPs: 0 Tests: 2		X							X			
Anions by Kone (soil)	All	NDPs: 0 Tests: 2		X							X			
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2	X							X				
Boron Water Soluble	All	NDPs: 0 Tests: 2		X							X			
CEN Readings	All	NDPs: 0 Tests: 2				X			X					
Clostridia Perfringens (S)*	All	NDPs: 0 Tests: 2					X						X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 4		X		X			X		X			
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2				X			X					
EPH	All	NDPs: 0 Tests: 2		X							X			
EPH by GCxGC-FID	All	NDPs: 0 Tests: 2		X						X				
EPH CWG GC (S)	All	NDPs: 0 Tests: 2		X							X			
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2			X							X		
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2		X							X			

Validated

CERTIFICATE OF ANALYSIS

SDG:	210417-40	**Client Reference:**	784-B026948	**Report Number:**	596971
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595318

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
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LE - Land Leachate
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PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24094819	24094838	24094847	24094772	24094787	24094794								
Customer Sample Reference			WS54	WS54	WS54	WS50A	WS50A	WS50A								
AGS Reference			ES3	ES5	ES9	ES3	ES6	ES9								
Depth (m)			0.60 - 0.60	1.50 - 1.50	3.00 - 3.00	0.70 - 0.70	1.50 - 1.50	2.50 - 2.50								
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 2				X				X						
Mercury Dissolved	All	NDPs: 0 Tests: 2				X				X						
Metals in solid samples by OES	All	NDPs: 0 Tests: 2		X									X			
PAH by GCMS	All	NDPs: 0 Tests: 2		X								X				
PCBs by GCMS	All	NDPs: 0 Tests: 1										X				
pH	All	NDPs: 0 Tests: 2		X									X			
pH Value of Filtered Water	All	NDPs: 0 Tests: 2				X				X						
Phenols by HPLC (S)	All	NDPs: 0 Tests: 2		X									X			
Sample description	All	NDPs: 0 Tests: 6		X			X		X		X		X			X
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1											X			
Sulphide	All	NDPs: 0 Tests: 2				X				X						
Total Coliforms(S)*	All	NDPs: 0 Tests: 1						X								
Total Organic Carbon	All	NDPs: 0 Tests: 2		X									X			
TPH CWG GC (S)	All	NDPs: 0 Tests: 2		X									X			
VOC MS (S)	All	NDPs: 0 Tests: 2			X									X		

CERTIFICATE OF ANALYSIS

SDG:	210417-40	**Client Reference:**	784-B026948	**Report Number:**	596971
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595318

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24094819	WS54	0.60 - 0.60	Dark Brown	Sandy Loam	Stones	Vegetation
24094838	WS54	1.50 - 1.50	Dark Brown	Sandy Loam	Stones	Vegetation
24094847	WS54	3.00 - 3.00	Dark Brown	Sandy Loam	Stones	Vegetation
24094772	WS50A	0.70 - 0.70	Dark Brown	Sandy Loam	Stones	Vegetation
24094787	WS50A	1.50 - 1.50	Dark Brown	Sandy Loam	Stones	Vegetation
24094794	WS50A	2.50 - 2.50	Dark Brown	Sand	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210417-40	**Client Reference:**	784-B026948	**Report Number:**	596971
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595318

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS54	WS54	WS54	WS50A	WS50A	WS50A
			Depth (m)	0.60 - 0.60	1.50 - 1.50	3.00 - 3.00	0.70 - 0.70	1.50 - 1.50	2.50 - 2.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	14/04/2021	14/04/2021	14/04/2021	14/04/2021	14/04/2021	14/04/2021
			Sample Time	.	.	.	.	.	.
			Date Received	16/04/2021	16/04/2021	16/04/2021	16/04/2021	16/04/2021	16/04/2021
			SDG Ref	210417-40	210417-40	210417-40	210417-40	210417-40	210417-40
			Lab Sample No.(s)	24094819	24094838	24094847	24094772	24094787	24094794
			AGS Reference	ES3	ES5	ES9	ES3	ES6	ES9
Moisture Content Ratio (% of as received sample)	%	PM024		23	21	36	6.3	19	6.6
Clostridia Perfringens*	CFU/G	SUB				<10			12
Total Coliforms (RW7)*	CFU/G	SUB				9450			
Exchangeable Ammonia as N	<12 mg/kg	TM024		<12 M				<12 M	
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 M				<0.01 M	
Cresols	<0.01 mg/kg	TM062 (S)		<0.01 M				<0.01 M	
Xylenols	<0.015 mg/kg	TM062 (S)		<0.015 M				<0.015 M	
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 M				<0.035 M	
Soil Organic Matter (SOM)	<0.35 %	TM132		5.14 #				1.32 #	
pH	1 pH Units	TM133		7.83 M				7.56 M	
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #				<0.6 #	
Cyanide, Total	<1 mg/kg	TM153		<1 M				<1 M	
PCB congener 118	<0.003 mg/kg	TM168						<0.003 M	
PCB congener 81	<0.003 mg/kg	TM168						<0.003 M	
PCB congener 77	<0.003 mg/kg	TM168						<0.003 M	
PCB congener 123	<0.003 mg/kg	TM168						<0.003 M	
PCB congener 114	<0.003 mg/kg	TM168						<0.003 M	
PCB congener 105	<0.003 mg/kg	TM168						<0.003 M	
PCB congener 126	<0.003 mg/kg	TM168						<0.003 M	
PCB congener 167	<0.003 mg/kg	TM168						<0.003 M	
PCB congener 156	<0.003 mg/kg	TM168						<0.003 M	
PCB congener 157	<0.003 mg/kg	TM168						<0.003 M	
PCB congener 169	<0.003 mg/kg	TM168						<0.003 M	
PCB congener 189	<0.003 mg/kg	TM168						<0.003 M	
Sum of detected WHO 12 PCBs	<0.036 mg/kg	TM168						<0.036	
Arsenic	<0.6 mg/kg	TM181		18.7 M				21 M	
Cadmium	<0.02 mg/kg	TM181		1.94 M				3.56 M	
Chromium	<0.9 mg/kg	TM181		50.4 M				36.7 M	
Copper	<1.4 mg/kg	TM181		61.9 M				29.5 M	
Iron	<1000 mg/kg	TM181		38200 #				66000 #	
Lead	<0.7 mg/kg	TM181		283 M				42.2 M	
Mercury	<0.1 mg/kg	TM181		<0.1 M				<0.1 M	
Nickel	<0.2 mg/kg	TM181		41.1 M				48.9 M	

Validated

CERTIFICATE OF ANALYSIS

SDG:	210417-40	**Client Reference:**	784-B026948	**Report Number:**	596971
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595318

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS54	WS54	WS54	WS50A	WS50A	WS50A
			Depth (m)	0.60 - 0.60	1.50 - 1.50	3.00 - 3.00	0.70 - 0.70	1.50 - 1.50	2.50 - 2.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	14/04/2021	14/04/2021	14/04/2021	14/04/2021	14/04/2021	14/04/2021
			Sample Time	.	.	.	.	.	.
			Date Received	16/04/2021	16/04/2021	16/04/2021	16/04/2021	16/04/2021	16/04/2021
			SDG Ref	210417-40	210417-40	210417-40	210417-40	210417-40	210417-40
			Lab Sample No.(s)	24094819	24094838	24094847	24094772	24094787	24094794
			AGS Reference	ES3	ES5	ES9	ES3	ES6	ES9
Selenium	<1 mg/kg	TM181		<1 #				1.45 #	
Vanadium	<0.2 mg/kg	TM181		63.9 #				64.1 #	
Zinc	<1.9 mg/kg	TM181		315 M				410 M	
Boron, water soluble	<1 mg/kg	TM222		1.56 M				1.3 M	
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.0579 M				0.098 M	
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248		0.527				1.04	
EPH (C5-C40)	<35 mg/kg	TM415		<35				<35	
EPH Surrogate % recovery**	%	TM415		106				95.5	
EPH >C10-C40	<35 mg/kg	TM415		<35 M				<35 M	

Validated

CERTIFICATE OF ANALYSIS

SDG:	210417-40	**Client Reference:**	784-B026948	**Report Number:**	596971
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595318

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS54	WS50A				
			Depth (m)	0.60 - 0.60	1.50 - 1.50				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	14/04/2021	14/04/2021				
			Sample Time	.	.				
			Date Received	16/04/2021	16/04/2021				
			SDG Ref	210417-40	210417-40				
			Lab Sample No.(s)	24094819	24094787				
			AGS Reference	ES3	ES6				
Naphthalene-d8 % recovery**	%	TM218		84.4	84.7				
Acenaphthene-d10 % recovery**	%	TM218		87.1	88.4				
Phenanthrene-d10 % recovery**	%	TM218		86.3	87.1				
Chrysene-d12 % recovery**	%	TM218		70.4	70.4				
Perylene-d12 % recovery**	%	TM218		80.3	76.4				
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	<0.009 M				
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 M	<0.012 M				
Acenaphthene	<0.008 mg/kg	TM218		<0.008 M	<0.008 M				
Fluorene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M				
Phenanthrene	<0.015 mg/kg	TM218		0.0323 M	<0.015 M				
Anthracene	<0.016 mg/kg	TM218		<0.016 M	<0.016 M				
Fluoranthene	<0.017 mg/kg	TM218		0.0776 M	<0.017 M				
Pyrene	<0.015 mg/kg	TM218		0.0679 M	<0.015 M				
Benz(a)anthracene	<0.014 mg/kg	TM218		0.0368 M	<0.014 M				
Chrysene	<0.01 mg/kg	TM218		0.0381 M	<0.01 M				
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		0.0676 M	<0.015 M				
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.0231 M	<0.014 M				
Benzo(a)pyrene	<0.015 mg/kg	TM218		0.0382 M	<0.015 M				
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.0408 M	<0.018 M				
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	<0.023 M				
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.033 M	<0.024 M				
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		0.455	<0.118				

CERTIFICATE OF ANALYSIS

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Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595318

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	WS50A
Depth (m)	1.50 - 1.50
Sample Type	Soil/Solid (S)
Date Sampled	14/04/2021
Sample Time	.
Date Received	16/04/2021
SDG Ref	210417-40
Lab Sample No.(s)	24094787
AGS Reference	ES6

Component	LOD/Units	Method	
Phenol	<0.1 mg/kg	TM157	<0.1
Pentachlorophenol	<0.1 mg/kg	TM157	<0.1
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157	<0.1
Nitrobenzene	<0.1 mg/kg	TM157	<0.1
Isophorone	<0.1 mg/kg	TM157	<0.1
Hexachloroethane	<0.1 mg/kg	TM157	<0.1
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157	<0.1
Hexachlorobutadiene	<0.1 mg/kg	TM157	<0.1
Hexachlorobenzene	<0.1 mg/kg	TM157	<0.1
n-Dioctyl phthalate	<0.1 mg/kg	TM157	<0.1
Dimethyl phthalate	<0.1 mg/kg	TM157	<0.1
Diethyl phthalate	<0.1 mg/kg	TM157	<0.1
n-Dibutyl phthalate	<0.1 mg/kg	TM157	<0.1
Dibenzofuran	<0.1 mg/kg	TM157	<0.1
Carbazole	<0.1 mg/kg	TM157	<0.1
Butylbenzyl phthalate	<0.1 mg/kg	TM157	<0.1
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157	<0.1
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157	<0.1
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157	<0.1
Azobenzene	<0.1 mg/kg	TM157	<0.1
4-Nitrophenol	<0.1 mg/kg	TM157	<0.1
4-Nitroaniline	<0.1 mg/kg	TM157	<0.1
4-Methylphenol	<0.1 mg/kg	TM157	<0.1
4-Chlorophenylphenylether	<0.1 mg/kg	TM157	<0.1
4-Chloroaniline	<0.1 mg/kg	TM157	<0.1
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157	<0.1
4-Bromophenylphenylether	<0.1 mg/kg	TM157	<0.1
3-Nitroaniline	<0.1 mg/kg	TM157	<0.1
2-Nitrophenol	<0.1 mg/kg	TM157	<0.1
2-Nitroaniline	<0.1 mg/kg	TM157	<0.1
2-Methylphenol	<0.1 mg/kg	TM157	<0.1
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157	<0.1
2-Chlorophenol	<0.1 mg/kg	TM157	<0.1

CERTIFICATE OF ANALYSIS

SDG:	210417-40	**Client Reference:**	784-B026948	**Report Number:**	596971
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595318

Semi Volatile Organic Compounds

Results Legend	
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aq	Aqueous / settled sample.
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**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			WS50A	1.50 - 1.50	Soil/Solid (S)	14/04/2021	.	16/04/2021	210417-40	24094787	ES6
2,6-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1								
2,4-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1								
2,4-Dimethylphenol	<0.1 mg/kg	TM157	<0.1								
2,4-Dichlorophenol	<0.1 mg/kg	TM157	<0.1								
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157	<0.1								
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157	<0.1								
1,4-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1								
1,3-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1								
1,2-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1								
2-Chloronaphthalene	<0.1 mg/kg	TM157	<0.1								
2-Methylnaphthalene	<0.1 mg/kg	TM157	<0.1								
Acenaphthylene	<0.1 mg/kg	TM157	<0.1								
Acenaphthene	<0.1 mg/kg	TM157	<0.1								
Anthracene	<0.1 mg/kg	TM157	<0.1								
Benzo(a)anthracene	<0.1 mg/kg	TM157	<0.1								
Benzo(b)fluoranthene	<0.1 mg/kg	TM157	<0.1								
Benzo(k)fluoranthene	<0.1 mg/kg	TM157	<0.1								
Benzo(a)pyrene	<0.1 mg/kg	TM157	<0.1								
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157	<0.1								
Chrysene	<0.1 mg/kg	TM157	<0.1								
Fluoranthene	<0.1 mg/kg	TM157	<0.1								
Fluorene	<0.1 mg/kg	TM157	<0.1								
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157	<0.1								
Phenanthrene	<0.1 mg/kg	TM157	<0.1								
Pyrene	<0.1 mg/kg	TM157	<0.1								
Naphthalene	<0.1 mg/kg	TM157	<0.1								
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157	<0.1								
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157	<0.1								

Validated

CERTIFICATE OF ANALYSIS

SDG:	210417-40	**Client Reference:**	784-B026948	**Report Number:**	596971
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595318

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS54	WS50A				
			Depth (m)	0.60 - 0.60	1.50 - 1.50				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	14/04/2021	14/04/2021				
			Sample Time	.	.				
			Date Received	16/04/2021	16/04/2021				
			SDG Ref	210417-40	210417-40				
			Lab Sample No.(s)	24094819	24094787				
			AGS Reference	ES3	ES6				
GRO Surrogate % recovery**	%	TM089		99	109				
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	0.0246				
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	0.0283				
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	0.204				
Aliphatics >C10-C12	<1 mg/kg	TM414		<1	<1				
Aliphatics >C12-C16	<1 mg/kg	TM414		<1	<1				
Aliphatics >C16-C21	<1 mg/kg	TM414		1.46	<1				
Aliphatics >C21-C35	<1 mg/kg	TM414		44.2	1.49				
Aliphatics >C35-C44	<1 mg/kg	TM414		5.36	<1				
Total Aliphatics >C10-C44	<5 mg/kg	TM414		51	<5				
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		80.5	<10				
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	0.137				
Aromatics > EC10-EC12	<1 mg/kg	TM414		<1	<1				
Aromatics > EC12-EC16	<1 mg/kg	TM414		<1	<1				
Aromatics > EC16-EC21	<1 mg/kg	TM414		5.17	<1				
Aromatics > EC21-EC35	<1 mg/kg	TM414		22.1	<1				
Aromatics >EC35-EC44	<1 mg/kg	TM414		2.22	<1				
Aromatics > EC40-EC44	<1 mg/kg	TM414		<1	<1				
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		29.5	<5				
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		80.5	<10				
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		<0.05	0.257				
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		<0.05	0.137				
GRO >C5-C10	<0.02 mg/kg	TM089		<0.02	0.394				

CERTIFICATE OF ANALYSIS

SDG:	210417-40	**Client Reference:**	784-B026948	**Report Number:**	596971
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595318

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS54	WS50A			
			Depth (m)	0.60 - 0.60	1.50 - 1.50			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	14/04/2021	14/04/2021			
			Sample Time	.	.			
			Date Received	16/04/2021	16/04/2021			
			SDG Ref	210417-40	210417-40			
			Lab Sample No.(s)	24094819	24094787			
			AGS Reference	ES3	ES6			
Dibromofluoromethane**	%	TM116		105	107			
Toluene-d8**	%	TM116		97.9	97.2			
4-Bromofluorobenzene**	%	TM116		100	100			
Dichlorodifluoromethane	<0.006 mg/kg	TM116			<0.12 M			
Chloromethane	<0.007 mg/kg	TM116			<0.14 #			
Vinyl Chloride	<0.006 mg/kg	TM116			<0.12 M			
Bromomethane	<0.01 mg/kg	TM116			<0.2 M			
Chloroethane	<0.01 mg/kg	TM116			<0.2 M			
Trichlorofluorormethane	<0.006 mg/kg	TM116			<0.12 M			
1,1-Dichloroethene	<0.01 mg/kg	TM116			<0.2 #			
Carbon Disulphide	<0.007 mg/kg	TM116			<0.14 M			
Dichloromethane	<0.01 mg/kg	TM116			<0.2 #			
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 M	<0.2 M			
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116			<0.2 M			
1,1-Dichloroethane	<0.008 mg/kg	TM116			<0.16 M			
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116			<0.12 M			
2,2-Dichloropropane	<0.01 mg/kg	TM116			<0.2			
Bromochloromethane	<0.01 mg/kg	TM116			<0.2 M			
Chloroform	<0.008 mg/kg	TM116			<0.16 M			
1,1,1-Trichloroethane	<0.007 mg/kg	TM116			<0.14 M			
1,1-Dichloropropene	<0.01 mg/kg	TM116			<0.2 M			
Carbontetrachloride	<0.01 mg/kg	TM116			<0.2 M			
1,2-Dichloroethane	<0.005 mg/kg	TM116			<0.1 M			
Benzene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M			
Trichloroethene	<0.009 mg/kg	TM116			<0.18 #			
1,2-Dichloropropane	<0.01 mg/kg	TM116			<0.2 M			
Dibromomethane	<0.009 mg/kg	TM116			<0.18 M			
Bromodichloromethane	<0.007 mg/kg	TM116			<0.14 M			
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116			<0.2 M			
Toluene	<0.007 mg/kg	TM116		<0.14 M	<0.14 M			
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116			<0.2			
1,1,2-Trichloroethane	<0.01 mg/kg	TM116			<0.2 M			
1,3-Dichloropropane	<0.007 mg/kg	TM116			<0.14 M			

CERTIFICATE OF ANALYSIS

SDG:	210417-40	**Client Reference:**	784-B026948	**Report Number:**	596971
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595318

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS54	WS50A				
			Depth (m)	0.60 - 0.60	1.50 - 1.50				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	14/04/2021	14/04/2021				
			Sample Time	.	.				
			Date Received	16/04/2021	16/04/2021				
			SDG Ref	210417-40	210417-40				
			Lab Sample No.(s)	24094819	24094787				
			AGS Reference	ES3	ES6				
Tetrachloroethene	<0.005 mg/kg	TM116			<0.1 M				
Dibromochloromethane	<0.01 mg/kg	TM116			<0.2 M				
1,2-Dibromoethane	<0.01 mg/kg	TM116			<0.2 M				
Chlorobenzene	<0.005 mg/kg	TM116			<0.1 M				
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116			<0.2 M				
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 M	<0.08 M				
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #				
o-Xylene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Styrene	<0.01 mg/kg	TM116			<0.2 #				
Bromoform	<0.01 mg/kg	TM116			<0.2 M				
Isopropylbenzene	<0.005 mg/kg	TM116			<0.1 #				
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116			<0.2 #				
1,2,3-Trichloropropane	<0.016 mg/kg	TM116			<0.32 M				
Bromobenzene	<0.01 mg/kg	TM116			<0.2 M				
Propylbenzene	<0.01 mg/kg	TM116			<0.2 M				
2-Chlorotoluene	<0.009 mg/kg	TM116			<0.18 M				
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116			<0.16 M				
4-Chlorotoluene	<0.01 mg/kg	TM116			<0.2 M				
tert-Butylbenzene	<0.014 mg/kg	TM116			<0.28 M				
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116			<0.18 #				
sec-Butylbenzene	<0.01 mg/kg	TM116			<0.2				
4-Isopropyltoluene	<0.01 mg/kg	TM116			<0.2 M				
1,3-Dichlorobenzene	<0.008 mg/kg	TM116			<0.16 M				
1,4-Dichlorobenzene	<0.005 mg/kg	TM116			<0.1 M				
n-Butylbenzene	<0.011 mg/kg	TM116			<0.22				
1,2-Dichlorobenzene	<0.01 mg/kg	TM116			<0.2 M				
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116			<0.28 M				
Tert-amyl methyl ether	<0.01 mg/kg	TM116			<0.2 #				
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116			<0.4				
Hexachlorobutadiene	<0.02 mg/kg	TM116			<0.4				
Naphthalene	<0.013 mg/kg	TM116			<0.26 M				
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116			<0.4 #				
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116			<0.4				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210417-40	**Client Reference:**	784-B026948	**Report Number:**	596971
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595318

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS54	WS50A
			Depth (m)	0.60 - 0.60	1.50 - 1.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	14/04/2021	14/04/2021
			Sample Time	.	.
			Date Received	16/04/2021	16/04/2021
			SDG Ref	210417-40	210417-40
			Lab Sample No.(s)	24094819	24094787
			AGS Reference	ES3	ES6
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4	<0.4
Sum of BTEX	<0.04 mg/kg	TM116		<0.8	<0.8

CERTIFICATE OF ANALYSIS

SDG:	210417-40	**Client Reference:**	784-B026948	**Report Number:**	596971
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595318

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦$@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS54ES3 0.60 - 0.60 SOLID 14/04/2021 00:00:00 16/04/2021 05:00:00 210417-40 24094819 TM048	20/04/2021	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS50AES6 1.50 - 1.50 SOLID 14/04/2021 00:00:00 16/04/2021 05:00:00 210417-40 24094787 TM048	21.04.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	210417-40	**Client Reference:**	784-B026948	**Report Number:**	596971
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595318

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.100	**Natural Moisture Content (%)**	11.1
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	90
Particle Size <4mm	>95%		

Case	
SDG	210417-40
Lab Sample Number(s)	24094772
Sampled Date	14-Apr-2021
Customer Sample Ref.	WS50A ES3
Depth (m)	0.70 - 0.70

Eluate Analysis	**C_2 Conc^n in 10:1 eluate (mg/l)**		**A_2 10:1 conc^n leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	0.0000115	<0.00001	0.000115	<0.0001	-	-	-
Arsenic	0.00101	<0.0005	0.0101	<0.005	-	-	-
Boron	0.0676	<0.01	0.676	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.134	<0.019	1.34	<0.19	-	-	-
Lead	0.000285	<0.0002	0.00285	<0.002	-	-	-
Nickel	0.000641	<0.0004	0.00641	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00847	<0.001	0.0847	<0.01	-	-	-
Sulphide	0.0402	<0.01	0.402	<0.1	-	-	-

Leach Test Information

Date Prepared	19-Apr-2021
pH (pH Units)	8.33
Conductivity (µS/cm)	117.00
Temperature (°C)	19.90
Volume Leachant (Litres)	0.890

CERTIFICATE OF ANALYSIS

SDG:	210417-40	**Client Reference:**	784-B026948	**Report Number:**	596971
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595318

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.147	**Natural Moisture Content (%)**	63
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	61.3
Particle Size <4mm	>95%		

Case	
SDG	210417-40
Lab Sample Number(s)	24094838
Sampled Date	14-Apr-2021
Customer Sample Ref.	WS54 ES5
Depth (m)	1.50 - 1.50

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.00112	<0.0005	0.0112	<0.005	-	-	-
Boron	0.0753	<0.01	0.753	<0.1	-	-	-
Cadmium	0.000184	<0.00008	0.00184	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.121	<0.019	1.21	<0.19	-	-	-
Lead	0.000427	<0.0002	0.00427	<0.002	-	-	-
Nickel	0.00243	<0.0004	0.0243	<0.004	-	-	-
Selenium	0.00125	<0.001	0.0125	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0018	<0.001	0.018	<0.01	-	-	-
Sulphide	0.078	<0.01	0.78	<0.1	-	-	-

Leach Test Information

Date Prepared	19-Apr-2021
pH (pH Units)	8.46
Conductivity (µS/cm)	183.00
Temperature (°C)	19.70
Volume Leachant (Litres)	0.842

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210417-40	**Client Reference:**	784-B026948	**Report Number:**	596971
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595318

Test Completion Dates

Lab Sample No(s)	24094819	24094838	24094847	24094772	24094787	24094794
Customer Sample Ref.	WS54	WS54	WS54	WS50A	WS50A	WS50A
AGS Ref.	ES3	ES5	ES9	ES3	ES6	ES9
Depth	0.60 - 0.60	1.50 - 1.50	3.00 - 3.00	0.70 - 0.70	1.50 - 1.50	2.50 - 2.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	23-Apr-2021				23-Apr-2021	
Ammoniacal Nitrogen		22-Apr-2021		22-Apr-2021		
Ammonium Soil by Titration	21-Apr-2021				21-Apr-2021	
Anions by Kone (soil)	23-Apr-2021				23-Apr-2021	
Asbestos ID in Solid Samples	20-Apr-2021				21-Apr-2021	
Boron Water Soluble	22-Apr-2021				22-Apr-2021	
CEN 10:1 Leachate (1 Stage)		19-Apr-2021		19-Apr-2021		
CEN Readings		20-Apr-2021		20-Apr-2021		
Clostridia Perfringens (S)*			04-May-2021			04-May-2021
Cyanide Comp/Free/Total/Thiocyanate	21-Apr-2021	22-Apr-2021		22-Apr-2021	21-Apr-2021	
Dissolved Metals by ICP-MS		23-Apr-2021		21-Apr-2021		
EPH	22-Apr-2021				21-Apr-2021	
EPH by GCxGC-FID	21-Apr-2021				21-Apr-2021	
EPH CWG GC (S)	21-Apr-2021				21-Apr-2021	
GRO by GC-FID (S)	22-Apr-2021				21-Apr-2021	
Hexavalent Chromium (s)	21-Apr-2021				21-Apr-2021	
Hexavalent Chromium (w)		22-Apr-2021		21-Apr-2021		
Mercury Dissolved		22-Apr-2021		22-Apr-2021		
Metals in solid samples by OES	23-Apr-2021				23-Apr-2021	
Moisture at 105C		19-Apr-2021		19-Apr-2021		
PAH by GCMS	21-Apr-2021				21-Apr-2021	
PCBs by GCMS					21-Apr-2021	
pH	20-Apr-2021				20-Apr-2021	
pH Value of Filtered Water		21-Apr-2021		20-Apr-2021		
Phenols by HPLC (S)	21-Apr-2021				21-Apr-2021	
Sample description	19-Apr-2021	18-Apr-2021	18-Apr-2021	18-Apr-2021	19-Apr-2021	18-Apr-2021
Semi Volatile Organic Compounds					22-Apr-2021	
Sulphide		22-Apr-2021		21-Apr-2021		
Total Coliforms(S)*			04-May-2021			
Total Organic Carbon	23-Apr-2021				23-Apr-2021	
TPH CWG GC (S)	22-Apr-2021				21-Apr-2021	
VOC MS (S)	21-Apr-2021				21-Apr-2021	

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2465	QC 2494
Ammoniacal Nitrogen as N	TM099	**97.6** 91.28 : 106.64	**98.4** 91.28 : 106.64

Ammonium Soil by Titration

Component	Method Code	QC 2464
Exchangeable Ammonium as NH4	TM024	**89.05** 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2484
Chloride (soluble)	TM243	**137.82** 80.93 : 111.66
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**150.47** 70.00 : 130.00

Boron Water Soluble

Component	Method Code	QC 2421
Water Soluble Boron	TM222	**98.0** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2499	QC 2462
Free Cyanide	TM153	**97.43** 79.00 : 115.00	
Free Cyanide (W)	TM227		**80.75** 91.52 : 123.82
Thiocyanate	TM153	**98.08** 94.09 : 113.89	
Thiocyanate (W)	TM227		**106.5** 90.50 : 113.00
Total Cyanide	TM153	**95.1** 73.07 : 107.47	
Total Cyanide (W)	TM227		**103.25** 91.75 : 112.75

Dissolved Metals by ICP-MS

CERTIFICATE OF ANALYSIS

SDG:	210417-40	**Client Reference:**	784-B026948	**Report Number:**	596971
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595318

Dissolved Metals by ICP-MS

Component	Method Code	QC 2436	QC 2463	QC 2421
Aluminium	TM152	**99.0** 90.78 : 110.89	**108.0** 90.78 : 110.89	**100.67** 90.78 : 110.89
Antimony	TM152	**101.33** 77.22 : 119.42	**107.17** 77.22 : 119.42	**102.33** 77.22 : 119.42
Arsenic	TM152	**97.33** 86.77 : 107.67	**105.67** 86.77 : 107.67	**98.5** 86.77 : 107.67
Barium	TM152	**99.17** 87.86 : 110.23	**107.17** 87.86 : 110.23	**99.33** 87.86 : 110.23
Beryllium	TM152	**99.67** 86.19 : 112.98	**108.83** 86.19 : 112.98	**102.83** 86.19 : 112.98
Bismuth	TM152	**96.17** 84.06 : 106.46	**106.17** 84.06 : 106.46	**96.83** 84.06 : 106.46
Borate	TM152	**101.85** 88.00 : 112.00	**111.11** 88.00 : 112.00	**103.7** 88.00 : 112.00
Boron	TM152	**101.67** 83.92 : 114.90	**110.67** 83.92 : 114.90	**103.67** 83.92 : 114.90
Cadmium	TM152	**97.67** 88.89 : 106.69	**105.67** 88.89 : 106.69	**98.83** 88.89 : 106.69
Calcium	TM152	**96.67** 80.24 : 117.95	**104.0** 80.24 : 117.95	**98.0** 80.24 : 117.95
Chromium	TM152	**97.83** 83.22 : 110.16	**105.67** 83.22 : 110.16	**97.83** 83.22 : 110.16
Cobalt	TM152	**97.33** 82.49 : 112.36	**105.33** 82.49 : 112.36	**97.67** 82.49 : 112.36
Copper	TM152	**96.33** 83.14 : 113.00	**105.83** 83.14 : 113.00	**97.5** 83.14 : 113.00
Iron	TM152	**98.0** 88.40 : 109.24	**106.67** 88.40 : 109.24	**98.0** 88.40 : 109.24
Lead	TM152	**97.0** 83.71 : 109.58	**104.67** 83.71 : 109.58	**96.83** 83.71 : 109.58
Lithium	TM152	**98.5** 84.50 : 114.28	**108.5** 84.50 : 114.28	**102.5** 84.50 : 114.28
Magnesium	TM152	**94.0** 87.56 : 114.57	**103.33** 87.56 : 114.57	**96.0** 87.56 : 114.57
Manganese	TM152	**98.5** 90.01 : 108.72	**106.5** 90.01 : 108.72	**99.17** 90.01 : 108.72
Molybdenum	TM152	**95.33** 85.53 : 107.42	**103.0** 85.53 : 107.42	**94.83** 85.53 : 107.42
Nickel	TM152	**97.5** 88.05 : 106.42	**105.83** 88.05 : 106.42	**98.0** 88.05 : 106.42
Phosphorus	TM152	**96.83** 82.76 : 107.72	**106.5** 82.76 : 107.72	**100.33** 82.76 : 107.72
Potassium	TM152	**96.67** 88.45 : 106.42	**104.67** 88.45 : 106.42	**98.67** 88.45 : 106.42
Selenium	TM152	**98.0** 85.61 : 111.03	**104.83** 85.61 : 111.03	**96.17** 85.61 : 111.03
Silver	TM152	**95.67** 88.48 : 110.48	**105.17** 88.48 : 110.48	**95.33** 88.48 : 110.48
Sodium	TM152	**94.67** 88.32 : 106.30	**104.0** 88.32 : 106.30	**96.67** 88.32 : 106.30
Strontium	TM152	**98.67** 83.77 : 107.87	**103.67** 83.77 : 107.87	**98.33** 83.77 : 107.87
Tellurium	TM152	**95.5** 82.83 : 104.73	**101.5** 82.83 : 104.73	**97.5** 82.83 : 104.73

Dissolved Metals by ICP-MS

		QC 2436	QC 2463	QC 2421
Thallium	TM152	**94.17** 77.47 : 113.87	**103.67** 77.47 : 113.87	**92.83** 77.47 : 113.87
Tin	TM152	**100.0** 87.36 : 109.55	**107.83** 87.36 : 109.55	**100.17** 87.36 : 109.55
Titanium	TM152	**101.5** 87.29 : 108.31	**110.33** 87.29 : 108.31	**104.0** 87.29 : 108.31
Tungsten	TM152	**98.0** 68.27 : 122.97	**104.83** 68.27 : 122.97	**97.83** 68.27 : 122.97
Uranium	TM152	**95.5** 82.46 : 105.16	**103.33** 82.46 : 105.16	**95.33** 82.46 : 105.16
Vanadium	TM152	**97.5** 88.43 : 114.30	**106.67** 88.43 : 114.30	**103.83** 88.43 : 114.30
Zinc	TM152	**98.0** 85.57 : 114.31	**106.67** 85.57 : 114.31	**99.33** 85.57 : 114.31

EPH by GCxGC-FID

Component	Method Code	QC 2450
EPH >C10-C40 Raw	TM415	**99.12** 56.36 : 129.92

EPH CWG GC (S)

Component	Method Code	QC 2459
EPH >C8-C40 Raw	TM414	**96.33** 67.87 : 120.05
Total Aliphatics Raw	TM414	**103.29** 66.68 : 120.89
Total Aromatics Raw	TM414	**100.49** 61.16 : 129.42

GRO by GC-FID (S)

Component	Method Code	QC 2419	QC 2436
QC	TM089	**90.63** 70.75 : 114.19	**93.56** 70.75 : 114.19

Hexavalent Chromium (s)

Component	Method Code	QC 2460
Hexavalent Chromium	TM151	**102.0** 92.00 : 111.20

Hexavalent Chromium (w)

Hexavalent Chromium (w)

Component	Method Code	QC 2408	QC 2443
Hexavalent Chromium	TM241	**102.0** 94.17 : 106.17	**100.4** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2438	QC 2414
Mercury Dissolved (CVAF)	TM183	**104.0** 69.30 : 128.70	**110.0** 69.30 : 128.70

Metals in solid samples by OES

Component	Method Code	QC 2400
Aluminium	TM181	**100.0** 77.46 : 123.98
Antimony	TM181	**102.44** 87.04 : 111.16
Arsenic	TM181	**99.71** 87.34 : 110.87
Barium	TM181	**99.08** 80.73 : 115.16
Beryllium	TM181	**95.52** 89.47 : 112.97
Boron	TM181	**92.84** 76.57 : 104.15
Cadmium	TM181	**93.0** 78.94 : 102.43
Chromium	TM181	**88.64** 77.55 : 104.47
Cobalt	TM181	**88.68** 82.95 : 107.41
Copper	TM181	**96.48** 84.36 : 106.14
Iron	TM181	**98.41** 81.43 : 115.79
Lead	TM181	**94.59** 81.95 : 107.63
Manganese	TM181	**107.78** 94.29 : 119.51
Mercury	TM181	**93.72** 82.73 : 106.36
Molybdenum	TM181	**97.12** 86.61 : 111.07
Nickel	TM181	**90.22** 79.72 : 103.80
Phosphorus	TM181	**109.49** 92.65 : 125.47
Selenium	TM181	**101.57** 88.36 : 111.25

Metals in solid samples by OES

		QC 2400
Strontium	TM181	**90.87** 78.06 : 99.91
Thallium	TM181	**100.0** 88.60 : 116.73
Tin	TM181	**96.96** 89.77 : 112.62
Titanium	TM181	**88.55** 66.29 : 105.96
Vanadium	TM181	**91.21** 75.51 : 108.87
Zinc	TM181	**98.77** 84.02 : 111.24

PAH by GCMS

Component	Method Code	QC 2405	QC 2470
Acenaphthene	TM218	**87.0** 76.79 : 103.90	**86.5** 76.79 : 103.90
Acenaphthylene	TM218	**85.0** 74.19 : 106.17	**85.5** 74.19 : 106.17
Anthracene	TM218	**84.5** 70.90 : 109.22	**86.5** 70.90 : 109.22
Benz(a)anthracene	TM218	**80.0** 73.77 : 119.26	**84.0** 73.77 : 119.26
Benzo(a)pyrene	TM218	**78.0** 73.20 : 114.18	**83.0** 73.20 : 114.18
Benzo(b)fluoranthene	TM218	**77.5** 75.36 : 117.58	**82.5** 75.36 : 117.58
Benzo(ghi)perylene	TM218	**79.0** 70.73 : 116.12	**78.0** 70.73 : 116.12
Benzo(k)fluoranthene	TM218	**83.5** 75.98 : 116.59	**83.5** 75.98 : 116.59
Chrysene	TM218	**84.5** 74.82 : 114.18	**81.0** 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	**79.5** 69.17 : 115.30	**77.0** 69.17 : 115.30
Fluoranthene	TM218	**77.5** 66.06 : 114.63	**82.0** 66.06 : 114.63
Fluorene	TM218	**86.0** 76.66 : 107.56	**86.5** 76.66 : 107.56
Indeno(123cd)pyrene	TM218	**80.5** 70.26 : 117.95	**78.0** 70.26 : 117.95
Naphthalene	TM218	**85.5** 74.70 : 101.83	**84.0** 74.70 : 101.83
Phenanthrene	TM218	**84.0** 73.62 : 109.34	**85.5** 73.62 : 109.34
Pyrene	TM218	**78.5** 71.46 : 117.00	**81.0** 71.46 : 117.00

PCBs by GCMS

PCBs by GCMS

Component	Method Code	QC 2416
PCB congener 101	TM168	**79.6** 65.66 : 110.06
PCB congener 105	TM168	**73.3** 58.10 : 106.34
PCB congener 114	TM168	**70.8** 59.38 : 106.48
PCB congener 118	TM168	**72.3** 60.02 : 106.23
PCB congener 123	TM168	**77.5** 65.01 : 99.81
PCB congener 126	TM168	**71.0** 59.31 : 109.23
PCB congener 138	TM168	**74.2** 63.95 : 107.63
PCB congener 153	TM168	**76.7** 62.65 : 108.85
PCB congener 156	TM168	**70.9** 61.69 : 112.27
PCB congener 157	TM168	**68.1** 55.37 : 104.81
PCB congener 167	TM168	**71.7** 65.58 : 109.14
PCB congener 169	TM168	**71.4** 56.84 : 112.10
PCB congener 180	TM168	**75.0** 66.99 : 111.63
PCB congener 189	TM168	**71.4** 57.75 : 112.59
PCB congener 28	TM168	**80.4** 73.68 : 105.96
PCB congener 52	TM168	**79.2** 67.24 : 107.62
PCB congener 77	TM168	**76.5** 64.87 : 108.49
PCB congener 81	TM168	**78.0** 70.78 : 110.80

pH

Component	Method Code	QC 2465	QC 2407
pH	TM133	**99.12** 98.41 : 102.48	**98.38** 97.51 : 101.32

pH Value of Filtered Water

Component	Method Code	QC 2468	QC 2468
pH	TM256	**99.73** 99.20 : 101.60	**101.34** 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2400
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**50.65** 70.71 : 116.42
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**43.27** 64.54 : 117.79
Cresols by HPLC (S)	TM062 (S)	**47.39** 74.40 : 108.98
Phenol by HPLC (S)	TM062 (S)	**50.33** 69.44 : 122.18
Xylenols by HPLC (S)	TM062 (S)	**48.12** 76.56 : 106.38

Semi Volatile Organic Compounds

Component	Method Code	QC 2479
4-Bromophenylphenylether (Soil)	TM157	**77.0** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**91.0** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**82.5** 68.25 : 126.75
Naphthalene (Soil)	TM157	**87.5** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**78.5** 66.50 : 123.50
Phenol (Soil)	TM157	**88.5** 69.92 : 114.02

Sulphide

Component	Method Code	QC 2444	QC 2427
Sulphide	TM101	**106.0** 88.90 : 112.50	**96.67** 88.90 : 112.50

Total Organic Carbon

Component	Method Code	QC 2436
Total Organic Carbon	TM132	**100.0** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2424
1,1,1,2-tetrachloroethane	TM116	**98.0** 86.59 : 118.97
1,1,1-Trichloroethane	TM116	**100.2** 86.26 : 117.53
1,1,2-Trichloroethane	TM116	**102.6** 75.16 : 112.70

VOC MS (S)

		QC 2424
1,1-Dichloroethane	TM116	**104.6** 83.27 : 122.16
1,2-Dichloroethane	TM116	**107.0** 89.30 : 133.10
1,4-Dichlorobenzene	TM116	**111.8** 82.59 : 123.23
2-Chlorotoluene	TM116	**105.2** 66.81 : 118.43
4-Chlorotoluene	TM116	**102.8** 65.88 : 114.76
Benzene	TM116	**96.4** 93.16 : 123.63
Carbon Disulphide	TM116	**93.2** 75.11 : 124.81
Carbontetrachloride	TM116	**104.4** 82.35 : 126.46
Chlorobenzene	TM116	**100.0** 85.07 : 118.13
Chloroform	TM116	**104.2** 88.13 : 122.71
Chloromethane	TM116	**82.8** 61.62 : 145.66
Cis-1,2-Dichloroethene	TM116	**105.0** 78.27 : 128.90
Dibromomethane	TM116	**103.2** 77.47 : 121.29
Dichloromethane	TM116	**109.6** 87.89 : 134.72
Ethylbenzene	TM116	**88.6** 79.92 : 110.05
Hexachlorobutadiene	TM116	**67.2** 16.78 : 153.29
Isopropylbenzene	TM116	**79.8** 64.20 : 119.59
Naphthalene	TM116	**123.2** 79.29 : 125.59
o-Xylene	TM116	**88.4** 72.86 : 102.10
p/m-Xylene	TM116	**82.1** 74.06 : 106.47
Sec-Butylbenzene	TM116	**79.0** 44.71 : 117.87
Tetrachloroethene	TM116	**96.4** 77.82 : 125.00
Toluene	TM116	**93.6** 87.82 : 116.21
Trichloroethene	TM116	**94.6** 79.80 : 112.33
Trichlorofluoromethane	TM116	**93.0** 80.52 : 132.12
Vinyl Chloride	TM116	**99.0** 74.57 : 146.88

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.

The figure detailed is the percentage recovery result for the AQC.

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

ALS Environmental Ltd
Torrington Avenue
Coventry
CV4 9GU

[redacted]

Subcon Results
ALS Life Sciences Limited
Torrington Avenue
Tile Hill CV4 9GU

04 May 2021

Test Report: COV/2124015/2021

Dear Subcon Results

Analysis of your sample(s) received on 23 April 2021 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using ALS Environmental Ltd and we look forward to receiving your next samples.

Yours Sincerely,

Signed: [redacted]

Name: A. Zunzunegui

Title: Dept Organic Technical Manager

UKAS TESTING 1314

bsi ISO 14001 Environmental Management CERTIFIED ISO 45001 Occupational Health and Safety Management CERTIFIED
EMS 675527 OHS 542058

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

Report Summary

ANALYSED BY

1314

Hawarden Subcon Results
ALS Life Sciences Limited
Torrington Avenue
Tile Hill
CV4 9GU

Date of Issue: **04 May 2021**

Report Number: **COV/2124015/2021** Issue **1**

This issue replaces all previous issues

Job Description: 2020 Analysis

Job Location: 210417-40

Number of Samples included in this report **3**

Job Received: **23 April 2021**

Number of Test Results included in this report **5**

Analysis Commenced: **24 April 2021**

Signed: [redacted]

Name: **A. Zunzunegui** Date: **04 May 2021**

Title: **Dept Organic Technical Manager**

ALS Environmental Ltd was not responsible for sampling unless otherwise stated.

Information on the methods of analysis and performance characteristics are available on request.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. The results relate only to the items tested and where relevant sampled.
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.
This test report is not a statement of conformity to any specification or standard.

Certificate of Analysis

ANALYSED BY

1314

Report Number:	**COV/2124015/2021**	Issue	**1**
Laboratory Number:	**20365060**	Sample	**1** of **3**

Sample Source: **ALS Life Sciences Limited**
Sample Point Description:
Sample Description: **24126144**
Sample Matrix: **Soil**
Sample Date/Time: **14 April 2021**
Sample Received: **23 April 2021**
Analysis Complete: **04 May 2021**

Sample Reference: **WS50A**

Test Description	Result	Units	Analysis Date	Accreditation		Method
Clostridia perfringens	12	cfu/g	02/05/2021	N	Cov	W32
Solids, Total at 105c, sludge.	81.3	%	27/04/2021	Y	Cov	CON10

Analyst Comments for 20365060: This sample has been analysed for Solids, Total at 105c, sludge. outside recommended stability times. It is therefore possible that the results provided may be compromised.

This issue replaces all previous issues
Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: [redacted]

Name: **A. Zunzunegui** Date: **04 May 2021**

Title: **Dept Organic Technical Manager**

ALS Environmental Ltd
Torrington Avenue, Coventry, CV4 9GU
Tel:+44 (0)24 7642 1213 Fax:+44 (0)24 7685 6575

Certificate of Analysis

ANALYSED BY

1314

Report Number:	**COV/2124015/2021**	Issue	**1**
Laboratory Number:	**20365061**	Sample	**2** of **3**

Sample Source:	**ALS Life Sciences Limited**
Sample Point Description:	
Sample Description:	**24126124**
Sample Matrix:	**Soil**
Sample Date/Time:	**14 April 2021**
Sample Received:	**23 April 2021**
Analysis Complete:	**04 May 2021**
Sample Reference:	**WS54**

Test Description	Result	Units	Analysis Date	Accreditation		Method
Total Coliforms	9454	cfu/g	02/05/2021	N	Cov	W32
Solids, Total at 105c, sludge.	50.5	%	27/04/2021	Y	Cov	CON10

Analyst Comments for 20365061: This sample has been analysed for Solids, Total at 105c, sludge. outside recommended stability times. It is therefore possible that the results provided may be compromised.

This issue replaces all previous issues
Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: [redacted]

Name: **A. Zunzunegui** Date: **04 May 2021**

Title: **Dept Organic Technical Manager**

ALS Environmental Ltd
Torrington Avenue, Coventry, CV4 9GU
Tel:+44 (0)24 7642 1213 Fax:+44 (0)24 7685 6575

Certificate of Analysis

ANALYSED BY

1314

Report Number:	**COV/2124015/2021**	Issue	**1**
Laboratory Number:	**20365062**	Sample	**3** of **3**

Sample Source: **ALS Life Sciences Limited**
Sample Point Description:
Sample Description: **24126137**
Sample Matrix: **Soil**
Sample Date/Time: **14 April 2021**
Sample Received: **23 April 2021**
Analysis Complete: **04 May 2021**

Sample Reference: **WS54**

Test Description	Result	Units	Analysis Date	Accreditation	Method
Clostridia perfringens	<10	cfu/g	25/04/2021	N Cov	W32

Analyst Comments for 20365062: No Analyst Comment

This issue replaces all previous issues
Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: [redacted]

Name: **A. Zunzunegui** Date: **04 May 2021**

Title: **Dept Organic Technical Manager**

ALS Environmental Ltd
Torrington Avenue, Coventry, CV4 9GU
Tel:+44 (0)24 7642 1213 Fax:+44 (0)24 7685 6575

ANALYST COMMENTS FOR REPORT COV/2124015/2021 Issue 1

This issue replaces all previous issues

Date of Issue: **04 May 2021**

Sample No	Analysis Comments
20365060	This sample has been analysed for Solids, Total at 105c, sludge. outside recommended stability times. It is therefore possible that the results provided may be compromised.
20365061	This sample has been analysed for Solids, Total at 105c, sludge. outside recommended stability times. It is therefore possible that the results provided may be compromised.
20365062	

Signed: [redacted]

Name: **A. Zunzunegui** Date: **04 May 2021**

Title: **Dept Organic Technical Manager**

DETERMINAND COMMENTS FOR REPORT COV/2124015/2021

ISSUE 1

This issue replaces all previous issues

Date of Issue: 04 May 2021

Sample No	Description	Determinand	Comments

Signed: [redacted]

Name: **A. Zunzunegui** Date: **04 May 2021**

Title: **Dept Organic Technical Manager**

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Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	28 April 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210417-79
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	595680

We received 16 samples on Saturday April 17, 2021 and 7 of these samples were scheduled for analysis which was completed on Wednesday April 28, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210417-79	**Client Reference:**	784-B026948	**Report Number:**	595680
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24097918	TP34	ES1	0.10 - 0.10	15/04/2021
24097927	TP34	ES3	0.50 - 0.50	15/04/2021
24097938	TP37	ES1	0.10 - 0.10	15/04/2021
24097812	TP37	ES4	0.90 - 0.90	15/04/2021
24097824	TP39	ES1	0.10 - 0.10	15/04/2021
24097831	TP39	ES4	0.40 - 0.40	15/04/2021
24097838	TP43	ES1	0.10 - 0.10	15/04/2021
24097849	TP43	ES4	0.60 - 0.60	15/04/2021
24097885	TP44	ES1	0.10 - 0.10	15/04/2021
24097892	TP44	ES3	0.70 - 0.70	15/04/2021
24097856	TP45	ES1	0.10 - 0.10	15/04/2021
24097866	TP45	ES4	1.00 - 1.00	15/04/2021
24097901	TP46	ES1	0.10 - 0.10	15/04/2021
24097910	TP46	ES3	0.90 - 0.90	15/04/2021
24097803	TP50	ES1	0.10 - 0.10	15/04/2021
24097876	TP50	ES3	0.80 - 0.80	15/04/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210417-79	**Client Reference:**	784-B026948	**Report Number:**	595680
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24097824			24097831			24097849			24097885		24097856		24097901			24097876		
Customer Sample Reference			TP39			TP39			TP43			TP44		TP45		TP46			TP50		
AGS Reference			ES1			ES4			ES4			ES1		ES1		ES1			ES3		
Depth (m)			0.10 - 0.10			0.40 - 0.40			0.60 - 0.60			0.10 - 0.10		0.10 - 0.10		0.10 - 0.10			0.80 - 0.80		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 4		X						X							X			X	
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 3							X			X		X							
Ammonium Soil by Titration	All	NDPs: 0 Tests: 4		X						X							X			X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 4		X						X							X			X	
Anions by Kone (w)	All	NDPs: 0 Tests: 1				X															
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 4	X						X							X			X		
Boron Water Soluble	All	NDPs: 0 Tests: 4		X						X							X			X	
CEN Readings	All	NDPs: 0 Tests: 4				X			X			X		X							
Coronene	All	NDPs: 0 Tests: 1					X														
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 7		X					X	X		X		X			X			X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 4				X			X			X		X							
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1				X															
EPH	All	NDPs: 0 Tests: 4		X						X							X			X	
EPH by GCxGC-FID	All	NDPs: 0 Tests: 5		X			X			X							X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 4		X						X							X			X	

Validated

CERTIFICATE OF ANALYSIS

SDG:	210417-79	**Client Reference:**	784-B026948	**Report Number:**	595680
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24097824			24097831			24097849			24097885	24097856		24097901			24097876	
Customer Sample Reference			TP39			TP39			TP43			TP44	TP45		TP46			TP50	
AGS Reference			ES1			ES4			ES4			ES1	ES1		ES1			ES3	
Depth (m)			0.10 - 0.10			0.40 - 0.40			0.60 - 0.60			0.10 - 0.10	0.10 - 0.10		0.10 - 0.10			0.80 - 0.80	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Fluoride	All	NDPs: 0 Tests: 1				X														
GRO by GC-FID (S)	All	NDPs: 0 Tests: 4			X						X						X			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 4		X						X						X			X	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 3							X			X		X						
Mercury Dissolved	All	NDPs: 0 Tests: 4				X			X			X		X						
Metals in solid samples by OES	All	NDPs: 0 Tests: 4		X						X						X			X	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1					X													
PAH by GCMS	All	NDPs: 0 Tests: 5		X			X			X						X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 1					X													
pH	All	NDPs: 0 Tests: 4		X						X						X			X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 3							X			X		X						
Phenols by HPLC (S)	All	NDPs: 0 Tests: 4		X						X						X			X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1				X														
Sample description	All	NDPs: 0 Tests: 6		X			X						X		X	X			X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1								X										

Validated

CERTIFICATE OF ANALYSIS

SDG:	210417-79	**Client Reference:**	784-B026948	**Report Number:**	595680
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24097824		24097831			24097849			24097885		24097856		24097901			24097876		
Customer Sample Reference			TP39		TP39			TP43			TP44		TP45		TP46			TP50		
AGS Reference			ES1		ES4			ES4			ES1		ES1		ES1			ES3		
Depth (m)			0.10 - 0.10		0.40 - 0.40			0.60 - 0.60			0.10 - 0.10		0.10 - 0.10		0.10 - 0.10			0.80 - 0.80		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Sulphide	All	NDPs: 0 Tests: 3							X			X		X							
Total Dissolved Solids	All	NDPs: 0 Tests: 1				X															
Total Organic Carbon	All	NDPs: 0 Tests: 5		X			X			X							X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 4		X						X							X			X	
VOC MS (S)	All	NDPs: 0 Tests: 5			X			X			X							X			X

CERTIFICATE OF ANALYSIS

SDG:	210417-79	**Client Reference:**	784-B026948	**Report Number:**	595680
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24097824	TP39	0.10 - 0.10	Dark Brown	Loamy Sand	Stones	Vegetation
24097831	TP39	0.40 - 0.40	Dark Brown	Loamy Sand	Stones	Vegetation
24097849	TP43	0.60 - 0.60	Dark Brown	Sand	Stones	Brick
24097885	TP44	0.10 - 0.10	Dark Brown	Loamy Sand	Stones	Vegetation
24097856	TP45	0.10 - 0.10	Dark Brown	Sand	Stones	Vegetation
24097901	TP46	0.10 - 0.10	Dark Brown	Loamy Sand	Stones	Vegetation
24097876	TP50	0.80 - 0.80	Dark Brown	Sandy Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210417-79	**Client Reference:**	784-B026948	**Report Number:**	595680
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	TP39	TP39	TP43	TP44	TP45	TP46
			Depth (m)	0.10 - 0.10	0.40 - 0.40	0.60 - 0.60	0.10 - 0.10	0.10 - 0.10	0.10 - 0.10
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	15/04/2021	15/04/2021	15/04/2021	15/04/2021	15/04/2021	15/04/2021
			Sample Time	.	.	.	.	.	.
			Date Received	17/04/2021	17/04/2021	17/04/2021	17/04/2021	17/04/2021	17/04/2021
			SDG Ref	210417-79	210417-79	210417-79	210417-79	210417-79	210417-79
			Lab Sample No.(s)	24097824	24097831	24097849	24097885	24097856	24097901
			AGS Reference	ES1	ES4	ES4	ES1	ES1	ES1
Moisture Content Ratio (% of as received sample)	%	PM024		7.5	7.8	3	5.2	3.8	9.1
Exchangeable Ammonia as N	<12 mg/kg	TM024		<12 M		<12 M			19.5 M
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 M		0.0206 M			<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)		0.0108 M		0.0103 M			0.011 M
Xylenols	<0.015 mg/kg	TM062 (S)		<0.015 M		<0.015 M			<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 M		<0.035 M			<0.035 M
Organic Carbon, Total	<0.2 %	TM132			2.63 M				
Soil Organic Matter (SOM)	<0.35 %	TM132		3.5 #		1.83 #			3.36 #
pH	1 pH Units	TM133		9.65 M		8.57 M			6.71 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #		<0.6 #			<0.6 #
Cyanide, Total	<1 mg/kg	TM153		<1 M		<1 M			<1 M
PCB congener 28	<0.003 mg/kg	TM168			<0.015 M				
PCB congener 52	<0.003 mg/kg	TM168			<0.015 M				
PCB congener 101	<0.003 mg/kg	TM168			<0.015 M				
PCB congener 118	<0.003 mg/kg	TM168			<0.015 M				
PCB congener 138	<0.003 mg/kg	TM168			<0.015 M				
PCB congener 153	<0.003 mg/kg	TM168			<0.015 M				
PCB congener 180	<0.003 mg/kg	TM168			<0.015 M				
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168			<0.105				
Arsenic	<0.6 mg/kg	TM181		7.49 M		8.51 M			6.8 M
Cadmium	<0.02 mg/kg	TM181		0.232 M		0.314 M			0.18 M
Chromium	<0.9 mg/kg	TM181		12.5 M		174 M			7.37 M
Copper	<1.4 mg/kg	TM181		15.4 M		25.2 M			22.1 M
Iron	<1000 mg/kg	TM181		14400 #		15900 #			16500 #
Lead	<0.7 mg/kg	TM181		34.5 M		52.9 M			74 M
Mercury	<0.1 mg/kg	TM181		<0.1 M		<0.1 M			<0.1 M
Nickel	<0.2 mg/kg	TM181		10.3 M		10.1 M			9.16 M
Selenium	<1 mg/kg	TM181		<1 #		<1 #			<1 #
Vanadium	<0.2 mg/kg	TM181		15.4 #		15.4 #			15.3 #
Zinc	<1.9 mg/kg	TM181		66.6 M		131 M			68.1 M
Boron, water soluble	<1 mg/kg	TM222		<1 M		<1 M			<1 M
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.0509 M		0.0187 M			0.0135 M
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248		4.84		4.7			4.45

CERTIFICATE OF ANALYSIS

SDG:	210417-79	**Client Reference:**	784-B026948	**Report Number:**	595680
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	TP39	TP39	TP43	TP44	TP45	TP46
			Depth (m)	0.10 - 0.10	0.40 - 0.40	0.60 - 0.60	0.10 - 0.10	0.10 - 0.10	0.10 - 0.10
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	15/04/2021	15/04/2021	15/04/2021	15/04/2021	15/04/2021	15/04/2021
			Sample Time	.	.	.	.	.	.
			Date Received	17/04/2021	17/04/2021	17/04/2021	17/04/2021	17/04/2021	17/04/2021
			SDG Ref	210417-79	210417-79	210417-79	210417-79	210417-79	210417-79
			Lab Sample No.(s)	24097824	24097831	24097849	24097885	24097856	24097901
			AGS Reference	ES1	ES4	ES4	ES1	ES1	ES1
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410			<10				
Coronene	<0.2 mg/kg	TM410			0.237				
EPH (C5-C40)	<35 mg/kg	TM415	314		296				47.1
EPH Surrogate % recovery**	%	TM415	112	102	120				96
EPH >C10-C40	<35 mg/kg	TM415	314 M		296 M				47.1 M
Mineral Oil >C10-C40	<5 mg/kg	TM415		43.5					

Validated

CERTIFICATE OF ANALYSIS

SDG:	210417-79	**Client Reference:**	784-B026948	**Report Number:**	595680
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref. TP50	Depth (m) 0.80 - 0.80	Sample Type Soil/Solid (S)	Date Sampled 15/04/2021	Sample Time .	Date Received 17/04/2021	SDG Ref 210417-79	Lab Sample No.(s) 24097876	AGS Reference ES3
Moisture Content Ratio (% of as received sample)	%	PM024	11								
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12 M								
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M								
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M								
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M								
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M								
Soil Organic Matter (SOM)	<0.35 %	TM132	0.819 #								
pH	1 pH Units	TM133	7.64 M								
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #								
Cyanide, Total	<1 mg/kg	TM153	<1 M								
Arsenic	<0.6 mg/kg	TM181	8.86 M								
Cadmium	<0.02 mg/kg	TM181	0.0706 M								
Chromium	<0.9 mg/kg	TM181	11.2 M								
Copper	<1.4 mg/kg	TM181	15.1 M								
Iron	<1000 mg/kg	TM181	21900 #								
Lead	<0.7 mg/kg	TM181	27 M								
Mercury	<0.1 mg/kg	TM181	<0.1 M								
Nickel	<0.2 mg/kg	TM181	13.5 M								
Selenium	<1 mg/kg	TM181	<1 #								
Vanadium	<0.2 mg/kg	TM181	21.8 #								
Zinc	<1.9 mg/kg	TM181	58.5 M								
Boron, water soluble	<1 mg/kg	TM222	<1 M								
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0204 M								
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248	4.11								
EPH (C5-C40)	<35 mg/kg	TM415	<35								
EPH Surrogate % recovery**	%	TM415	106								
EPH >C10-C40	<35 mg/kg	TM415	<35 M								

CERTIFICATE OF ANALYSIS

SDG:	210417-79	**Client Reference:**	784-B026948	**Report Number:**	595680
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	TP39	TP43	TP46	TP50		
			Depth (m)	0.10 - 0.10	0.60 - 0.60	0.10 - 0.10	0.80 - 0.80		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	15/04/2021	15/04/2021	15/04/2021	15/04/2021		
			Sample Time	.	.	.	.		
			Date Received	17/04/2021	17/04/2021	17/04/2021	17/04/2021		
			SDG Ref	210417-79	210417-79	210417-79	210417-79		
			Lab Sample No.(s)	24097824	24097849	24097901	24097876		
			AGS Reference	ES1	ES4	ES1	ES3		
Naphthalene-d8 % recovery**	%	TM218		89.2	84.8	88.3	88.4		
Acenaphthene-d10 % recovery**	%	TM218		99.5	95.8	96.3	95		
Phenanthrene-d10 % recovery**	%	TM218		101	94.2	95.9	94.8		
Chrysene-d12 % recovery**	%	TM218		76.1	74.3	74.4	74		
Perylene-d12 % recovery**	%	TM218		89.2	79	80.1	80.6		
Naphthalene	<0.009 mg/kg	TM218		0.135 M	<0.045 M	0.0241 M	<0.009 M		
Acenaphthylene	<0.012 mg/kg	TM218		<0.12 M	0.0702 M	0.0747 M	<0.012 M		
Acenaphthene	<0.008 mg/kg	TM218		1.36 M	0.0582 M	<0.008 M	<0.008 M		
Fluorene	<0.01 mg/kg	TM218		0.793 M	<0.05 M	0.011 M	<0.01 M		
Phenanthrene	<0.015 mg/kg	TM218		10.2 M	0.873 M	0.204 M	<0.015 M		
Anthracene	<0.016 mg/kg	TM218		2.14 M	0.224 M	0.0578 M	<0.016 M		
Fluoranthene	<0.017 mg/kg	TM218		21.1 M	2.62 M	0.67 M	<0.017 M		
Pyrene	<0.015 mg/kg	TM218		18.3 M	2.3 M	0.56 M	0.0392 M		
Benz(a)anthracene	<0.014 mg/kg	TM218		7.54 M	1.11 M	0.355 M	0.0213 M		
Chrysene	<0.01 mg/kg	TM218		6.89 M	1 M	0.338 M	0.0174 M		
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		9.29 M	1.76 M	0.554 M	0.0346 M		
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		4.05 M	0.636 M	0.214 M	<0.014 M		
Benzo(a)pyrene	<0.015 mg/kg	TM218		6.84 M	1.17 M	0.361 M	0.0221 M		
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		5.19 M	0.97 M	0.305 M	0.0213 M		
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		0.807 M	0.16 M	0.068 M	<0.023 M		
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		4.2 M	0.899 M	0.267 M	<0.024 M		
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		98.7	13.9	4.06	0.156		

CERTIFICATE OF ANALYSIS

SDG:	210417-79	**Client Reference:**	784-B026948	**Report Number:**	595680
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	TP43
Depth (m)	0.60 - 0.60
Sample Type	Soil/Solid (S)
Date Sampled	15/04/2021
Sample Time	.
Date Received	17/04/2021
SDG Ref	210417-79
Lab Sample No.(s)	24097849
AGS Reference	ES4

Component	LOD/Units	Method	
Phenol	<0.1 mg/kg	TM157	<0.2
Pentachlorophenol	<0.1 mg/kg	TM157	<0.2
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157	<0.2
Nitrobenzene	<0.1 mg/kg	TM157	<0.2
Isophorone	<0.1 mg/kg	TM157	<0.2
Hexachloroethane	<0.1 mg/kg	TM157	<0.2
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157	<0.2
Hexachlorobutadiene	<0.1 mg/kg	TM157	<0.2
Hexachlorobenzene	<0.1 mg/kg	TM157	<0.2
n-Dioctyl phthalate	<0.1 mg/kg	TM157	<0.2
Dimethyl phthalate	<0.1 mg/kg	TM157	<0.2
Diethyl phthalate	<0.1 mg/kg	TM157	<0.2
n-Dibutyl phthalate	<0.1 mg/kg	TM157	<0.2
Dibenzofuran	<0.1 mg/kg	TM157	<0.2
Carbazole	<0.1 mg/kg	TM157	<0.2
Butylbenzyl phthalate	<0.1 mg/kg	TM157	<0.2
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157	<0.2
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157	<0.2
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157	<0.2
Azobenzene	<0.1 mg/kg	TM157	<0.2
4-Nitrophenol	<0.1 mg/kg	TM157	<0.2
4-Nitroaniline	<0.1 mg/kg	TM157	<0.2
4-Methylphenol	<0.1 mg/kg	TM157	<0.2
4-Chlorophenylphenylether	<0.1 mg/kg	TM157	<0.2
4-Chloroaniline	<0.1 mg/kg	TM157	<0.2
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157	<0.2
4-Bromophenylphenylether	<0.1 mg/kg	TM157	<0.2
3-Nitroaniline	<0.1 mg/kg	TM157	<0.2
2-Nitrophenol	<0.1 mg/kg	TM157	<0.2
2-Nitroaniline	<0.1 mg/kg	TM157	<0.2
2-Methylphenol	<0.1 mg/kg	TM157	<0.2
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157	<0.2
2-Chlorophenol	<0.1 mg/kg	TM157	<0.2

CERTIFICATE OF ANALYSIS

SDG:	210417-79	**Client Reference:**	784-B026948	**Report Number:**	595680
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

		Customer Sample Ref.	TP43
		Depth (m)	0.60 - 0.60
		Sample Type	Soil/Solid (S)
		Date Sampled	15/04/2021
		Sample Time	.
		Date Received	17/04/2021
		SDG Ref	210417-79
		Lab Sample No.(s)	24097849
		AGS Reference	ES4
Component	**LOD/Units**	**Method**	
2,6-Dinitrotoluene	<0.1 mg/kg	TM157	<0.2
2,4-Dinitrotoluene	<0.1 mg/kg	TM157	<0.2
2,4-Dimethylphenol	<0.1 mg/kg	TM157	<0.2
2,4-Dichlorophenol	<0.1 mg/kg	TM157	<0.2
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157	<0.2
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157	<0.2
1,4-Dichlorobenzene	<0.1 mg/kg	TM157	<0.2
1,3-Dichlorobenzene	<0.1 mg/kg	TM157	<0.2
1,2-Dichlorobenzene	<0.1 mg/kg	TM157	<0.2
2-Chloronaphthalene	<0.1 mg/kg	TM157	<0.2
2-Methylnaphthalene	<0.1 mg/kg	TM157	<0.2
Acenaphthylene	<0.1 mg/kg	TM157	<0.2
Acenaphthene	<0.1 mg/kg	TM157	<0.2
Anthracene	<0.1 mg/kg	TM157	<0.2
Benzo(a)anthracene	<0.1 mg/kg	TM157	1.08
Benzo(b)fluoranthene	<0.1 mg/kg	TM157	0.66
Benzo(k)fluoranthene	<0.1 mg/kg	TM157	0.959
Benzo(a)pyrene	<0.1 mg/kg	TM157	1.06
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157	0.588
Chrysene	<0.1 mg/kg	TM157	1.14
Fluoranthene	<0.1 mg/kg	TM157	2.54
Fluorene	<0.1 mg/kg	TM157	<0.2
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157	1.12
Phenanthrene	<0.1 mg/kg	TM157	0.753
Pyrene	<0.1 mg/kg	TM157	2.54
Naphthalene	<0.1 mg/kg	TM157	<0.2
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157	<0.2
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157	<0.2

Validated

CERTIFICATE OF ANALYSIS

SDG:	210417-79	**Client Reference:**	784-B026948	**Report Number:**	595680
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	TP39	TP43	TP46	TP50		
			Depth (m)	0.10 - 0.10	0.60 - 0.60	0.10 - 0.10	0.80 - 0.80		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	15/04/2021	15/04/2021	15/04/2021	15/04/2021		
			Sample Time	.	.	.	.		
			Date Received	17/04/2021	17/04/2021	17/04/2021	17/04/2021		
			SDG Ref	210417-79	210417-79	210417-79	210417-79		
			Lab Sample No.(s)	24097824	24097849	24097901	24097876		
			AGS Reference	ES1	ES4	ES1	ES3		
GRO Surrogate % recovery**	%	TM089		101	104	99.3	114		
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01		
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01		
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01		
Aliphatics >C10-C12	<1 mg/kg	TM414		<1	<1	<1	<1		
Aliphatics >C12-C16	<1 mg/kg	TM414		<1	<1	<1	<1		
Aliphatics >C16-C21	<1 mg/kg	TM414		2.3	3.87	<1	<1		
Aliphatics >C21-C35	<1 mg/kg	TM414		11.3	32.5	8.97	1.88		
Aliphatics >C35-C44	<1 mg/kg	TM414		1.21	5.47	<1	<1		
Total Aliphatics >C10-C44	<5 mg/kg	TM414		15.5	41.9	9.47	<5		
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		373	97.7	21.4	<10		
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01		
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01		
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01		
Aromatics > EC10-EC12	<1 mg/kg	TM414		<1	<1	<1	<1		
Aromatics > EC12-EC16	<1 mg/kg	TM414		5.85	<1	<1	<1		
Aromatics > EC16-EC21	<1 mg/kg	TM414		88.9	8.42	1.45	<1		
Aromatics > EC21-EC35	<1 mg/kg	TM414		245	43.4	9.39	<1		
Aromatics >EC35-EC44	<1 mg/kg	TM414		18.5	4.02	<1	<1		
Aromatics > EC40-EC44	<1 mg/kg	TM414		2.18	<1	<1	<1		
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		358	55.9	11.9	<5		
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		373	97.7	21.4	<10		
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		<0.05	<0.05	<0.05	<0.05		
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		<0.05	<0.05	<0.05	<0.05		
GRO >C5-C10	<0.02 mg/kg	TM089		<0.02	<0.02	<0.02	<0.02		

CERTIFICATE OF ANALYSIS

SDG:	210417-79	**Client Reference:**	784-B026948	**Report Number:**	595680
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	TP39	TP39	TP43	TP46	TP50
			Depth (m)	0.10 - 0.10	0.40 - 0.40	0.60 - 0.60	0.10 - 0.10	0.80 - 0.80
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	15/04/2021	15/04/2021	15/04/2021	15/04/2021	15/04/2021
			Sample Time	.	.	.	.	.
			Date Received	17/04/2021	17/04/2021	17/04/2021	17/04/2021	17/04/2021
			SDG Ref	210417-79	210417-79	210417-79	210417-79	210417-79
			Lab Sample No.(s)	24097824	24097831	24097849	24097901	24097876
			AGS Reference	ES1	ES4	ES4	ES1	ES3
Dibromofluoromethane**	%	TM116		105	105	104	104	102
Toluene-d8**	%	TM116		96.9	96	97.5	98	98.7
4-Bromofluorobenzene**	%	TM116		98.2	95	97.3	97.7	102
Dichlorodifluoromethane	<0.006 mg/kg	TM116				<0.12 M		
Chloromethane	<0.007 mg/kg	TM116				<0.14 #		
Vinyl Chloride	<0.006 mg/kg	TM116				<0.12 M		
Bromomethane	<0.01 mg/kg	TM116				<0.2 M		
Chloroethane	<0.01 mg/kg	TM116				<0.2 M		
Trichlorofluorormethane	<0.006 mg/kg	TM116				<0.12 M		
1,1-Dichloroethene	<0.01 mg/kg	TM116				<0.2 #		
Carbon Disulphide	<0.007 mg/kg	TM116				<0.14 M		
Dichloromethane	<0.01 mg/kg	TM116				<0.2 #		
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M	<0.2 M	<0.2 M
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116				<0.2 M		
1,1-Dichloroethane	<0.008 mg/kg	TM116				<0.16 M		
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116				<0.12 M		
2,2-Dichloropropane	<0.01 mg/kg	TM116				<0.2		
Bromochloromethane	<0.01 mg/kg	TM116				<0.2 M		
Chloroform	<0.008 mg/kg	TM116				<0.16 M		
1,1,1-Trichloroethane	<0.007 mg/kg	TM116				<0.14 M		
1,1-Dichloropropene	<0.01 mg/kg	TM116				<0.2 M		
Carbontetrachloride	<0.01 mg/kg	TM116				<0.2 M		
1,2-Dichloroethane	<0.005 mg/kg	TM116				<0.1 M		
Benzene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M	<0.18 M	<0.18 M	<0.18 M
Trichloroethene	<0.009 mg/kg	TM116				<0.18 #		
1,2-Dichloropropane	<0.01 mg/kg	TM116				<0.2 M		
Dibromomethane	<0.009 mg/kg	TM116				<0.18 M		
Bromodichloromethane	<0.007 mg/kg	TM116				<0.14 M		
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116				<0.2 M		
Toluene	<0.007 mg/kg	TM116		<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116				<0.2		
1,1,2-Trichloroethane	<0.01 mg/kg	TM116				<0.2 M		
1,3-Dichloropropane	<0.007 mg/kg	TM116				<0.14 M		

Validated

CERTIFICATE OF ANALYSIS

SDG:	210417-79	**Client Reference:**	784-B026948	**Report Number:**	595680
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	TP39	TP39	TP43	TP46	TP50	
			Depth (m)	0.10 - 0.10	0.40 - 0.40	0.60 - 0.60	0.10 - 0.10	0.80 - 0.80	
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	
			Date Sampled	15/04/2021	15/04/2021	15/04/2021	15/04/2021	15/04/2021	
			Sample Time	.	.	.	.	.	
			Date Received	17/04/2021	17/04/2021	17/04/2021	17/04/2021	17/04/2021	
			SDG Ref	210417-79	210417-79	210417-79	210417-79	210417-79	
			Lab Sample No.(s)	24097824	24097831	24097849	24097901	24097876	
			AGS Reference	ES1	ES4	ES4	ES1	ES3	
Tetrachloroethene	<0.005 mg/kg	TM116				<0.1 M			
Dibromochloromethane	<0.01 mg/kg	TM116				<0.2 M			
1,2-Dibromoethane	<0.01 mg/kg	TM116				<0.2 M			
Chlorobenzene	<0.005 mg/kg	TM116				<0.1 M			
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116				<0.2 M			
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 M	<0.08 M	<0.08 M	<0.08 M	<0.08 M	
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #	<0.2 #	<0.2 #	<0.2 #	
o-Xylene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M	<0.2 M	<0.2 M	
Styrene	<0.01 mg/kg	TM116				<0.2 #			
Bromoform	<0.01 mg/kg	TM116				<0.2 M			
Isopropylbenzene	<0.005 mg/kg	TM116				<0.1 3 #			
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116				<0.2 #			
1,2,3-Trichloropropane	<0.016 mg/kg	TM116				<0.32 M			
Bromobenzene	<0.01 mg/kg	TM116				<0.2 M			
Propylbenzene	<0.01 mg/kg	TM116				<0.2 M			
2-Chlorotoluene	<0.009 mg/kg	TM116				<0.18 M			
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116				<0.16 M			
4-Chlorotoluene	<0.01 mg/kg	TM116				<0.2 M			
tert-Butylbenzene	<0.014 mg/kg	TM116				<0.28 M			
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116				<0.18 #			
sec-Butylbenzene	<0.01 mg/kg	TM116				<0.2			
4-Isopropyltoluene	<0.01 mg/kg	TM116				<0.2 M			
1,3-Dichlorobenzene	<0.008 mg/kg	TM116				<0.16 M			
1,4-Dichlorobenzene	<0.005 mg/kg	TM116				<0.1 M			
n-Butylbenzene	<0.011 mg/kg	TM116				<0.22			
1,2-Dichlorobenzene	<0.01 mg/kg	TM116				<0.2 M			
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116				<0.28 M			
Tert-amyl methyl ether	<0.01 mg/kg	TM116				<0.2 #			
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116				<0.4			
Hexachlorobutadiene	<0.02 mg/kg	TM116				<0.4			
Naphthalene	<0.013 mg/kg	TM116				<0.26 M			
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116				<0.4 #			
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116				<0.4			

CERTIFICATE OF ANALYSIS

SDG:	210417-79	**Client Reference:**	784-B026948	**Report Number:**	595680
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	TP39	TP39	TP43	TP46	TP50	
			Depth (m)	0.10 - 0.10	0.40 - 0.40	0.60 - 0.60	0.10 - 0.10	0.80 - 0.80	
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	
			Date Sampled	15/04/2021	15/04/2021	15/04/2021	15/04/2021	15/04/2021	
			Sample Time	.	.	.	.	.	
			Date Received	17/04/2021	17/04/2021	17/04/2021	17/04/2021	17/04/2021	
			SDG Ref	210417-79	210417-79	210417-79	210417-79	210417-79	
			Lab Sample No.(s)	24097824	24097831	24097849	24097901	24097876	
			AGS Reference	ES1	ES4	ES4	ES1	ES3	
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4		<0.4	<0.4	<0.4	
Sum of BTEX	<0.04 mg/kg	TM116		<0.8		<0.8	<0.8	<0.8	

CERTIFICATE OF ANALYSIS

SDG:	210417-79	**Client Reference:**	784-B026948	**Report Number:**	595680
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&+$@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP39ES1 0.10 - 0.10 SOLID 15/04/2021 00:00:00 17/04/2021 05:00:00 210417-79 24097824 TM048	20/04/2021	Agnieszka Chelmowska	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP43ES4 0.60 - 0.60 SOLID 15/04/2021 00:00:00 17/04/2021 05:00:00 210417-79 24097849 TM048	20/04/2021	Agnieszka Chelmowska	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP46ES1 0.10 - 0.10 SOLID 15/04/2021 00:00:00 17/04/2021 05:00:00 210417-79 24097901 TM048	21/04/2021	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP50ES3 0.80 - 0.80 SOLID 15/04/2021 00:00:00 17/04/2021 05:00:00 210417-79 24097876 TM048	21/04/2021	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG:	210417-79	**Client Reference:**	784-B026948	**Report Number:**	595680
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.099	**Natural Moisture Content (%)**	9.47
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	91.3
Particle Size <4mm	>95%		

Case	
SDG	210417-79
Lab Sample Number(s)	24097831
Sampled Date	15-Apr-2021
Customer Sample Ref.	TP39 ES4
Depth (m)	0.40 - 0.40

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	2.63	3	5	6
Loss on Ignition (%)	-	-	-	-
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.105	1	-	-
Mineral Oil (mg/kg)	43.5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	-	-	-	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00355	<0.0005	0.0355	<0.005	0.5	2	25
Barium	0.0175	<0.0002	0.175	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.0106	<0.0003	0.106	<0.003	2	50	100
Mercury Dissolved (CVAF)	0.0000181	<0.00001	0.000181	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000732	<0.0004	0.00732	<0.004	0.4	10	40
Lead	0.00276	<0.0002	0.0276	<0.002	0.5	10	50
Antimony	0.00122	<0.001	0.0122	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00581	<0.001	0.0581	<0.01	4	50	200
Chloride	2.3	<2	23	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	102	<5	1020	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	9.31	<3	93.1	<30	500	800	1000

Leach Test Information

Date Prepared	19-Apr-2021
pH (pH Units)	7.75
Conductivity (µS/cm)	130.00
Temperature (°C)	21.70
Volume Leachant (Litres)	0.892

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation

28/04/2021 07:22:06

07:21:48 28/04/2021

CERTIFICATE OF ANALYSIS

SDG:	210417-79	**Client Reference:**	784-B026948	**Report Number:**	595680
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.102	**Natural Moisture Content (%)**	12.9
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	88.6
Particle Size <4mm	>95%		

Case	
SDG	210417-79
Lab Sample Number(s)	24097849
Sampled Date	15-Apr-2021
Customer Sample Ref.	TP43 ES4
Depth (m)	0.60 - 0.60

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	0.0000221	<0.00001	0.000221	<0.0001	-	-	-
Arsenic	0.00567	<0.0005	0.0567	<0.005	-	-	-
Boron	0.0168	<0.01	0.168	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.0106	<0.001	0.106	<0.01	-	-	-
Copper	0.00601	<0.0003	0.0601	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.101	<0.019	1.01	<0.19	-	-	-
Lead	0.000869	<0.0002	0.00869	<0.002	-	-	-
Nickel	0.00117	<0.0004	0.0117	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	0.00405	<0.001	0.0405	<0.01	-	-	-
Zinc	0.00753	<0.001	0.0753	<0.01	-	-	-
Sulphide	0.012	<0.01	0.12	<0.1	-	-	-

Leach Test Information

Date Prepared	19-Apr-2021
pH (pH Units)	8.41
Conductivity (µS/cm)	116.00
Temperature (°C)	21.40
Volume Leachant (Litres)	0.889

CERTIFICATE OF ANALYSIS

SDG:	210417-79	**Client Reference:**	784-B026948	**Report Number:**	595680
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.097	**Natural Moisture Content (%)**	7.91
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	92.7
Particle Size <4mm	>95%		

Case	
SDG	210417-79
Lab Sample Number(s)	24097856
Sampled Date	15-Apr-2021
Customer Sample Ref.	TP45 ES1
Depth (m)	0.10 - 0.10

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	0.0000206	<0.00001	0.000206	<0.0001	-	-	-
Arsenic	0.00431	<0.0005	0.0431	<0.005	-	-	-
Boron	0.0191	<0.01	0.191	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.0164	<0.001	0.164	<0.01	-	-	-
Copper	0.00631	<0.0003	0.0631	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.22	<0.019	2.2	<0.19	-	-	-
Lead	0.0019	<0.0002	0.019	<0.002	-	-	-
Nickel	0.000781	<0.0004	0.00781	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	0.00353	<0.001	0.0353	<0.01	-	-	-
Zinc	0.101	<0.001	1.01	<0.01	-	-	-
Sulphide	0.0104	<0.01	0.104	<0.1	-	-	-

Leach Test Information

Date Prepared	19-Apr-2021
pH (pH Units)	8.28
Conductivity (µS/cm)	290.00
Temperature (°C)	22.00
Volume Leachant (Litres)	0.893

CERTIFICATE OF ANALYSIS

SDG:	210417-79	**Client Reference:**	784-B026948	**Report Number:**	595680
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.096	**Natural Moisture Content (%)**	6.25
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	94.1
Particle Size <4mm	>95%		

Case	
SDG	210417-79
Lab Sample Number(s)	24097885
Sampled Date	15-Apr-2021
Customer Sample Ref.	TP44 ES1
Depth (m)	0.10 - 0.10

Eluate Analysis	**C_2 Conc^n in 10:1 eluate (mg/l)**		**A_2 10:1 conc^n leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	0.222	<0.2	2.22	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	0.0000325	<0.00001	0.000325	<0.0001	-	-	-
Arsenic	0.00227	<0.0005	0.0227	<0.005	-	-	-
Boron	0.0171	<0.01	0.171	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00125	<0.0003	0.0125	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.373	<0.019	3.73	<0.19	-	-	-
Lead	0.00174	<0.0002	0.0174	<0.002	-	-	-
Nickel	0.00138	<0.0004	0.0138	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	0.00352	<0.001	0.0352	<0.01	-	-	-
Zinc	0.0866	<0.001	0.866	<0.01	-	-	-
Sulphide	0.023	<0.01	0.23	<0.1	-	-	-

Leach Test Information

Date Prepared	19-Apr-2021
pH (pH Units)	6.84
Conductivity (µS/cm)	38.40
Temperature (°C)	21.50
Volume Leachant (Litres)	0.894

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210417-79	**Client Reference:**	784-B026948	**Report Number:**	595680
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24097824	24097831	24097849	24097885	24097856	24097901	24097876
Customer Sample Ref.	TP39	TP39	TP43	TP44	TP45	TP46	TP50
AGS Ref.	ES1	ES4	ES4	ES1	ES1	ES1	ES3
Depth	0.10 - 0.10	0.40 - 0.40	0.60 - 0.60	0.10 - 0.10	0.10 - 0.10	0.10 - 0.10	0.80 - 0.80
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	27-Apr-2021		21-Apr-2021			27-Apr-2021	21-Apr-2021
Ammoniacal Nitrogen			26-Apr-2021	26-Apr-2021	26-Apr-2021		
Ammonium Soil by Titration	23-Apr-2021		23-Apr-2021			23-Apr-2021	23-Apr-2021
Anions by Kone (soil)	23-Apr-2021		23-Apr-2021			23-Apr-2021	23-Apr-2021
Anions by Kone (w)		23-Apr-2021					
Asbestos ID in Solid Samples	20-Apr-2021		20-Apr-2021			21-Apr-2021	21-Apr-2021
Boron Water Soluble	22-Apr-2021		20-Apr-2021			22-Apr-2021	20-Apr-2021
CEN 10:1 Leachate (1 Stage)		19-Apr-2021	19-Apr-2021	20-Apr-2021	19-Apr-2021		
CEN Readings		25-Apr-2021	25-Apr-2021	25-Apr-2021	25-Apr-2021		
Coronene		20-Apr-2021					
Cyanide Comp/Free/Total/Thiocyanate	21-Apr-2021		22-Apr-2021	22-Apr-2021	22-Apr-2021	21-Apr-2021	20-Apr-2021
Dissolved Metals by ICP-MS		23-Apr-2021	23-Apr-2021	23-Apr-2021	23-Apr-2021		
Dissolved Organic/Inorganic Carbon		28-Apr-2021					
EPH	22-Apr-2021		22-Apr-2021			22-Apr-2021	22-Apr-2021
EPH by GCxGC-FID	21-Apr-2021	21-Apr-2021	21-Apr-2021			21-Apr-2021	21-Apr-2021
EPH CWG GC (S)	21-Apr-2021		21-Apr-2021			21-Apr-2021	21-Apr-2021
Fluoride		22-Apr-2021					
GRO by GC-FID (S)	21-Apr-2021		21-Apr-2021			21-Apr-2021	21-Apr-2021
Hexavalent Chromium (s)	21-Apr-2021		21-Apr-2021			22-Apr-2021	21-Apr-2021
Hexavalent Chromium (w)			22-Apr-2021	22-Apr-2021	22-Apr-2021		
Mercury Dissolved		23-Apr-2021	23-Apr-2021	23-Apr-2021	23-Apr-2021		
Metals in solid samples by OES	22-Apr-2021		22-Apr-2021			22-Apr-2021	22-Apr-2021
Moisture at 105C		19-Apr-2021	19-Apr-2021	19-Apr-2021	19-Apr-2021		
PAH 16 & 17 Calc		22-Apr-2021					
PAH by GCMS	21-Apr-2021	20-Apr-2021	21-Apr-2021			21-Apr-2021	21-Apr-2021
PCBs by GCMS		20-Apr-2021					
pH	20-Apr-2021		19-Apr-2021			20-Apr-2021	19-Apr-2021
pH Value of Filtered Water			22-Apr-2021	22-Apr-2021	22-Apr-2021		
Phenols by HPLC (S)	21-Apr-2021		20-Apr-2021			21-Apr-2021	21-Apr-2021
Phenols by HPLC (W)		22-Apr-2021					
Sample description	19-Apr-2021	18-Apr-2021	18-Apr-2021	18-Apr-2021	18-Apr-2021	19-Apr-2021	18-Apr-2021
Semi Volatile Organic Compounds			22-Apr-2021				
Sulphide			22-Apr-2021	22-Apr-2021	22-Apr-2021		
Total Dissolved Solids		22-Apr-2021					
Total Organic Carbon	26-Apr-2021	26-Apr-2021	26-Apr-2021			26-Apr-2021	26-Apr-2021
TPH CWG GC (S)	21-Apr-2021		21-Apr-2021			21-Apr-2021	21-Apr-2021
VOC MS (S)	21-Apr-2021	21-Apr-2021	21-Apr-2021			21-Apr-2021	21-Apr-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2464	QC 2470
Ammoniacal Nitrogen as N	TM099	**96.0** 91.28 : 106.64	**96.4** 91.28 : 106.64

Ammonium Soil by Titration

Component	Method Code	QC 2439
Exchangeable Ammonium as NH4	TM024	**86.57** 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2488	QC 2487
Chloride (soluble)	TM243	**147.67** 80.93 : 111.66	**138.34** 83.05 : 116.28
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**153.27** 70.00 : 130.00	**147.66** 70.00 : 130.00

Anions by Kone (w)

Component	Method Code	QC 2425
Chloride	TM184	**94.7** 91.40 : 109.10
Sulphate (soluble)	TM184	**96.0** 91.99 : 109.30

Boron Water Soluble

Component	Method Code	QC 2411	QC 2493
Water Soluble Boron	TM222	**99.0** 84.00 : 111.00	**98.5** 84.00 : 111.00

Coronene

Component	Method Code	QC 2464
Coronene RAW	TM410	**99.5** 79.43 : 137.78

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2494	QC 2499	QC 2462
Free Cyanide	TM153	**91.29** 79.00 : 115.00	**97.43** 79.00 : 115.00	
Free Cyanide (W)	TM227			**80.75** 91.52 : 123.82
Thiocyanate	TM153	**98.72** 94.09 : 113.89	**98.08** 94.09 : 113.89	
Thiocyanate (W)	TM227			**106.5** 90.50 : 113.00
Total Cyanide	TM153	**96.5** 73.07 : 107.47	**95.1** 73.07 : 107.47	
Total Cyanide (W)	TM227			**103.25** 91.75 : 112.75

Dissolved Metals by ICP-MS

Component	Method Code	QC 2402
Aluminium	TM152	**96.33** 90.78 : 110.89
Antimony	TM152	**97.67** 77.22 : 119.42
Arsenic	TM152	**94.17** 86.77 : 107.67
Barium	TM152	**95.5** 87.86 : 110.23
Beryllium	TM152	**95.0** 86.19 : 112.98
Bismuth	TM152	**92.67** 84.06 : 106.46
Borate	TM152	**97.53** 88.00 : 112.00
Boron	TM152	**97.33** 83.92 : 114.90
Cadmium	TM152	**96.5** 88.89 : 106.69
Calcium	TM152	**92.0** 80.24 : 117.95
Chromium	TM152	**94.33** 83.22 : 110.16
Cobalt	TM152	**94.0** 82.49 : 112.36
Copper	TM152	**95.17** 83.14 : 113.00
Iron	TM152	**94.67** 88.40 : 109.24
Lead	TM152	**92.5** 83.71 : 109.58
Lithium	TM152	**94.83** 84.50 : 114.28
Magnesium	TM152	**90.67** 87.56 : 114.57
Manganese	TM152	**95.0** 90.01 : 108.72
Molybdenum	TM152	**94.0** 85.53 : 107.42

Dissolved Metals by ICP-MS

		QC 2402
Nickel	TM152	**95.17** 88.05 : 106.42
Phosphorus	TM152	**91.5** 82.76 : 107.72
Potassium	TM152	**91.33** 88.45 : 106.42
Selenium	TM152	**93.83** 85.61 : 111.03
Silver	TM152	**94.17** 88.48 : 110.48
Sodium	TM152	**91.33** 88.32 : 106.30
Strontium	TM152	**95.0** 83.77 : 107.87
Tellurium	TM152	**90.0** 82.83 : 104.73
Thallium	TM152	**89.67** 77.47 : 113.87
Tin	TM152	**97.0** 87.36 : 109.55
Titanium	TM152	**98.33** 87.29 : 108.31
Tungsten	TM152	**92.17** 68.27 : 122.97
Uranium	TM152	**89.67** 82.46 : 105.16
Vanadium	TM152	**94.67** 88.43 : 114.30
Zinc	TM152	**95.67** 85.57 : 114.31

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2424
Dissolved Inorganic Carbon	TM090	**100.83** 93.58 : 112.28
Dissolved Organic Carbon	TM090	**102.67** 96.13 : 109.53

EPH CWG GC (S)

Component	Method Code	QC 2459
EPH >C8-C40 Raw	TM414	**96.33** 67.87 : 120.05
Total Aliphatics Raw	TM414	**103.29** 66.68 : 120.89
Total Aromatics Raw	TM414	**100.49** 61.16 : 129.42

Fluoride

Fluoride

Component	Method Code	QC 2456
Fluoride	TM104	**104.67** 96.67 : 108.67

GRO by GC-FID (S)

Component	Method Code	QC 2425
QC	TM089	**93.57** 70.34 : 111.95

Hexavalent Chromium (s)

Component	Method Code	QC 2460	QC 2449	QC 2436
Hexavalent Chromium	TM151	**102.0** 92.00 : 111.20	**102.0** 92.00 : 111.20	**104.0** 92.00 : 111.20

Hexavalent Chromium (w)

Component	Method Code	QC 2443
Hexavalent Chromium	TM241	**100.4** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2498	QC 2479
Mercury Dissolved (CVAF)	TM183	**109.0** 69.30 : 128.70	**109.0** 69.30 : 128.70

Metals in solid samples by OES

Component	Method Code	QC 2452	QC 2481
Aluminium	TM181	**94.69** 77.46 : 123.98	**102.65** 77.46 : 123.98
Antimony	TM181	**107.72** 87.04 : 111.16	**104.47** 87.04 : 111.16
Arsenic	TM181	**103.2** 87.34 : 110.87	**104.94** 87.34 : 110.87
Barium	TM181	**97.25** 80.73 : 115.16	**100.92** 80.73 : 115.16

Metals in solid samples by OES

		QC 2452	QC 2481
Beryllium	TM181	**101.49** 89.47 : 112.97	**105.6** 89.47 : 112.97
Boron	TM181	**85.67** 76.57 : 104.15	**96.28** 76.57 : 104.15
Cadmium	TM181	**97.53** 78.94 : 102.43	**97.53** 78.94 : 102.43
Chromium	TM181	**95.33** 77.55 : 104.47	**92.09** 77.55 : 104.47
Cobalt	TM181	**90.25** 82.95 : 107.41	**93.08** 82.95 : 107.41
Copper	TM181	**100.88** 84.36 : 106.14	**100.35** 84.36 : 106.14
Iron	TM181	**100.0** 81.43 : 115.79	**101.59** 81.43 : 115.79
Lead	TM181	**93.92** 81.95 : 107.63	**96.62** 81.95 : 107.63
Manganese	TM181	**111.39** 94.29 : 119.51	**113.33** 94.29 : 119.51
Mercury	TM181	**97.83** 82.73 : 106.36	**97.58** 82.73 : 106.36
Molybdenum	TM181	**100.41** 86.61 : 111.07	**100.82** 86.61 : 111.07
Nickel	TM181	**92.91** 79.72 : 103.80	**93.89** 79.72 : 103.80
Phosphorus	TM181	**111.11** 92.65 : 125.47	**113.54** 92.65 : 125.47
Selenium	TM181	**104.31** 88.36 : 111.25	**104.31** 88.36 : 111.25
Strontium	TM181	**95.77** 78.06 : 99.91	**97.1** 78.06 : 99.91
Thallium	TM181	**103.54** 88.60 : 116.73	**104.87** 88.60 : 116.73
Tin	TM181	**103.04** 89.77 : 112.62	**102.28** 89.77 : 112.62
Titanium	TM181	**76.11** 66.29 : 105.96	**88.55** 66.29 : 105.96
Vanadium	TM181	**97.44** 75.51 : 108.87	**99.63** 75.51 : 108.87
Zinc	TM181	**103.9** 84.02 : 111.24	**105.34** 84.02 : 111.24

PAH by GCMS

Component	Method Code	QC 2457	QC 2417
Acenaphthene	TM218	**85.5** 73.47 : 109.80	**93.0** 78.59 : 112.16
Acenaphthylene	TM218	**84.0** 70.00 : 130.00	**91.0** 75.11 : 109.01
Anthracene	TM218	**84.5** 68.68 : 111.89	**91.5** 73.99 : 113.85
Benz(a)anthracene	TM218	**89.5** 68.12 : 118.39	**87.0** 69.31 : 119.18
Benzo(a)pyrene	TM218	**90.5** 71.72 : 115.31	**88.5** 66.97 : 114.92

PAH by GCMS

		QC 2457	QC 2417
Benzo(b)fluoranthene	TM218	**87.5** 66.89 : 120.40	**82.5** 67.41 : 114.46
Benzo(ghi)perylene	TM218	**89.5** 67.82 : 118.49	**89.0** 62.92 : 114.36
Benzo(k)fluoranthene	TM218	**90.0** 73.10 : 117.03	**92.0** 69.98 : 116.49
Chrysene	TM218	**89.5** 69.58 : 115.47	**89.0** 69.86 : 114.50
Dibenzo(ah)anthracene	TM218	**85.5** 67.32 : 121.35	**84.5** 64.54 : 115.22
Fluoranthene	TM218	**88.5** 75.16 : 117.28	**84.5** 72.56 : 111.70
Fluorene	TM218	**85.0** 73.81 : 108.66	**92.5** 79.13 : 111.49
Indeno(123cd)pyrene	TM218	**89.5** 68.91 : 117.62	**85.5** 61.22 : 113.25
Naphthalene	TM218	**81.5** 72.12 : 106.18	**88.0** 77.96 : 110.91
Phenanthrene	TM218	**86.0** 69.01 : 113.72	**88.5** 76.83 : 113.25
Pyrene	TM218	**87.5** 64.28 : 115.75	**87.0** 72.45 : 110.77

PCBs by GCMS

Component	Method Code	QC 2466
PCB congener 101	TM168	**74.2** 65.66 : 110.06
PCB congener 105	TM168	**71.4** 58.10 : 106.34
PCB congener 114	TM168	**70.9** 59.38 : 106.48
PCB congener 118	TM168	**70.5** 60.02 : 106.23
PCB congener 123	TM168	**81.8** 65.01 : 99.81
PCB congener 126	TM168	**70.8** 59.31 : 109.23
PCB congener 138	TM168	**73.2** 63.95 : 107.63
PCB congener 153	TM168	**74.1** 62.65 : 108.85
PCB congener 156	TM168	**68.4** 61.69 : 112.27
PCB congener 157	TM168	**65.4** 55.37 : 104.81
PCB congener 167	TM168	**69.4** 65.58 : 109.14
PCB congener 169	TM168	**71.4** 56.84 : 112.10
PCB congener 180	TM168	**73.3** 66.99 : 111.63
PCB congener 189	TM168	**70.5** 57.75 : 112.59

PCBs by GCMS

		QC 2466
PCB congener 28	TM168	**78.6** 73.68 : 105.96
PCB congener 52	TM168	**76.0** 67.24 : 107.62
PCB congener 77	TM168	**73.1** 64.87 : 108.49
PCB congener 81	TM168	**74.8** 70.78 : 110.80

pH

Component	Method Code	QC 2455	QC 2429
pH	TM133	**98.97** 97.51 : 101.32	**98.38** 97.51 : 101.32

pH Value of Filtered Water

Component	Method Code	QC 2456	QC 2463
pH	TM256	**99.87** 99.33 : 102.54	**100.67** 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2406	QC 2400
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**48.05** 70.71 : 116.42	**50.65** 70.71 : 116.42
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**40.94** 64.54 : 117.79	**43.27** 64.54 : 117.79
Cresols by HPLC (S)	TM062 (S)	**44.05** 74.40 : 108.98	**47.39** 74.40 : 108.98
Phenol by HPLC (S)	TM062 (S)	**45.7** 69.44 : 122.18	**50.33** 69.44 : 122.18
Xylenols by HPLC (S)	TM062 (S)	**46.25** 76.56 : 106.38	**48.12** 76.56 : 106.38

Phenols by HPLC (W)

Component	Method Code	QC 2484
2.3.5 Trimethyl-Phenol by HPLC (W)	TM259	**97.66** 77.41 : 127.55
2-Isopropyl Phenol by HPLC (W)	TM259	**91.78** 82.77 : 126.51
Cresols by HPLC (W)	TM259	**97.37** 76.60 : 126.28
Napthol by HPLC (W)	TM259	**97.66** 75.40 : 129.40
Phenol by HPLC (W)	TM259	**92.63** 85.77 : 125.91

Phenols by HPLC (W)

		QC 2484
Xylenols by HPLC (W)	TM259	**95.25** 79.09 : 131.82

Semi Volatile Organic Compounds

Component	Method Code	QC 2479
4-Bromophenylphenylether (Soil)	TM157	**77.0** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**91.0** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**82.5** 68.25 : 126.75
Naphthalene (Soil)	TM157	**87.5** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**78.5** 66.50 : 123.50
Phenol (Soil)	TM157	**88.5** 69.92 : 114.02

Sulphide

Component	Method Code	QC 2427
Sulphide	TM101	**96.67** 88.90 : 112.50

Total Dissolved Solids

Component	Method Code	QC 2453
Total Dissolved Solids	TM123	**99.7** 97.30 : 100.92

Total Organic Carbon

Component	Method Code	QC 2493	QC 2434
Total Organic Carbon	TM132	**103.52** 87.02 : 113.45	**109.77** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2401
1,1,1,2-tetrachloroethane	TM116	**107.0** 84.84 : 116.25
1,1,1-Trichloroethane	TM116	**100.4** 73.73 : 118.05
1,1,2-Trichloroethane	TM116	**105.4** 77.12 : 116.04

VOC MS (S)

		QC 2401
1,1-Dichloroethane	TM116	**106.4** 74.46 : 129.15
1,2-Dichloroethane	TM116	**114.4** 92.38 : 131.65
1,4-Dichlorobenzene	TM116	**117.2** 83.64 : 126.18
2-Chlorotoluene	TM116	**111.8** 76.03 : 113.25
4-Chlorotoluene	TM116	**102.8** 66.90 : 112.46
Benzene	TM116	**105.6** 88.60 : 113.80
Carbon Disulphide	TM116	**104.6** 74.91 : 122.14
Carbontetrachloride	TM116	**100.4** 80.31 : 124.50
Chlorobenzene	TM116	**107.8** 83.81 : 114.18
Chloroform	TM116	**108.8** 87.40 : 122.49
Chloromethane	TM116	**102.6** 65.89 : 136.93
Cis-1,2-Dichloroethene	TM116	**109.0** 80.67 : 126.72
Dibromomethane	TM116	**101.8** 73.23 : 118.35
Dichloromethane	TM116	**118.0** 81.11 : 133.25
Ethylbenzene	TM116	**103.2** 75.92 : 110.41
Hexachlorobutadiene	TM116	**123.4** 12.82 : 152.73
Isopropylbenzene	TM116	**98.4** 55.79 : 97.59
Naphthalene	TM116	**120.8** 80.86 : 128.81
o-Xylene	TM116	**100.6** 69.99 : 108.74
p/m-Xylene	TM116	**99.6** 68.32 : 108.91
Sec-Butylbenzene	TM116	**100.8** 38.50 : 101.50
Tetrachloroethene	TM116	**111.0** 76.95 : 121.02
Toluene	TM116	**98.4** 74.24 : 107.42
Trichloroethene	TM116	**102.0** 85.28 : 109.36
Trichlorofluoromethane	TM116	**107.2** 84.55 : 133.27
Vinyl Chloride	TM116	**108.4** 68.02 : 143.37

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.

The figure detailed is the percentage recovery result for the AQC.

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	29 April 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210419-45
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	595910

This report has been revised and directly supersedes 595671 in its entirety.

We received 3 samples on Thursday April 15, 2021 and 2 of these samples were scheduled for analysis which was completed on Thursday April 29, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210419-45	**Client Reference:**	784-B026948	**Report Number:**	595910
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595671

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24103072	WS57	ES1	0.10 - 0.10	19/04/2021
24103082	WS57	ES4	1.00 - 1.00	19/04/2021
24103086	WS57	ES7	1.50 - 1.50	19/04/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210419-45	**Client Reference:**	784-B026948	**Report Number:**	595910
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595671

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24103072			24103082			
Customer Sample Reference			WS57			WS57			
AGS Reference			ES1			ES4			
Depth (m)			0.10 - 0.10			1.00 - 1.00			
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)		
Sample Type			S	S	S	S	S		
Acid herbicides*	All	NDPs: 0 Tests: 1		X					
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 1				X			
Ammonium Soil by Titration	All	NDPs: 0 Tests: 1				X			
Anions by Kone (soil)	All	NDPs: 0 Tests: 1				X			
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2	X		X				
Boron Water Soluble	All	NDPs: 0 Tests: 1				X			
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 1				X			
EPH	All	NDPs: 0 Tests: 1				X			
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1				X			
EPH CWG GC (S)	All	NDPs: 0 Tests: 1				X			
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1					X		
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1				X			
Metals in solid samples by OES	All	NDPs: 0 Tests: 1				X			
OC OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 1		X					
PAH by GCMS	All	NDPs: 0 Tests: 1				X			

Validated

CERTIFICATE OF ANALYSIS

SDG:	210419-45	**Client Reference:**	784-B026948	**Report Number:**	595910
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595671

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24103072			24103082			
Customer Sample Reference			WS57			WS57			
AGS Reference			ES1			ES4			
Depth (m)			0.10 - 0.10			1.00 - 1.00			
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)		
Sample Type			S	S	S	S	S		
pH	All	NDPs: 0 Tests: 1				X			
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1				X			
Sample description	All	NDPs: 0 Tests: 1				X			
Total Organic Carbon	All	NDPs: 0 Tests: 1				X			
TPH CWG GC (S)	All	NDPs: 0 Tests: 1				X			
VOC MS (S)	All	NDPs: 0 Tests: 1					X		

CERTIFICATE OF ANALYSIS

SDG:	210419-45	**Client Reference:**	784-B026948	**Report Number:**	595910
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595671

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24103072	WS57	0.10 - 0.10	Dark Brown	Sand	Tile/Insulation Board	Stones
24103082	WS57	1.00 - 1.00	Dark Brown	Sand	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210419-45	**Client Reference:**	784-B026948	**Report Number:**	595910
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595671

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			WS57	0.10 - 0.10	Soil/Solid (S)	19/04/2021	.	15/04/2021	210419-45	24103072	ES1
			WS57	1.00 - 1.00	Soil/Solid (S)	19/04/2021	.	15/04/2021	210419-45	24103082	ES4
Moisture Content Ratio (% of as received sample)	%	PM024	0						4.1		
2,4,5-T*	<0.01 mg/kg	SUB	<0.01								
2,4,5-TP (Fenoprop)*	<0.01 mg/kg	SUB	<0.01								
2,4-D*	<0.01 mg/kg	SUB	<0.01								
2,4-DB*	<0.01 mg/kg	SUB	<0.01								
2,4-Dichloroprop (2,4 DP)*	<0.01 mg/kg	SUB	<0.01								
4-Chlorophenoxyacetic acid (4-CPA)*	<0.01 mg/kg	SUB	<0.01								
Acifluorfen*	<0.01 mg/kg	SUB	<0.01								
Bentazone*	<0.01 mg/kg	SUB	<0.01								
Bromoxynil*	<0.01 mg/kg	SUB	<0.01								
Dicamba*	<0.01 mg/kg	SUB	<0.01								
Diclofop*	<0.01 mg/kg	SUB	<0.01								
Dinoseb*	<0.01 mg/kg	SUB	<0.01								
DNOC*	<0.01 mg/kg	SUB	<0.01								
Fluroxypyr*	<0.01 mg/kg	SUB	<0.01								
Ioxynil*	<0.01 mg/kg	SUB	<0.01								
2-methyl-4-Chlorophenoxyacetic acid (MCPA)*	<0.01 mg/kg	SUB	<0.01								
4-(4-Chloro-o-tolyloxy) butyric acid (MCPB)*	<0.01 mg/kg	SUB	<0.01								
Mecoprop (MCPP)*	<0.01 mg/kg	SUB	<0.01								
Propoxycarbazone-sodium*	<0.01 mg/kg	SUB	<0.01								
Triclopyr*	<0.01 mg/kg	SUB	<0.02								
Triclosan*	<0.01 mg/kg	SUB	<0.01								
Exchangeable Ammonia as N	<12 mg/kg	TM024							<12 M		
Phenol	<0.01 mg/kg	TM062 (S)							<0.01 M		
Cresols	<0.01 mg/kg	TM062 (S)							<0.01 M		
Xylenols	<0.015 mg/kg	TM062 (S)							<0.015 M		
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)							<0.035 M		
Soil Organic Matter (SOM)	<0.35 %	TM132							<0.35 #		
pH	1 pH Units	TM133							7.71 M		
Chromium, Hexavalent	<0.6 mg/kg	TM151							<0.6 #		
Cyanide, Total	<1 mg/kg	TM153							<1 M		
Arsenic	<0.6 mg/kg	TM181							7.87 M		
Cadmium	<0.02 mg/kg	TM181							0.452 M		

CERTIFICATE OF ANALYSIS

SDG:	210419-45	**Client Reference:**	784-B026948	**Report Number:**	595910
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595671

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS57	WS57
			Depth (m)	0.10 - 0.10	1.00 - 1.00
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	19/04/2021	19/04/2021
			Sample Time	.	.
			Date Received	15/04/2021	15/04/2021
			SDG Ref	210419-45	210419-45
			Lab Sample No.(s)	24103072	24103082
			AGS Reference	ES1	ES4
Chromium	<0.9 mg/kg	TM181		4.22 M	
Copper	<1.4 mg/kg	TM181		8.31 M	
Iron	<1000 mg/kg	TM181		16900 #	
Lead	<0.7 mg/kg	TM181		10.9 M	
Mercury	<0.1 mg/kg	TM181		<0.1 M	
Nickel	<0.2 mg/kg	TM181		9.91 M	
Selenium	<1 mg/kg	TM181		<1 #	
Vanadium	<0.2 mg/kg	TM181		11.9 #	
Zinc	<1.9 mg/kg	TM181		29.8 M	
Boron, water soluble	<1 mg/kg	TM222		<1 M	
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		<0.004 M	
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248		5.03	
EPH (C5-C40)	<35 mg/kg	TM415		<35	
EPH Surrogate % recovery**	%	TM415		99.1	
EPH >C10-C40	<35 mg/kg	TM415		<35 M	

CERTIFICATE OF ANALYSIS

SDG:	210419-45	**Client Reference:**	784-B026948	**Report Number:**	595910
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595671

OC OP Pesticides and Triazine Herb

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	WS57
Depth (m)	0.10 - 0.10
Sample Type	Soil/Solid (S)
Date Sampled	19/04/2021
Sample Time	.
Date Received	15/04/2021
SDG Ref	210419-45
Lab Sample No.(s)	24103072
AGS Reference	ES1

Component	LOD/Units	Method	
Dichlorvos	<0.05 mg/kg	TM073	<0.05
Mevinphos	<0.05 mg/kg	TM073	<0.05
Phorate	<0.05 mg/kg	TM073	<0.05
alpha-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073	<0.05
Diazinon	<0.05 mg/kg	TM073	<0.05
gamma-Hexachlorocyclohexane (HCH / Lindane)	<0.05 mg/kg	TM073	<0.05
Disulfoton	<0.05 mg/kg	TM073	<0.05
Heptachlor	<0.05 mg/kg	TM073	<0.05
Aldrin	<0.05 mg/kg	TM073	<0.05
beta-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073	<0.05
Methyl parathion	<0.05 mg/kg	TM073	<0.05
Malathion	<0.05 mg/kg	TM073	<0.05
Fenitrothion	<0.05 mg/kg	TM073	<0.05
Heptachlor epoxide	<0.05 mg/kg	TM073	<0.05
Parathion	<0.05 mg/kg	TM073	<0.05
Endosulphan I	<0.05 mg/kg	TM073	<0.05
p,p-DDE	<0.05 mg/kg	TM073	<0.05
Dieldrin	<0.05 mg/kg	TM073	<0.05
Endrin	<0.05 mg/kg	TM073	<0.05
p,p-TDE (DDD)	<0.05 mg/kg	TM073	<0.05
Ethion	<0.05 mg/kg	TM073	<0.05
Endosulphan II	<0.05 mg/kg	TM073	<0.05
p,p-DDT	<0.05 mg/kg	TM073	<0.05
p,p-Methoxychlor	<0.05 mg/kg	TM073	<0.05
Endosulphan sulphate	<0.05 mg/kg	TM073	<0.05
Azinphos-methyl	<0.05 mg/kg	TM073	<0.05

Validated

CERTIFICATE OF ANALYSIS

SDG:	210419-45	**Client Reference:**	784-B026948	**Report Number:**	595910
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595671

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			WS57	1.00 - 1.00	Soil/Solid (S)	19/04/2021	.	15/04/2021	210419-45	24103082	ES4
Naphthalene-d8 % recovery**	%	TM218	85.9								
Acenaphthene-d10 % recovery**	%	TM218	90.3								
Phenanthrene-d10 % recovery**	%	TM218	89.9								
Chrysene-d12 % recovery**	%	TM218	72								
Perylene-d12 % recovery**	%	TM218	79.2								
Naphthalene	<0.009 mg/kg	TM218	<0.009 M								
Acenaphthylene	<0.012 mg/kg	TM218	<0.012 M								
Acenaphthene	<0.008 mg/kg	TM218	<0.008 M								
Fluorene	<0.01 mg/kg	TM218	<0.01 M								
Phenanthrene	<0.015 mg/kg	TM218	<0.015 M								
Anthracene	<0.016 mg/kg	TM218	<0.016 M								
Fluoranthene	<0.017 mg/kg	TM218	<0.017 M								
Pyrene	<0.015 mg/kg	TM218	<0.015 M								
Benz(a)anthracene	<0.014 mg/kg	TM218	<0.014 M								
Chrysene	<0.01 mg/kg	TM218	<0.01 M								
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	<0.015 M								
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	<0.014 M								
Benzo(a)pyrene	<0.015 mg/kg	TM218	<0.015 M								
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	<0.018 M								
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	<0.023 M								
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	<0.024 M								
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	<0.118								

Validated

CERTIFICATE OF ANALYSIS

SDG:	210419-45	**Client Reference:**	784-B026948	**Report Number:**	595910
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595671

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	WS57
Depth (m)	1.00 - 1.00
Sample Type	Soil/Solid (S)
Date Sampled	19/04/2021
Sample Time	.
Date Received	15/04/2021
SDG Ref	210419-45
Lab Sample No.(s)	24103082
AGS Reference	ES4

Component	LOD/Units	Method	
GRO Surrogate % recovery**	%	TM089	98.2
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01
Aliphatics >C10-C12	<1 mg/kg	TM414	<1
Aliphatics >C12-C16	<1 mg/kg	TM414	<1
Aliphatics >C16-C21	<1 mg/kg	TM414	<1
Aliphatics >C21-C35	<1 mg/kg	TM414	<1
Aliphatics >C35-C44	<1 mg/kg	TM414	<1
Total Aliphatics >C10-C44	<5 mg/kg	TM414	<5
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414	<10
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	<0.01
Aromatics > EC10-EC12	<1 mg/kg	TM414	<1
Aromatics > EC12-EC16	<1 mg/kg	TM414	<1
Aromatics > EC16-EC21	<1 mg/kg	TM414	<1
Aromatics > EC21-EC35	<1 mg/kg	TM414	<1
Aromatics >EC35-EC44	<1 mg/kg	TM414	<1
Aromatics > EC40-EC44	<1 mg/kg	TM414	<1
Total Aromatics > EC10-EC44	<5 mg/kg	TM414	<5
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414	<10
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089	<0.05
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089	<0.05
GRO >C5-C10	<0.02 mg/kg	TM089	<0.02

Validated

CERTIFICATE OF ANALYSIS

SDG:	210419-45	**Client Reference:**	784-B026948	**Report Number:**	595910
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595671

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	WS57
Depth (m)	1.00 - 1.00
Sample Type	Soil/Solid (S)
Date Sampled	19/04/2021
Sample Time	.
Date Received	15/04/2021
SDG Ref	210419-45
Lab Sample No.(s)	24103082
AGS Reference	ES4

Component	LOD/Units	Method	
Dibromofluoromethane**	%	TM116	120
Toluene-d8**	%	TM116	101
4-Bromofluorobenzene**	%	TM116	105
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.2 M
Benzene	<0.009 mg/kg	TM116	<0.18 M
Toluene	<0.007 mg/kg	TM116	<0.14 M
Ethylbenzene	<0.004 mg/kg	TM116	<0.08 M
p/m-Xylene	<0.01 mg/kg	TM116	<0.2 #
o-Xylene	<0.01 mg/kg	TM116	<0.2 M
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4
Sum of BTEX	<0.04 mg/kg	TM116	<0.8

CERTIFICATE OF ANALYSIS

SDG:	210419-45	**Client Reference:**	784-B026948	**Report Number:**	595910
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595671

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS57ES1 0.10 - 0.10 SOLID 19/04/2021 00:00:00 15/04/2021 05:00:00 210419-45 24103072 TM048	22/04/2021	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS57ES4 1.00 - 1.00 SOLID 19/04/2021 00:00:00 15/04/2021 05:00:00 210419-45 24103082 TM048	21/04/2021	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
SUB		Subcontracted Test
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210419-45	**Client Reference:**	784-B026948	**Report Number:**	595910
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595671

Test Completion Dates

Lab Sample No(s)	24103072	24103082
Customer Sample Ref.	WS57	WS57
AGS Ref.	ES1	ES4
Depth	0.10 - 0.10	1.00 - 1.00
Type	Soil/Solid (S)	Soil/Solid (S)
Acid herbicides*	29-Apr-2021	
Ammoniacal N as NH4 in 2:1 extract		27-Apr-2021
Ammonium Soil by Titration		23-Apr-2021
Anions by Kone (soil)		23-Apr-2021
Asbestos ID in Solid Samples	23-Apr-2021	21-Apr-2021
Boron Water Soluble		26-Apr-2021
Cyanide Comp/Free/Total/Thiocyanate		22-Apr-2021
EPH		22-Apr-2021
EPH by GCxGC-FID		21-Apr-2021
EPH CWG GC (S)		21-Apr-2021
GRO by GC-FID (S)		21-Apr-2021
Hexavalent Chromium (s)		22-Apr-2021
Metals in solid samples by OES		26-Apr-2021
OC OP Pesticides and Triazine Herb	22-Apr-2021	
PAH by GCMS		21-Apr-2021
pH		20-Apr-2021
Phenols by HPLC (S)		21-Apr-2021
Sample description	19-Apr-2021	19-Apr-2021
Total Organic Carbon		26-Apr-2021
TPH CWG GC (S)		21-Apr-2021
VOC MS (S)		21-Apr-2021

ASSOCIATED AQC DATA

Ammonium Soil by Titration

Component	Method Code	QC 2439
Exchangeable Ammonium as NH4	TM024	**86.57** 76.20 : 110.13

Boron Water Soluble

Component	Method Code	QC 2416
Water Soluble Boron	TM222	**102.0** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2420
Free Cyanide	TM153	**110.89** 79.00 : 115.00
Thiocyanate	TM153	**115.38** 94.09 : 113.89
Total Cyanide	TM153	**112.59** 73.07 : 107.47

GRO by GC-FID (S)

Component	Method Code	QC 2436
QC	TM089	**93.56** 70.75 : 114.19

Hexavalent Chromium (s)

Component	Method Code	QC 2400
Hexavalent Chromium	TM151	**108.0** 92.00 : 111.20

Metals in solid samples by OES

Component	Method Code	QC 2430
Aluminium	TM181	**92.92** 77.46 : 123.98
Antimony	TM181	**103.66** 87.04 : 111.16
Arsenic	TM181	**101.45** 87.34 : 110.87

CERTIFICATE OF ANALYSIS

SDG:	210419-45	**Client Reference:**	784-B026948	**Report Number:**	595910
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595671

Metals in solid samples by OES

		QC 2430
Barium	TM181	**101.83** 80.73 : 115.16
Beryllium	TM181	**101.49** 89.47 : 112.97
Boron	TM181	**88.54** 76.57 : 104.15
Cadmium	TM181	**95.88** 78.94 : 102.43
Chromium	TM181	**90.87** 77.55 : 104.47
Cobalt	TM181	**92.14** 82.95 : 107.41
Copper	TM181	**100.18** 84.36 : 106.14
Iron	TM181	**103.17** 81.43 : 115.79
Lead	TM181	**96.4** 81.95 : 107.63
Manganese	TM181	**110.0** 94.29 : 119.51
Mercury	TM181	**93.72** 82.73 : 106.36
Molybdenum	TM181	**97.12** 86.61 : 111.07
Nickel	TM181	**92.42** 79.72 : 103.80
Phosphorus	TM181	**111.72** 92.65 : 125.47
Selenium	TM181	**101.18** 88.36 : 111.25
Strontium	TM181	**95.77** 77.99 : 108.06
Thallium	TM181	**100.0** 88.60 : 116.73
Tin	TM181	**100.0** 89.77 : 112.62
Titanium	TM181	**86.26** 66.29 : 105.96
Vanadium	TM181	**98.17** 75.51 : 108.87
Zinc	TM181	**97.95** 84.02 : 111.24

PAH by GCMS

Component	Method Code	QC 2405
Acenaphthene	TM218	**87.0** 76.79 : 103.90
Acenaphthylene	TM218	**85.0** 74.19 : 106.17
Anthracene	TM218	**84.5** 70.90 : 109.22
Benz(a)anthracene	TM218	**80.0** 73.77 : 119.26

PAH by GCMS

		QC 2405
Benzo(a)pyrene	TM218	**78.0** 73.20 : 114.18
Benzo(b)fluoranthene	TM218	**77.5** 75.36 : 117.58
Benzo(ghi)perylene	TM218	**79.0** 70.73 : 116.12
Benzo(k)fluoranthene	TM218	**83.5** 75.98 : 116.59
Chrysene	TM218	**84.5** 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	**79.5** 69.17 : 115.30
Fluoranthene	TM218	**77.5** 66.06 : 114.63
Fluorene	TM218	**86.0** 76.66 : 107.56
Indeno(123cd)pyrene	TM218	**80.5** 70.26 : 117.95
Naphthalene	TM218	**85.5** 74.70 : 101.83
Phenanthrene	TM218	**84.0** 73.62 : 109.34
Pyrene	TM218	**78.5** 71.46 : 117.00

pH

Component	Method Code	QC 2407
pH	TM133	**98.38** 97.51 : 101.32

Phenols by HPLC (S)

Component	Method Code	QC 2447
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**50.0** 70.71 : 116.42
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**43.27** 64.54 : 117.79
Cresols by HPLC (S)	TM062 (S)	**46.56** 74.40 : 108.98
Phenol by HPLC (S)	TM062 (S)	**49.67** 69.44 : 122.18
Xylenols by HPLC (S)	TM062 (S)	**47.81** 76.56 : 106.38

Total Organic Carbon

Total Organic Carbon

Component	Method Code	QC 2434
Total Organic Carbon	TM132	**109.77** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2444
1,1,1,2-tetrachloroethane	TM116	**98.4** 86.59 : 118.97
1,1,1-Trichloroethane	TM116	**99.6** 86.26 : 117.53
1,1,2-Trichloroethane	TM116	**95.6** 75.16 : 112.70
1,1-Dichloroethane	TM116	**104.0** 83.27 : 122.16
1,2-Dichloroethane	TM116	**100.8** 89.30 : 133.10
1,4-Dichlorobenzene	TM116	**110.2** 82.59 : 123.23
2-Chlorotoluene	TM116	**105.0** 66.81 : 118.43
4-Chlorotoluene	TM116	**101.0** 65.88 : 114.76
Benzene	TM116	**96.2** 93.16 : 123.63
Carbon Disulphide	TM116	**95.8** 75.11 : 124.81
Carbontetrachloride	TM116	**103.6** 82.35 : 126.46
Chlorobenzene	TM116	**99.0** 85.07 : 118.13
Chloroform	TM116	**104.8** 88.13 : 122.71
Chloromethane	TM116	**106.8** 61.62 : 145.66
Cis-1,2-Dichloroethene	TM116	**103.2** 78.27 : 128.90
Dibromomethane	TM116	**94.6** 77.47 : 121.29
Dichloromethane	TM116	**111.2** 87.89 : 134.72
Ethylbenzene	TM116	**87.0** 79.92 : 110.05
Hexachlorobutadiene	TM116	**55.2** 16.78 : 153.29
Isopropylbenzene	TM116	**79.4** 64.20 : 119.59
Naphthalene	TM116	**105.4** 79.29 : 125.59
o-Xylene	TM116	**85.8** 72.86 : 102.10

VOC MS (S)

		QC 2444
p/m-Xylene	TM116	**81.2** 74.06 : 106.47
Sec-Butylbenzene	TM116	**73.8** 44.71 : 117.87
Tetrachloroethene	TM116	**94.4** 77.82 : 125.00
Toluene	TM116	**88.8** 87.82 : 116.21
Trichloroethene	TM116	**93.0** 79.80 : 112.33
Trichlorofluoromethane	TM116	**99.2** 80.52 : 132.12
Vinyl Chloride	TM116	**106.4** 74.57 : 146.88

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

Work Order	: **PR2135375**	Issue Date	: 29-Apr-2021
Customer	: **ALS Life Sciences Ltd**	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: [redacted]	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 210419-45	Page	: 1 of 2
Order number	: ----	Date Samples Received	: 22-Apr-2021
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 22-Apr-2021 - 29-Apr-2021
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Sample(s) PR2135375/001, method S-PESLMSA1 - LOR for particular sample(s) raised due to matrix interference.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories		*Position*
Zdeněk Jirák	[redacted]	Environmental Business Unit Manager

The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)

Analytical Results

Sub-Matrix: **SOIL**			Client sample ID	**24104011 WS57**		**----**		**----**	
			Laboratory sample ID	*PR2135375-001*		----		----	
			Client sampling date / time	19-Apr-2021 15:12		----		----	
Parameter	*Method*	*LOR*	*Unit*	**Result**	**MU**	**Result**	**MU**	**Result**	**MU**
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	**88.5**	± 6.0%	**----**	----	**----**	----
Pesticides									
2.4.5-T	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4.5-TP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-D	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
4-CPP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bentazone	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dinoseb	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Fluroxypyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPA	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Acifluorfen	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bromoxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
DNOC	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dicamba	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Diclofop	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Ioxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Propoxycarbazone-sodium	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclopyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0200	----	**----**	----	**----**	----
Triclosan	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.
Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	*Method Descriptions*
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PESLMSA1	CZ_SOP_D06_03_182.B (CSN EN 15637, US EPA 1694) Determination of acidic herbicides and drug residues by liquid chromatography method with MS/MS detection.

A `*` symbol preceding any method indicates laboratory or subcontractor non-accredited test. In the case when a procedure belonging to an accredited method was used for non-accredited matrix, would apply that the reported results are non-accredited. Please refer to General Comment section on front page for information. If the report contains subcontracted analysis, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.
The calculation methods of summation parameters are available on request in the client service.

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	04 May 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210422-156
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	596360

This report has been revised and directly supersedes 596182 in its entirety.

We received 14 samples on Tuesday April 20, 2021 and 5 of these samples were scheduled for analysis which was completed on Tuesday May 04, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210422-156	**Client Reference:**	784-B026948	**Report Number:**	596360
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596182

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24129878	BH15	ES1	0.10 - 0.10	16/04/2021
24129889	BH15	ES4	0.70 - 0.70	16/04/2021
24129902	BH19	ES1	0.20 - 0.20	16/04/2021
24129916	BH19	ES4	0.50 - 0.50	16/04/2021
24130049	no id			
24129862	WS04	ES1	0.10 - 0.10	16/04/2021
24129930	WS04	ES4	0.90 - 0.90	16/04/2021
24129953	WS04	ES6	1.50 - 1.50	16/04/2021
24129972	WS06	ES1	0.10 - 0.10	16/04/2021
24129985	WS06	ES4	0.80 - 0.80	16/04/2021
24130003	WS06	ES7	1.90 - 1.90	16/04/2021
24130013	WS10	ES1	0.10 - 0.10	16/04/2021
24130027	WS10	ES3	0.50 - 0.50	16/04/2021
24130040	WS10	ES6	1.50 - 1.50	16/04/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210422-156	**Client Reference:**	784-B026948	**Report Number:**	596360
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596182

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24129889		24129902		24129862	24129930			24130013			
Customer Sample Reference			BH15		BH19		WS04	WS04			WS10			
AGS Reference			ES4		ES1		ES1	ES4			ES1			
Depth (m)			0.70 - 0.70		0.20 - 0.20		0.10 - 0.10	0.90 - 0.90			0.10 - 0.10			
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S
Acid herbicides*	All	NDPs: 0 Tests: 2		X			X								
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 4		X			X			X				X	
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1				X									
Ammonium Soil by Titration	All	NDPs: 0 Tests: 4		X			X			X				X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 4		X			X			X				X	
Anions by Kone (w)	All	NDPs: 0 Tests: 1				X									
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 4	X			X							X		
Boron Water Soluble	All	NDPs: 0 Tests: 4		X			X			X				X	
CEN Readings	All	NDPs: 0 Tests: 1				X									
Coronene	All	NDPs: 0 Tests: 1					X								
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 5		X		X	X			X				X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1				X									
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1				X									
EPH	All	NDPs: 0 Tests: 4		X			X			X				X	
EPH by GCxGC-FID	All	NDPs: 0 Tests: 4		X			X			X				X	

Validated

CERTIFICATE OF ANALYSIS

SDG:	210422-156	**Client Reference:**	784-B026948	**Report Number:**	596360
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596182

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

Lab Sample No(s)			24129889			24129902			24129862	24129930			24130013		
Customer Sample Reference			BH15			BH19			WS04	WS04			WS10		
AGS Reference			ES4			ES1			ES1	ES4			ES1		
Depth (m)			0.70 - 0.70			0.20 - 0.20			0.10 - 0.10	0.90 - 0.90			0.10 - 0.10		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S
EPH CWG GC (S)	All	NDPs: 0 Tests: 4		X			X				X			X	
Fluoride	All	NDPs: 0 Tests: 1				X									
GRO by GC-FID (S)	All	NDPs: 0 Tests: 4			X			X				X			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 4		X			X				X			X	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1				X									
Mercury Dissolved	All	NDPs: 0 Tests: 1				X									
Metals in solid samples by OES	All	NDPs: 0 Tests: 4		X			X				X			X	
OC OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 2		X					X						
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1					X								
PAH by GCMS	All	NDPs: 0 Tests: 4		X			X				X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 1					X								
pH	All	NDPs: 0 Tests: 4		X			X				X			X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 1				X									
Phenols by HPLC (S)	All	NDPs: 0 Tests: 4		X			X				X			X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1				X									

Validated

CERTIFICATE OF ANALYSIS

SDG:	210422-156	**Client Reference:**	784-B026948	**Report Number:**	596360
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596182

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24129889		24129902			24129862		24129930			24130013		
Customer Sample Reference			BH15		BH19			WS04		WS04			WS10		
AGS Reference			ES4		ES1			ES1		ES4			ES1		
Depth (m)			0.70 - 0.70		0.20 - 0.20			0.10 - 0.10		0.90 - 0.90			0.10 - 0.10		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S
Sample description	All	NDPs: 0 Tests: 5		X			X		X		X			X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1					X								
Sulphide	All	NDPs: 0 Tests: 1				X									
Total Dissolved Solids	All	NDPs: 0 Tests: 1				X									
Total Organic Carbon	All	NDPs: 0 Tests: 4		X			X		X		X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 4		X			X		X		X			X	
VOC MS (S)	All	NDPs: 0 Tests: 4			X			X				X			X

CERTIFICATE OF ANALYSIS

SDG:	210422-156	**Client Reference:**	784-B026948	**Report Number:**	596360
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596182

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24129889	BH15	0.70 - 0.70	Light Brown	Sandy Loam	Stones	None
24129902	BH19	0.20 - 0.20	Dark Brown	Sandy Loam	Stones	None
24129862	WS04	0.10 - 0.10	Dark Brown	Loamy Sand	Vegetation	None
24129930	WS04	0.90 - 0.90	Dark Brown	Loamy Sand	Vegetation	None
24130013	WS10	0.10 - 0.10	Dark Brown	Sandy Loam	Vegetation	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210422-156	**Client Reference:**	784-B026948	**Report Number:**	596360
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596182

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH15	BH19	WS04	WS04	WS10
			Depth (m)	0.70 - 0.70	0.20 - 0.20	0.10 - 0.10	0.90 - 0.90	0.10 - 0.10
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	16/04/2021	16/04/2021	16/04/2021	16/04/2021	16/04/2021
			Sample Time	.	.	.	.	.
			Date Received	20/04/2021	20/04/2021	20/04/2021	20/04/2021	20/04/2021
			SDG Ref	210422-156	210422-156	210422-156	210422-156	210422-156
			Lab Sample No.(s)	24129889	24129902	24129862	24129930	24130013
			AGS Reference	ES4	ES1	ES1	ES4	ES1
Moisture Content Ratio (% of as received sample)	%	PM024		7.1	5.7	21	19	20
2,4,5-T*	<0.01 mg/kg	SUB		<0.01		<0.01		
2,4,5-TP (Fenoprop)*	<0.01 mg/kg	SUB		<0.01		<0.01		
2,4-D*	<0.01 mg/kg	SUB		<0.01		<0.01		
2,4-DB*	<0.01 mg/kg	SUB		<0.01		<0.01		
2,4-Dichloroprop (2,4 DP)*	<0.01 mg/kg	SUB		<0.01		<0.01		
4-Chlorophenoxyacetic acid (4-CPA)*	<0.01 mg/kg	SUB		<0.01		<0.01		
Acifluorfen*	<0.01 mg/kg	SUB		<0.01		<0.01		
Bentazone*	<0.01 mg/kg	SUB		<0.01		<0.01		
Bromoxynil*	<0.01 mg/kg	SUB		<0.01		<0.01		
Dicamba*	<0.01 mg/kg	SUB		<0.01		<0.01		
Diclofop*	<0.01 mg/kg	SUB		<0.01		<0.01		
Dinoseb*	<0.01 mg/kg	SUB		<0.01		<0.01		
DNOC*	<0.01 mg/kg	SUB		<0.01		<0.01		
Fluroxypyr*	<0.01 mg/kg	SUB		<0.01		<0.01		
Ioxynil*	<0.01 mg/kg	SUB		<0.01		<0.01		
2-methyl-4-Chlorophenoxyacetic acid (MCPA)*	<0.01 mg/kg	SUB		<0.01		<0.01		
4-(4-Chloro-o-tolyloxy) butyric acid (MCPB)*	<0.01 mg/kg	SUB		<0.01		<0.01		
Mecoprop (MCPP)*	<0.01 mg/kg	SUB		<0.01		<0.01		
Propoxycarbazone-sodium*	<0.01 mg/kg	SUB		<0.01		<0.01		
Triclopyr*	<0.01 mg/kg	SUB		<0.01		<0.01		
Triclosan*	<0.01 mg/kg	SUB		<0.01		<0.01		
Exchangeable Ammonia as N	<12 mg/kg	TM024		<12 M	<12 M		<12 M	<12 M
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 M	<0.01 M		0.0124 M	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)		<0.01 M	<0.01 M		<0.01 M	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)		<0.015 M	<0.015 M		<0.015 M	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 M	<0.035 M		<0.035 M	<0.035 M
Organic Carbon, Total	<0.2 %	TM132			0.707 M			
Soil Organic Matter (SOM)	<0.35 %	TM132		0.628 #	1.22 #		0.952 #	3.4 #
pH	1 pH Units	TM133		7.56 M	8.55 M		7.49 M	7.56 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #		<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M		<1 M	<1 M
PCB congener 28	<0.003 mg/kg	TM168			<0.06 M			

CERTIFICATE OF ANALYSIS

SDG:	210422-156	**Client Reference:**	784-B026948	**Report Number:**	596360
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596182

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH15	BH19	WS04	WS04	WS10
			Depth (m)	0.70 - 0.70	0.20 - 0.20	0.10 - 0.10	0.90 - 0.90	0.10 - 0.10
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	16/04/2021	16/04/2021	16/04/2021	16/04/2021	16/04/2021
			Sample Time	.	.	.	.	.
			Date Received	20/04/2021	20/04/2021	20/04/2021	20/04/2021	20/04/2021
			SDG Ref	210422-156	210422-156	210422-156	210422-156	210422-156
			Lab Sample No.(s)	24129889	24129902	24129862	24129930	24130013
			AGS Reference	ES4	ES1	ES1	ES4	ES1
PCB congener 52	<0.003 mg/kg	TM168			<0.06 M			
PCB congener 101	<0.003 mg/kg	TM168			<0.06 M			
PCB congener 118	<0.003 mg/kg	TM168			<0.06 M			
PCB congener 138	<0.003 mg/kg	TM168			<0.06 M			
PCB congener 153	<0.003 mg/kg	TM168			<0.06 M			
PCB congener 180	<0.003 mg/kg	TM168			<0.06 M			
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168			<0.42			
Arsenic	<0.6 mg/kg	TM181		20.5 M	2.9 M		11.2 M	14.5 M
Cadmium	<0.02 mg/kg	TM181		0.342 M	2.25 M		2.41 M	2 M
Chromium	<0.9 mg/kg	TM181		5.35 M	3.99 M		20.5 M	32 M
Copper	<1.4 mg/kg	TM181		7.55 M	7.18 M		16.3 M	35.8 M
Iron	<1000 mg/kg	TM181		77100 #	4530 #		28500 #	33700 #
Lead	<0.7 mg/kg	TM181		19.4 M	29.2 M		68.6 M	131 M
Mercury	<0.1 mg/kg	TM181		0.128 M	<0.1 M		<0.1 M	<0.1 M
Nickel	<0.2 mg/kg	TM181		10 M	4.71 M		30.2 M	35.9 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #		<1 #	<1 #
Vanadium	<0.2 mg/kg	TM181		33.5 #	5.41 #		29.8 #	48.9 #
Zinc	<1.9 mg/kg	TM181		49.6 M	90.8 M		222 M	258 M
Boron, water soluble	<1 mg/kg	TM222		<1 M	<1 M		<1 M	1.14 M
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.0118 M	0.0642 M		0.0559 M	0.0254 M
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248		2.9	4.8		1.24	2.32
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410			<10			
Coronene	<0.2 mg/kg	TM410			<0.2			
EPH (C5-C40)	<35 mg/kg	TM415		<35	222		<35	<35
EPH Surrogate % recovery**	%	TM415		104	97.9		94.2	99.9
EPH >C10-C40	<35 mg/kg	TM415		<35 M	222 M		<35 M	<35 M
Mineral Oil >C10-C40	<5 mg/kg	TM415			37.1			

CERTIFICATE OF ANALYSIS

SDG:	210422-156	**Client Reference:**	784-B026948	**Report Number:**	596360
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596182

OC OP Pesticides and Triazine Herb

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH15	WS04				
			Depth (m)	0.70 - 0.70	0.10 - 0.10				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	16/04/2021	16/04/2021				
			Sample Time	.	.				
			Date Received	20/04/2021	20/04/2021				
			SDG Ref	210422-156	210422-156				
			Lab Sample No.(s)	24129889	24129862				
			AGS Reference	ES4	ES1				
Dichlorvos	<0.05 mg/kg	TM073		<0.05	<0.05				
Mevinphos	<0.05 mg/kg	TM073		<0.05	<0.05				
Phorate	<0.05 mg/kg	TM073		<0.05	<0.05				
alpha-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073		<0.05	<0.05				
Diazinon	<0.05 mg/kg	TM073		<0.05	<0.05				
gamma-Hexachlorocyclohexane (HCH / Lindane)	<0.05 mg/kg	TM073		<0.05	<0.05				
Disulfoton	<0.05 mg/kg	TM073		<0.05	<0.05				
Heptachlor	<0.05 mg/kg	TM073		<0.05	<0.05				
Aldrin	<0.05 mg/kg	TM073		<0.05	<0.05				
beta-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073		<0.05	<0.05				
Methyl parathion	<0.05 mg/kg	TM073		<0.05	<0.05				
Malathion	<0.05 mg/kg	TM073		<0.05	<0.05				
Fenitrothion	<0.05 mg/kg	TM073		<0.05	<0.05				
Heptachlor epoxide	<0.05 mg/kg	TM073		<0.05	<0.05				
Parathion	<0.05 mg/kg	TM073		<0.05	<0.05				
Endosulphan I	<0.05 mg/kg	TM073		<0.05	<0.05				
p,p-DDE	<0.05 mg/kg	TM073		<0.05	<0.05				
Dieldrin	<0.05 mg/kg	TM073		<0.05	<0.05				
Endrin	<0.05 mg/kg	TM073		<0.05	<0.05				
p,p-TDE (DDD)	<0.05 mg/kg	TM073		<0.05	<0.05				
Ethion	<0.05 mg/kg	TM073		<0.05	<0.05				
Endosulphan II	<0.05 mg/kg	TM073		<0.05	<0.05				
p,p-DDT	<0.05 mg/kg	TM073		<0.05	<0.05				
p,p-Methoxychlor	<0.05 mg/kg	TM073		<0.05	<0.05				
Endosulphan sulphate	<0.05 mg/kg	TM073		<0.05	<0.05				
Azinphos-methyl	<0.05 mg/kg	TM073		<0.05	<0.05				

CERTIFICATE OF ANALYSIS

SDG:	210422-156	**Client Reference:**	784-B026948	**Report Number:**	596360
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596182

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH15	BH19	WS04	WS10		
			Depth (m)	0.70 - 0.70	0.20 - 0.20	0.90 - 0.90	0.10 - 0.10		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	16/04/2021	16/04/2021	16/04/2021	16/04/2021		
			Sample Time	.	.	.	.		
			Date Received	20/04/2021	20/04/2021	20/04/2021	20/04/2021		
			SDG Ref	210422-156	210422-156	210422-156	210422-156		
			Lab Sample No.(s)	24129889	24129902	24129930	24130013		
			AGS Reference	ES4	ES1	ES4	ES1		
Naphthalene-d8 % recovery**	%	TM218		87.9	92.8	88.4	87.9		
Acenaphthene-d10 % recovery**	%	TM218		88	91.6	87.9	90.1		
Phenanthrene-d10 % recovery**	%	TM218		86.7	85.2	87.8	84.3		
Chrysene-d12 % recovery**	%	TM218		76.1	82.6	75.9	71.2		
Perylene-d12 % recovery**	%	TM218		86.5	90.6	84.4	74.7		
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	<0.18 M	<0.009 M	<0.009 M		
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 M	<0.24 M	<0.012 M	<0.012 M		
Acenaphthene	<0.008 mg/kg	TM218		<0.008 M	<0.16 M	<0.008 M	<0.008 M		
Fluorene	<0.01 mg/kg	TM218		<0.01 M	<0.2 M	<0.01 M	<0.01 M		
Phenanthrene	<0.015 mg/kg	TM218		<0.015 M	<0.3 M	<0.015 M	<0.015 M		
Anthracene	<0.016 mg/kg	TM218		<0.016 M	<0.32 M	<0.016 M	<0.016 M		
Fluoranthene	<0.017 mg/kg	TM218		<0.017 M	<0.34 M	<0.017 M	0.0267 M		
Pyrene	<0.015 mg/kg	TM218		<0.015 M	<0.3 M	<0.015 M	0.0233 M		
Benz(a)anthracene	<0.014 mg/kg	TM218		<0.014 M	<0.28 M	<0.014 M	<0.014 M		
Chrysene	<0.01 mg/kg	TM218		<0.01 M	<0.2 M	<0.01 M	0.0162 M		
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		<0.015 M	<0.3 M	<0.015 M	0.0236 M		
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		<0.014 M	<0.28 M	<0.014 M	<0.014 M		
Benzo(a)pyrene	<0.015 mg/kg	TM218		<0.015 M	<0.3 M	<0.015 M	<0.015 M		
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		<0.018 M	<0.36 M	<0.018 M	<0.018 M		
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	<0.46 M	<0.023 M	<0.023 M		
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		<0.024 M	<0.48 M	<0.024 M	<0.024 M		
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		<0.118	<2.36	<0.118	<0.118		

CERTIFICATE OF ANALYSIS

SDG:	210422-156	**Client Reference:**	784-B026948	**Report Number:**	596360
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596182

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH19
Depth (m)	0.20 - 0.20
Sample Type	Soil/Solid (S)
Date Sampled	16/04/2021
Sample Time	.
Date Received	20/04/2021
SDG Ref	210422-156
Lab Sample No.(s)	24129902
AGS Reference	ES1

Component	LOD/Units	Method	
Phenol	<0.1 mg/kg	TM157	<1
Pentachlorophenol	<0.1 mg/kg	TM157	<1
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157	<1
Nitrobenzene	<0.1 mg/kg	TM157	<1
Isophorone	<0.1 mg/kg	TM157	<1
Hexachloroethane	<0.1 mg/kg	TM157	<1
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157	<1
Hexachlorobutadiene	<0.1 mg/kg	TM157	<1
Hexachlorobenzene	<0.1 mg/kg	TM157	<1
n-Dioctyl phthalate	<0.1 mg/kg	TM157	<1
Dimethyl phthalate	<0.1 mg/kg	TM157	<1
Diethyl phthalate	<0.1 mg/kg	TM157	<1
n-Dibutyl phthalate	<0.1 mg/kg	TM157	<1
Dibenzofuran	<0.1 mg/kg	TM157	<1
Carbazole	<0.1 mg/kg	TM157	<1
Butylbenzyl phthalate	<0.1 mg/kg	TM157	<1
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157	<1
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157	<1
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157	<1
Azobenzene	<0.1 mg/kg	TM157	<1
4-Nitrophenol	<0.1 mg/kg	TM157	<1
4-Nitroaniline	<0.1 mg/kg	TM157	<1
4-Methylphenol	<0.1 mg/kg	TM157	<1
4-Chlorophenylphenylether	<0.1 mg/kg	TM157	<1
4-Chloroaniline	<0.1 mg/kg	TM157	<1
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157	<1
4-Bromophenylphenylether	<0.1 mg/kg	TM157	<1
3-Nitroaniline	<0.1 mg/kg	TM157	<1
2-Nitrophenol	<0.1 mg/kg	TM157	<1
2-Nitroaniline	<0.1 mg/kg	TM157	<1
2-Methylphenol	<0.1 mg/kg	TM157	<1
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157	<1
2-Chlorophenol	<0.1 mg/kg	TM157	<1

CERTIFICATE OF ANALYSIS

SDG:	210422-156	**Client Reference:**	784-B026948	**Report Number:**	596360
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596182

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BH19	0.20 - 0.20	Soil/Solid (S)	16/04/2021	.	20/04/2021	210422-156	24129902	ES1
2,6-Dinitrotoluene	<0.1 mg/kg	TM157	<1								
2,4-Dinitrotoluene	<0.1 mg/kg	TM157	<1								
2,4-Dimethylphenol	<0.1 mg/kg	TM157	<1								
2,4-Dichlorophenol	<0.1 mg/kg	TM157	<1								
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157	<1								
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157	<1								
1,4-Dichlorobenzene	<0.1 mg/kg	TM157	<1								
1,3-Dichlorobenzene	<0.1 mg/kg	TM157	<1								
1,2-Dichlorobenzene	<0.1 mg/kg	TM157	<1								
2-Chloronaphthalene	<0.1 mg/kg	TM157	<1								
2-Methylnaphthalene	<0.1 mg/kg	TM157	<1								
Acenaphthylene	<0.1 mg/kg	TM157	<1								
Acenaphthene	<0.1 mg/kg	TM157	<1								
Anthracene	<0.1 mg/kg	TM157	<1								
Benzo(a)anthracene	<0.1 mg/kg	TM157	<1								
Benzo(b)fluoranthene	<0.1 mg/kg	TM157	<1								
Benzo(k)fluoranthene	<0.1 mg/kg	TM157	<1								
Benzo(a)pyrene	<0.1 mg/kg	TM157	<1								
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157	<1								
Chrysene	<0.1 mg/kg	TM157	<1								
Fluoranthene	<0.1 mg/kg	TM157	<1								
Fluorene	<0.1 mg/kg	TM157	<1								
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157	<1								
Phenanthrene	<0.1 mg/kg	TM157	<1								
Pyrene	<0.1 mg/kg	TM157	<1								
Naphthalene	<0.1 mg/kg	TM157	<1								
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157	<1								
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157	<1								

Validated

CERTIFICATE OF ANALYSIS

SDG:	210422-156	**Client Reference:**	784-B026948	**Report Number:**	596360
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596182

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	BH15	BH19	WS04	WS10		
Customer Sample Ref.								
Depth (m)			0.70 - 0.70	0.20 - 0.20	0.90 - 0.90	0.10 - 0.10		
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
Date Sampled			16/04/2021	16/04/2021	16/04/2021	16/04/2021		
Sample Time			.	.	.	.		
Date Received			20/04/2021	20/04/2021	20/04/2021	20/04/2021		
SDG Ref			210422-156	210422-156	210422-156	210422-156		
Lab Sample No.(s)			24129889	24129902	24129930	24130013		
AGS Reference			ES4	ES1	ES4	ES1		
GRO Surrogate % recovery**	%	TM089	92.6	80	103	80.7		
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01		
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01	0.0127	<0.01	<0.01		
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01	0.0159	<0.01	<0.01		
Aliphatics >C10-C12	<1 mg/kg	TM414	<1	<1	<1	<1		
Aliphatics >C12-C16	<1 mg/kg	TM414	<1	3.39	<1	<1		
Aliphatics >C16-C21	<1 mg/kg	TM414	<1	12.1	<1	<1		
Aliphatics >C21-C35	<1 mg/kg	TM414	<1	11.4	<1	2.42		
Aliphatics >C35-C44	<1 mg/kg	TM414	<1	16.1	<1	<1		
Total Aliphatics >C10-C44	<5 mg/kg	TM414	<5	43	<5	<5		
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414	<10	282	<10	<10		
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01		
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01	<0.01		
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	<0.01	0.0106	<0.01	<0.01		
Aromatics > EC10-EC12	<1 mg/kg	TM414	<1	<1	<1	<1		
Aromatics > EC12-EC16	<1 mg/kg	TM414	<1	<1	<1	<1		
Aromatics > EC16-EC21	<1 mg/kg	TM414	<1	<1	<1	<1		
Aromatics > EC21-EC35	<1 mg/kg	TM414	<1	123	1.2	<1		
Aromatics >EC35-EC44	<1 mg/kg	TM414	<1	116	<1	<1		
Aromatics > EC40-EC44	<1 mg/kg	TM414	<1	12.1	<1	<1		
Total Aromatics > EC10-EC44	<5 mg/kg	TM414	<5	240	<5	<5		
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414	<10	283	<10	<10		
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089	<0.05	<0.05	<0.05	<0.05		
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089	<0.05	<0.05	<0.05	<0.05		
GRO >C5-C10	<0.02 mg/kg	TM089	<0.02	<0.02	<0.02	<0.02		

CERTIFICATE OF ANALYSIS

SDG:	210422-156	**Client Reference:**	784-B026948	**Report Number:**	596360
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596182

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH15	BH19	WS04	WS10		
			Depth (m)	0.70 - 0.70	0.20 - 0.20	0.90 - 0.90	0.10 - 0.10		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	16/04/2021	16/04/2021	16/04/2021	16/04/2021		
			Sample Time	.	.	.	.		
			Date Received	20/04/2021	20/04/2021	20/04/2021	20/04/2021		
			SDG Ref	210422-156	210422-156	210422-156	210422-156		
			Lab Sample No.(s)	24129889	24129902	24129930	24130013		
			AGS Reference	ES4	ES1	ES4	ES1		
Dibromofluoromethane**	%	TM116		107	108	110	108		
Toluene-d8**	%	TM116		99.5	96.9	99.3	97.5		
4-Bromofluorobenzene**	%	TM116		101	100	105	99.1		
Dichlorodifluoromethane	<0.006 mg/kg	TM116			<0.12 M				
Chloromethane	<0.007 mg/kg	TM116			<0.14 #				
Vinyl Chloride	<0.006 mg/kg	TM116			<0.12 @ M				
Bromomethane	<0.01 mg/kg	TM116			<0.2 M				
Chloroethane	<0.01 mg/kg	TM116			<0.2 M				
Trichlorofluorormethane	<0.006 mg/kg	TM116			<0.12 M				
1,1-Dichloroethene	<0.01 mg/kg	TM116			<0.2 #				
Carbon Disulphide	<0.007 mg/kg	TM116			<0.14 M				
Dichloromethane	<0.01 mg/kg	TM116			<0.2 #				
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M	<0.2 M		
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116			<0.2 M				
1,1-Dichloroethane	<0.008 mg/kg	TM116			<0.16 M				
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116			<0.12 M				
2,2-Dichloropropane	<0.01 mg/kg	TM116			<0.2				
Bromochloromethane	<0.01 mg/kg	TM116			<0.2 M				
Chloroform	<0.008 mg/kg	TM116			<0.16 M				
1,1,1-Trichloroethane	<0.007 mg/kg	TM116			<0.14 M				
1,1-Dichloropropene	<0.01 mg/kg	TM116			<0.2 M				
Carbontetrachloride	<0.01 mg/kg	TM116			<0.2 M				
1,2-Dichloroethane	<0.005 mg/kg	TM116			<0.1 M				
Benzene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M	<0.18 M	<0.18 M		
Trichloroethene	<0.009 mg/kg	TM116			<0.18 #				
1,2-Dichloropropane	<0.01 mg/kg	TM116			<0.2 M				
Dibromomethane	<0.009 mg/kg	TM116			<0.18 M				
Bromodichloromethane	<0.007 mg/kg	TM116			<0.14 M				
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116			<0.2 M				
Toluene	<0.007 mg/kg	TM116		<0.14 M	<0.14 M	<0.14 M	<0.14 M		
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116			<0.2				
1,1,2-Trichloroethane	<0.01 mg/kg	TM116			<0.2 M				
1,3-Dichloropropane	<0.007 mg/kg	TM116			<0.14 M				

CERTIFICATE OF ANALYSIS

SDG:	210422-156	**Client Reference:**	784-B026948	**Report Number:**	596360
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596182

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH15	BH19	WS04	WS10		
			Depth (m)	0.70 - 0.70	0.20 - 0.20	0.90 - 0.90	0.10 - 0.10		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	16/04/2021	16/04/2021	16/04/2021	16/04/2021		
			Sample Time	.	.	.	.		
			Date Received	20/04/2021	20/04/2021	20/04/2021	20/04/2021		
			SDG Ref	210422-156	210422-156	210422-156	210422-156		
			Lab Sample No.(s)	24129889	24129902	24129930	24130013		
			AGS Reference	ES4	ES1	ES4	ES1		
Tetrachloroethene	<0.005 mg/kg	TM116			<0.1 M				
Dibromochloromethane	<0.01 mg/kg	TM116			<0.2 M				
1,2-Dibromoethane	<0.01 mg/kg	TM116			<0.2 M				
Chlorobenzene	<0.005 mg/kg	TM116			<0.1 M				
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116			<0.2 M				
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 M	<0.08 M	<0.08 M	<0.08 M		
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #	<0.2 #	<0.2 #		
o-Xylene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M	<0.2 M		
Styrene	<0.01 mg/kg	TM116			<0.2 @ #				
Bromoform	<0.01 mg/kg	TM116			<0.2 M				
Isopropylbenzene	<0.005 mg/kg	TM116			<0.1 #				
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116			<0.2 #				
1,2,3-Trichloropropane	<0.016 mg/kg	TM116			<0.32 M				
Bromobenzene	<0.01 mg/kg	TM116			<0.2 M				
Propylbenzene	<0.01 mg/kg	TM116			<0.2 M				
2-Chlorotoluene	<0.009 mg/kg	TM116			<0.18 M				
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116			<0.16 M				
4-Chlorotoluene	<0.01 mg/kg	TM116			<0.2 M				
tert-Butylbenzene	<0.014 mg/kg	TM116			<0.28 M				
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116			<0.18 #				
sec-Butylbenzene	<0.01 mg/kg	TM116			<0.2				
4-Isopropyltoluene	<0.01 mg/kg	TM116			<0.2 M				
1,3-Dichlorobenzene	<0.008 mg/kg	TM116			<0.16 M				
1,4-Dichlorobenzene	<0.005 mg/kg	TM116			<0.1 M				
n-Butylbenzene	<0.011 mg/kg	TM116			<0.22				
1,2-Dichlorobenzene	<0.01 mg/kg	TM116			<0.2 M				
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116			<0.28 M				
Tert-amyl methyl ether	<0.01 mg/kg	TM116			<0.2 #				
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116			<0.4				
Hexachlorobutadiene	<0.02 mg/kg	TM116			<0.4				
Naphthalene	<0.013 mg/kg	TM116			<0.26 M				
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116			<0.4 #				
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116			<0.4				

CERTIFICATE OF ANALYSIS

SDG:	210422-156	**Client Reference:**	784-B026948	**Report Number:**	596360
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596182

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH15	BH19	WS04	WS10		
			Depth (m)	0.70 - 0.70	0.20 - 0.20	0.90 - 0.90	0.10 - 0.10		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	16/04/2021	16/04/2021	16/04/2021	16/04/2021		
			Sample Time	.	.	.	.		
			Date Received	20/04/2021	20/04/2021	20/04/2021	20/04/2021		
			SDG Ref	210422-156	210422-156	210422-156	210422-156		
			Lab Sample No.(s)	24129889	24129902	24129930	24130013		
			AGS Reference	ES4	ES1	ES4	ES1		
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4	<0.4	<0.4	<0.4		
Sum of BTEX	<0.04 mg/kg	TM116		<0.8	<0.8	<0.8	<0.8		

CERTIFICATE OF ANALYSIS

SDG:	210422-156	**Client Reference:**	784-B026948	**Report Number:**	596360
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596182

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&+$@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH15ES4 0.70 - 0.70 SOLID 16/04/2021 00:00:00 20/04/2021 05:00:00 210422-156 24129889 TM048	26.04.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH19ES1 0.20 - 0.20 SOLID 16/04/2021 00:00:00 20/04/2021 05:00:00 210422-156 24129902 TM048	26/04/2021	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS04ES4 0.90 - 0.90 SOLID 16/04/2021 00:00:00 20/04/2021 05:00:00 210422-156 24129930 TM048	26/04/2021	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS10ES1 0.10 - 0.10 SOLID 16/04/2021 00:00:00 20/04/2021 05:00:00 210422-156 24130013 TM048	26/04/2021	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG:	210422-156	**Client Reference:**	784-B026948	**Report Number:**	596360
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596182

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.097	**Natural Moisture Content (%)**	7.52
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	93
Particle Size <4mm	>95%		

Case	
SDG	210422-156
Lab Sample Number(s)	24129902
Sampled Date	16-Apr-2021
Customer Sample Ref.	BH19 ES1
Depth (m)	0.20 - 0.20

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.707	3	5	6
Loss on Ignition (%)	-	-	-	-
Sum of BTEX (mg/kg)	<0.8	6	-	-
Sum of 7 PCBs (mg/kg)	<0.42	1	-	-
Mineral Oil (mg/kg)	37.1	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.55	-	>6	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00122	<0.0005	0.0122	<0.005	0.5	2	25
Barium	0.0235	<0.0002	0.235	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	<0.0003	<0.0003	<0.003	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	<0.0004	<0.0004	<0.004	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00104	<0.001	0.0104	<0.01	4	50	200
Chloride	2.8	<2	28	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	14.3	<2	143	<20	1000	20000	50000
Total Dissolved Solids	89.5	<5	895	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.45	<3	34.5	<30	500	800	1000

Leach Test Information

Date Prepared	23-Apr-2021
pH (pH Units)	7.85
Conductivity (µS/cm)	116.00
Temperature (°C)	20.70
Volume Leachant (Litres)	0.893

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation

04/05/2021 14:09:00

14:07:36 04/05/2021

Validated

CERTIFICATE OF ANALYSIS

SDG:	210422-156	**Client Reference:**	784-B026948	**Report Number:**	596360
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596182

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.097	**Natural Moisture Content (%)**	7.52
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	93
Particle Size <4mm	>95%		

Case	
SDG	210422-156
Lab Sample Number(s)	24129902
Sampled Date	16-Apr-2021
Customer Sample Ref.	BH19 ES1
Depth (m)	0.20 - 0.20

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.707	3	5	6
Loss on Ignition (%)	-	-	-	-
Sum of BTEX (mg/kg)	<0.8	6	-	-
Sum of 7 PCBs (mg/kg)	<0.42	1	-	-
Mineral Oil (mg/kg)	37.1	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	8.55	-	>6	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	**C_2 Conc^n in 10:1 eluate (mg/l)**		**A_2 10:1 conc^n leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Boron	0.0152	<0.01	0.152	<0.1	-	-	-
Vanadium	0.00166	<0.001	0.0166	<0.01	-	-	-
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.19	<0.19	-	-	-

Leach Test Information

Date Prepared	23-Apr-2021
pH (pH Units)	7.85
Conductivity (µS/cm)	116.00
Temperature (°C)	20.70
Volume Leachant (Litres)	0.893

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation

04/05/2021 14:09:00

14:07:36 04/05/2021

CERTIFICATE OF ANALYSIS

SDG:	210422-156	**Client Reference:**	784-B026948	**Report Number:**	596360
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596182

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.097	**Natural Moisture Content (%)**	7.52
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	93
Particle Size <4mm	>95%		

Case	
SDG	210422-156
Lab Sample Number(s)	24129902
Sampled Date	16-Apr-2021
Customer Sample Ref.	BH19 ES1
Depth (m)	0.20 - 0.20

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	23-Apr-2021
pH (pH Units)	7.85
Conductivity (µS/cm)	116.00
Temperature (°C)	20.70
Volume Leachant (Litres)	0.893

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210422-156	**Client Reference:**	784-B026948	**Report Number:**	596360
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596182

Test Completion Dates

Lab Sample No(s)	24129889	24129902	24129862	24129930	24130013
Customer Sample Ref.	BH15	BH19	WS04	WS04	WS10
AGS Ref.	ES4	ES1	ES1	ES4	ES1
Depth	0.70 - 0.70	0.20 - 0.20	0.10 - 0.10	0.90 - 0.90	0.10 - 0.10
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Acid herbicides*	04-May-2021		04-May-2021		
Ammoniacal N as NH4 in 2:1 extract	27-Apr-2021	27-Apr-2021		27-Apr-2021	27-Apr-2021
Ammoniacal Nitrogen		28-Apr-2021			
Ammonium Soil by Titration	27-Apr-2021	27-Apr-2021		27-Apr-2021	27-Apr-2021
Anions by Kone (soil)	28-Apr-2021	28-Apr-2021		28-Apr-2021	28-Apr-2021
Anions by Kone (w)		26-Apr-2021			
Asbestos ID in Solid Samples	26-Apr-2021	26-Apr-2021		26-Apr-2021	26-Apr-2021
Boron Water Soluble	28-Apr-2021	28-Apr-2021		28-Apr-2021	28-Apr-2021
CEN 10:1 Leachate (1 Stage)		24-Apr-2021			
CEN Readings		28-Apr-2021			
Coronene		27-Apr-2021			
Cyanide Comp/Free/Total/Thiocyanate	29-Apr-2021	29-Apr-2021		29-Apr-2021	29-Apr-2021
Dissolved Metals by ICP-MS		27-Apr-2021			
Dissolved Organic/Inorganic Carbon		01-May-2021			
EPH	27-Apr-2021	28-Apr-2021		27-Apr-2021	27-Apr-2021
EPH by GCxGC-FID	27-Apr-2021	27-Apr-2021		27-Apr-2021	27-Apr-2021
EPH CWG GC (S)	27-Apr-2021	28-Apr-2021		27-Apr-2021	27-Apr-2021
Fluoride		26-Apr-2021			
GRO by GC-FID (S)	27-Apr-2021	28-Apr-2021		27-Apr-2021	27-Apr-2021
Hexavalent Chromium (s)	28-Apr-2021	28-Apr-2021		28-Apr-2021	28-Apr-2021
Hexavalent Chromium (w)		28-Apr-2021			
Mercury Dissolved		28-Apr-2021			
Metals in solid samples by OES	28-Apr-2021	27-Apr-2021		28-Apr-2021	28-Apr-2021
Moisture at 105C		23-Apr-2021			
OC OP Pesticides and Triazine Herb	29-Apr-2021		29-Apr-2021		
PAH 16 & 17 Calc		27-Apr-2021			
PAH by GCMS	26-Apr-2021	27-Apr-2021		26-Apr-2021	26-Apr-2021
PCBs by GCMS		27-Apr-2021			
pH	27-Apr-2021	27-Apr-2021		27-Apr-2021	27-Apr-2021
pH Value of Filtered Water		26-Apr-2021			
Phenols by HPLC (S)	28-Apr-2021	28-Apr-2021		28-Apr-2021	28-Apr-2021
Phenols by HPLC (W)		28-Apr-2021			
Sample description	23-Apr-2021	23-Apr-2021	23-Apr-2021	23-Apr-2021	23-Apr-2021
Semi Volatile Organic Compounds		27-Apr-2021			
Sulphide		27-Apr-2021			
Total Dissolved Solids		27-Apr-2021			
Total Organic Carbon	29-Apr-2021	29-Apr-2021		29-Apr-2021	29-Apr-2021
TPH CWG GC (S)	27-Apr-2021	28-Apr-2021		27-Apr-2021	27-Apr-2021
VOC MS (S)	27-Apr-2021	27-Apr-2021		27-Apr-2021	27-Apr-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2433
Ammoniacal Nitrogen as N	TM099	**100.4** 91.28 : 106.64

Ammonium Soil by Titration

Component	Method Code	QC 2400	QC 2412
Exchangeable Ammonium as NH4	TM024	**87.06** 76.20 : 110.13	**88.06** 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2452	QC 2401
Chloride (soluble)	TM243	**143.52** 80.93 : 111.66	**154.92** 80.93 : 111.66
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**160.75** 70.00 : 130.00	**159.35** 70.00 : 130.00

Anions by Kone (w)

Component	Method Code	QC 2422
Chloride	TM184	**97.1** 91.40 : 109.10
Sulphate (soluble)	TM184	**100.4** 91.99 : 109.30

Boron Water Soluble

Component	Method Code	QC 2460	QC 2499	QC 2438
Water Soluble Boron	TM222	**105.0** 84.00 : 111.00	**99.0** 84.00 : 111.00	**93.5** 84.00 : 111.00

Coronene

Component	Method Code	QC 2413
Coronene RAW	TM410	**105.0** 79.43 : 137.78

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2454	QC 2480
Free Cyanide	TM153		**100.99** 86.90 : 108.50
Free Cyanide (W)	TM227	**82.25** 91.52 : 123.82	
Thiocyanate	TM153		**105.13** 94.53 : 113.33
Thiocyanate (W)	TM227	**106.0** 90.50 : 113.00	
Total Cyanide	TM153		**97.9** 86.13 : 102.13
Total Cyanide (W)	TM227	**106.75** 91.75 : 112.75	

Dissolved Metals by ICP-MS

Component	Method Code	QC 2456
Aluminium	TM152	**102.67** 90.78 : 110.89
Antimony	TM152	**102.17** 77.22 : 119.42
Arsenic	TM152	**101.0** 86.77 : 107.67
Barium	TM152	**103.83** 87.86 : 110.23
Beryllium	TM152	**103.0** 86.19 : 112.98
Bismuth	TM152	**102.0** 84.06 : 106.46
Borate	TM152	**107.41** 88.00 : 112.00
Boron	TM152	**107.33** 83.92 : 114.90
Cadmium	TM152	**100.67** 88.89 : 106.69
Calcium	TM152	**100.67** 80.24 : 117.95
Chromium	TM152	**102.0** 83.22 : 110.16
Cobalt	TM152	**102.17** 82.49 : 112.36
Copper	TM152	**102.67** 83.14 : 113.00
Iron	TM152	**102.67** 88.40 : 109.24
Lead	TM152	**101.83** 83.71 : 109.58
Lithium	TM152	**103.0** 84.50 : 114.28
Magnesium	TM152	**100.0** 87.56 : 114.57
Manganese	TM152	**101.5** 90.01 : 108.72
Molybdenum	TM152	**101.67** 85.53 : 107.42

Dissolved Metals by ICP-MS

		QC 2456
Nickel	TM152	**102.5** 88.05 : 106.42
Phosphorus	TM152	**98.33** 82.76 : 107.72
Potassium	TM152	**99.33** 88.45 : 106.42
Selenium	TM152	**101.17** 85.61 : 111.03
Silver	TM152	**101.67** 88.48 : 110.48
Sodium	TM152	**100.67** 88.32 : 106.30
Strontium	TM152	**103.67** 83.77 : 107.87
Tellurium	TM152	**98.67** 82.83 : 104.73
Thallium	TM152	**96.5** 77.47 : 113.87
Tin	TM152	**99.33** 87.36 : 109.55
Titanium	TM152	**104.33** 87.29 : 108.31
Tungsten	TM152	**103.83** 68.27 : 122.97
Uranium	TM152	**103.67** 82.46 : 105.16
Vanadium	TM152	**96.33** 88.43 : 114.30
Zinc	TM152	**102.67** 85.57 : 114.31

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2439
Dissolved Inorganic Carbon	TM090	**111.33** 93.58 : 112.28
Dissolved Organic Carbon	TM090	**103.5** 96.13 : 109.53

EPH CWG GC (S)

Component	Method Code	QC 2428
EPH >C8-C40 Raw	TM414	**80.85** 69.95 : 114.99
Total Aliphatics Raw	TM414	**86.44** 68.45 : 114.88
Total Aromatics Raw	TM414	**86.18** 67.31 : 129.37

Fluoride

Fluoride

Component	Method Code	QC 2488
Fluoride	TM104	**104.67** 96.67 : 108.67

GRO by GC-FID (S)

Component	Method Code	QC 2426	QC 2498
QC	TM089	**86.67** 70.75 : 114.19	**91.29** 72.28 : 114.54

Hexavalent Chromium (s)

Component	Method Code	QC 2499	QC 2405
Hexavalent Chromium	TM151	**110.0** 92.00 : 111.20	**108.0** 92.00 : 111.20

Hexavalent Chromium (w)

Component	Method Code	QC 2425
Hexavalent Chromium	TM241	**102.2** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2480
Mercury Dissolved (CVAF)	TM183	**101.0** 69.30 : 128.70

Metals in solid samples by OES

Component	Method Code	QC 2479	QC 2402	QC 2461
Aluminium	TM181	**100.88** 77.46 : 123.98	**97.35** 77.46 : 123.98	**105.31** 77.46 : 123.98
Antimony	TM181	**96.34** 87.04 : 111.16	**97.97** 87.04 : 111.16	**101.22** 87.04 : 111.16
Arsenic	TM181	**103.78** 87.34 : 110.87	**98.55** 87.34 : 110.87	**101.16** 87.34 : 110.87
Barium	TM181	**101.83** 80.73 : 115.16	**96.33** 80.73 : 115.16	**101.83** 80.73 : 115.16

CERTIFICATE OF ANALYSIS

SDG:	210422-156	**Client Reference:**	784-B026948	**Report Number:**	596360
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596182

Metals in solid samples by OES

		QC 2479	QC 2402	QC 2461
Beryllium	TM181	**103.73** 89.47 : 112.97	**96.27** 89.47 : 112.97	**101.87** 89.47 : 112.97
Boron	TM181	**97.71** 76.57 : 104.15	**89.4** 76.57 : 104.15	**95.7** 76.57 : 104.15
Cadmium	TM181	**98.35** 78.94 : 102.43	**91.77** 78.94 : 102.43	**90.53** 78.94 : 102.43
Chromium	TM181	**90.67** 77.55 : 104.47	**87.63** 77.55 : 104.47	**91.89** 77.55 : 104.47
Cobalt	TM181	**94.34** 82.95 : 107.41	**87.42** 82.95 : 107.41	**90.25** 82.95 : 107.41
Copper	TM181	**99.65** 84.36 : 106.14	**94.72** 84.36 : 106.14	**98.42** 84.36 : 106.14
Iron	TM181	**100.0** 81.43 : 115.79	**96.03** 81.43 : 115.79	**100.79** 81.43 : 115.79
Lead	TM181	**95.5** 81.95 : 107.63	**89.64** 81.95 : 107.63	**92.79** 81.95 : 107.63
Manganese	TM181	**109.44** 94.29 : 119.51	**103.06** 94.29 : 119.51	**108.61** 94.29 : 119.51
Mercury	TM181	**99.28** 82.73 : 106.36	**91.55** 82.73 : 106.36	**95.17** 82.73 : 106.36
Molybdenum	TM181	**104.94** 86.61 : 111.07	**95.88** 86.61 : 111.07	**100.0** 86.61 : 111.07
Nickel	TM181	**96.09** 79.72 : 103.80	**89.0** 79.72 : 103.80	**92.18** 79.72 : 103.80
Phosphorus	TM181	**113.13** 92.65 : 125.47	**108.48** 92.65 : 125.47	**115.15** 92.65 : 125.47
Selenium	TM181	**106.27** 88.36 : 111.25	**98.04** 88.36 : 111.25	**101.18** 88.36 : 111.25
Strontium	TM181	**96.66** 77.99 : 108.06	**90.2** 77.99 : 108.06	**95.55** 77.99 : 108.06
Thallium	TM181	**104.42** 88.60 : 116.73	**99.12** 88.60 : 116.73	**102.65** 88.60 : 116.73
Tin	TM181	**102.28** 89.77 : 112.62	**97.34** 89.77 : 112.62	**100.0** 89.77 : 112.62
Titanium	TM181	**91.6** 66.29 : 105.96	**80.15** 66.29 : 105.96	**87.02** 66.29 : 105.96
Vanadium	TM181	**98.53** 75.51 : 108.87	**89.01** 75.51 : 108.87	**95.97** 75.51 : 108.87
Zinc	TM181	**105.13** 84.02 : 111.24	**98.77** 84.02 : 111.24	**102.67** 84.02 : 111.24

PAH by GCMS

Component	Method Code	QC 2416	QC 2496	QC 2407
Acenaphthene	TM218	**91.5** 76.79 : 103.90	**88.0** 76.79 : 103.90	**87.0** 78.59 : 112.16
Acenaphthylene	TM218	**89.0** 74.19 : 106.17	**85.5** 74.19 : 106.17	**85.5** 75.11 : 109.01
Anthracene	TM218	**87.5** 70.90 : 109.22	**84.5** 70.90 : 109.22	**83.0** 73.99 : 113.85
Benz(a)anthracene	TM218	**90.0** 73.77 : 119.26	**89.5** 73.77 : 119.26	**98.5** 69.31 : 119.18
Benzo(a)pyrene	TM218	**92.0** 73.20 : 114.18	**88.5** 73.20 : 114.18	**94.5** 66.97 : 114.92

PAH by GCMS

		QC 2416	QC 2496	QC 2407
Benzo(b)fluoranthene	TM218	**90.5** 75.36 : 117.58	**84.5** 75.36 : 117.58	**90.5** 67.41 : 114.46
Benzo(ghi)perylene	TM218	**91.5** 70.73 : 116.12	**85.0** 70.73 : 116.12	**94.0** 62.92 : 114.36
Benzo(k)fluoranthene	TM218	**91.5** 75.98 : 116.59	**85.5** 75.98 : 116.59	**85.0** 69.98 : 116.49
Chrysene	TM218	**89.5** 74.82 : 114.18	**87.0** 74.82 : 114.18	**91.5** 69.86 : 114.50
Dibenzo(ah)anthracene	TM218	**85.5** 69.17 : 115.30	**81.0** 69.17 : 115.30	**92.5** 64.54 : 115.22
Fluoranthene	TM218	**102.0** 66.06 : 114.63	**87.5** 66.06 : 114.63	**83.5** 72.56 : 111.70
Fluorene	TM218	**89.0** 76.66 : 107.56	**85.5** 76.66 : 107.56	**85.5** 79.13 : 111.49
Indeno(123cd)pyrene	TM218	**89.5** 70.26 : 117.95	**90.5** 70.26 : 117.95	**82.5** 61.22 : 113.25
Naphthalene	TM218	**88.5** 74.70 : 101.83	**86.0** 74.70 : 101.83	**87.5** 77.96 : 110.91
Phenanthrene	TM218	**97.5** 73.62 : 109.34	**86.0** 73.62 : 109.34	**84.5** 76.83 : 113.25
Pyrene	TM218	**96.0** 71.46 : 117.00	**87.0** 71.46 : 117.00	**83.0** 72.45 : 110.77

PCBs by GCMS

Component	Method Code	QC 2409
PCB congener 101	TM168	**85.6** 65.66 : 110.06
PCB congener 105	TM168	**81.7** 58.10 : 106.34
PCB congener 114	TM168	**81.1** 59.38 : 106.48
PCB congener 118	TM168	**81.5** 60.02 : 106.23
PCB congener 123	TM168	**88.3** 65.01 : 99.81
PCB congener 126	TM168	**80.4** 59.31 : 109.23
PCB congener 138	TM168	**85.9** 63.95 : 107.63
PCB congener 153	TM168	**88.2** 62.65 : 108.85
PCB congener 156	TM168	**83.0** 61.69 : 112.27
PCB congener 157	TM168	**77.2** 55.37 : 104.81
PCB congener 167	TM168	**81.9** 65.58 : 109.14
PCB congener 169	TM168	**83.1** 56.84 : 112.10
PCB congener 180	TM168	**85.7** 66.99 : 111.63
PCB congener 189	TM168	**82.9** 57.75 : 112.59

PCBs by GCMS

		QC 2409
PCB congener 28	TM168	**84.7** 73.68 : 105.96
PCB congener 52	TM168	**84.7** 67.24 : 107.62
PCB congener 77	TM168	**83.4** 64.87 : 108.49
PCB congener 81	TM168	**90.5** 70.78 : 110.80

pH

Component	Method Code	QC 2433	QC 2402
pH	TM133	**98.97** 97.51 : 101.32	**99.12** 97.51 : 101.32

pH Value of Filtered Water

Component	Method Code	QC 2420
pH	TM256	**100.0** 99.20 : 101.60

Phenols by HPLC (S)

Component	Method Code	QC 2491
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**52.6** 69.38 : 125.27
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**47.95** 69.79 : 122.84
Cresols by HPLC (S)	TM062 (S)	**50.73** 77.98 : 111.41
Phenol by HPLC (S)	TM062 (S)	**52.32** 67.94 : 117.69
Xylenols by HPLC (S)	TM062 (S)	**51.35** 88.23 : 104.42

Phenols by HPLC (W)

Component	Method Code	QC 2414
2.3.5 Trimethyl-Phenol by HPLC (W)	TM259	**97.66** 77.41 : 127.55
2-Isopropyl Phenol by HPLC (W)	TM259	**89.87** 82.77 : 126.51
Cresols by HPLC (W)	TM259	**97.37** 76.60 : 126.28
Napthol by HPLC (W)	TM259	**95.7** 75.40 : 129.40
Phenol by HPLC (W)	TM259	**92.63** 85.77 : 125.91

Phenols by HPLC (W)

		QC 2414
Xylenols by HPLC (W)	TM259	**95.25** 79.09 : 131.82

Semi Volatile Organic Compounds

Component	Method Code	QC 2483
4-Bromophenylphenylether (Soil)	TM157	**90.0** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**103.0** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**91.0** 68.25 : 126.75
Naphthalene (Soil)	TM157	**96.5** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**88.5** 66.50 : 123.50
Phenol (Soil)	TM157	**84.0** 69.92 : 114.02

Sulphide

Component	Method Code	QC 2483
Sulphide	TM101	**108.0** 88.90 : 112.50

Total Dissolved Solids

Component	Method Code	QC 2489
Total Dissolved Solids	TM123	**98.9** 97.30 : 100.92

Total Organic Carbon

Component	Method Code	QC 2400	QC 2410
Total Organic Carbon	TM132	**109.38** 87.02 : 113.45	**100.78** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2411
1,1,1,2-tetrachloroethane	TM116	**95.0** 86.59 : 118.97
1,1,1-Trichloroethane	TM116	**99.8** 86.26 : 117.53
1,1,2-Trichloroethane	TM116	**95.4** 75.16 : 112.70

VOC MS (S)

		QC 2411
1,1-Dichloroethane	TM116	**105.0** 83.27 : 122.16
1,2-Dichloroethane	TM116	**104.4** 89.30 : 133.10
1,4-Dichlorobenzene	TM116	**110.0** 82.59 : 123.23
2-Chlorotoluene	TM116	**104.8** 66.81 : 118.43
4-Chlorotoluene	TM116	**102.4** 65.88 : 114.76
Benzene	TM116	**99.6** 93.16 : 123.63
Carbon Disulphide	TM116	**100.2** 75.11 : 124.81
Carbontetrachloride	TM116	**105.6** 82.35 : 126.46
Chlorobenzene	TM116	**99.0** 85.07 : 118.13
Chloroform	TM116	**104.4** 88.13 : 122.71
Chloromethane	TM116	**120.4** 61.62 : 145.66
Cis-1,2-Dichloroethene	TM116	**102.6** 78.27 : 128.90
Dibromomethane	TM116	**96.2** 77.47 : 121.29
Dichloromethane	TM116	**106.2** 87.89 : 134.72
Ethylbenzene	TM116	**90.0** 79.92 : 110.05
Hexachlorobutadiene	TM116	**78.2** 16.78 : 153.29
Isopropylbenzene	TM116	**87.0** 64.20 : 119.59
Naphthalene	TM116	**99.0** 79.29 : 125.59
o-Xylene	TM116	**87.2** 72.86 : 102.10
p/m-Xylene	TM116	**83.9** 74.06 : 106.47
Sec-Butylbenzene	TM116	**93.0** 44.71 : 117.87
Tetrachloroethene	TM116	**99.4** 77.82 : 125.00
Toluene	TM116	**93.0** 87.82 : 116.21
Trichloroethene	TM116	**96.6** 79.80 : 112.33
Trichlorofluoromethane	TM116	**97.4** 80.52 : 132.12
Vinyl Chloride	TM116	**111.0** 74.57 : 146.88

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.

The figure detailed is the percentage recovery result for the AQC.

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

Work Order	: **PR2136553**	Issue Date	: 04-May-2021
Customer	: **ALS Life Sciences Ltd**	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: [redacted]	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 210422-156	Page	: 1 of 2
Order number	: ----	Date Samples Received	: 26-Apr-2021
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 27-Apr-2021 - 04-May-2021
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories		*Position*
Zdeněk Jirák	[redacted]	Environmental Business Unit Manager

The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)

Analytical Results

Sub-Matrix: **SOIL**	*Client sample ID*	**24135573 BH15**		**24135316 WS04**		**----**	
	Laboratory sample ID	*PR2136553-001*		*PR2136553-002*		----	
	Client sampling date / time	23-Apr-2021		23-Apr-2021		----	
Parameter	*Method*	*LOR*	*Unit*	**Result**	**MU**	**Result**	**MU**	**Result**	**MU**
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	**88.5**	± 6.0%	**78.8**	± 6.0%	**----**	----
Pesticides									
2.4.5-T	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
2.4.5-TP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
2.4-D	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
2.4-DB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
2.4-DP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
4-CPP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Bentazone	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Dinoseb	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Fluroxypyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
MCPA	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
MCPB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
MCPP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Acifluorfen	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Bromoxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
DNOC	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Dicamba	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Diclofop	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Ioxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Propoxycarbazone-sodium	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Triclopyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Triclosan	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.
Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	*Method Descriptions*
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PESLMSA1	CZ_SOP_D06_03_182.B (CSN EN 15637, US EPA 1694) Determination of acidic herbicides and drug residues by liquid chromatography method with MS/MS detection.

A `*` symbol preceding any method indicates laboratory or subcontractor non-accredited test. In the case when a procedure belonging to an accredited method was used for non-accredited matrix, would apply that the reported results are non-accredited. Please refer to General Comment section on front page for information. If the report contains subcontracted analysis, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.
The calculation methods of summation parameters are available on request in the client service.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	04 May 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210422-159
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	596361

This report has been revised and directly supersedes 595951 in its entirety.

We received 6 samples on Wednesday April 21, 2021 and 3 of these samples were scheduled for analysis which was completed on Tuesday May 04, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210422-159	**Client Reference:**	784-B026948	**Report Number:**	596361
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595951

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24130535	WS08	ES1	0.10 - 0.10	19/04/2021
24130548	WS08	ES3	0.70 - 0.70	19/04/2021
24130566	WS08	ES6	1.50 - 1.50	19/04/2021
24130573	WS12	ES1	0.10 - 0.10	19/04/2021
24130586	WS12	ES4	1.00 - 1.00	19/04/2021
24130610	WS12	ES6	1.50 - 1.50	19/04/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	210422-159	**Client Reference:**	784-B026948	**Report Number:**	596361
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595951

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24130535			24130548		24130573
Customer Sample Reference			WS08			WS08		WS12
AGS Reference			ES1			ES3		ES1
Depth (m)			0.10 - 0.10			0.70 - 0.70		0.10 - 0.10
Container			250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	
Sample Type			S	S	S	S	S	
Acid herbicides*	All	NDPs: 0 Tests: 2	X				X	
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 1			X			
Ammonium Soil by Titration	All	NDPs: 0 Tests: 1			X			
Anions by Kone (soil)	All	NDPs: 0 Tests: 1			X			
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1		X				
Boron Water Soluble	All	NDPs: 0 Tests: 1			X			
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 1			X			
EPH	All	NDPs: 0 Tests: 1			X			
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1			X			
EPH CWG GC (S)	All	NDPs: 0 Tests: 1			X			
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1				X		
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1			X			
Metals in solid samples by OES	All	NDPs: 0 Tests: 1			X			
OC OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 2	X				X	
PAH by GCMS	All	NDPs: 0 Tests: 1			X			

Validated

CERTIFICATE OF ANALYSIS

SDG:	210422-159	**Client Reference:**	784-B026948	**Report Number:**	596361
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595951

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24130535			24130548		24130573
Customer Sample Reference			WS08			WS08		WS12
AGS Reference			ES1			ES3		ES1
Depth (m)			0.10 - 0.10			0.70 - 0.70		0.10 - 0.10
Container			250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	
Sample Type			S	S	S	S	S	
pH	All	NDPs: 0 Tests: 1			X			
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1			X			
Sample description	All	NDPs: 0 Tests: 3	X		X		X	
Total Organic Carbon	All	NDPs: 0 Tests: 1			X			
TPH CWG GC (S)	All	NDPs: 0 Tests: 1			X			
VOC MS (S)	All	NDPs: 0 Tests: 1				X		

CERTIFICATE OF ANALYSIS

SDG:	210422-159	**Client Reference:**	784-B026948	**Report Number:**	596361
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595951

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24130535	WS08	0.10 - 0.10	Dark Brown	Clay Loam	Stones	Vegetation
24130548	WS08	0.70 - 0.70	Dark Brown	Sandy Loam	Vegetation	None
24130573	WS12	0.10 - 0.10	Dark Brown	Silt Loam	Vegetation	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210422-159	**Client Reference:**	784-B026948	**Report Number:**	596361
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595951

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS08	WS08	WS12			
			Depth (m)	0.10 - 0.10	0.70 - 0.70	0.10 - 0.10			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	19/04/2021	19/04/2021	19/04/2021			
			Sample Time	.	.	.			
			Date Received	21/04/2021	21/04/2021	21/04/2021			
			SDG Ref	210422-159	210422-159	210422-159			
			Lab Sample No.(s)	24130535	24130548	24130573			
			AGS Reference	ES1	ES3	ES1			
Moisture Content Ratio (% of as received sample)	%	PM024		17	42	23			
2,4,5-T*	<0.01 mg/kg	SUB		<0.01		<0.01			
2,4,5-TP (Fenoprop)*	<0.01 mg/kg	SUB		<0.01		<0.01			
2,4-D*	<0.01 mg/kg	SUB		<0.01		<0.01			
2,4-DB*	<0.01 mg/kg	SUB		<0.01		<0.01			
2,4-Dichloroprop (2,4 DP)*	<0.01 mg/kg	SUB		<0.01		<0.01			
4-Chlorophenoxyacetic acid (4-CPA)*	<0.01 mg/kg	SUB		<0.01		<0.01			
Acifluorfen*	<0.01 mg/kg	SUB		<0.01		<0.01			
Bentazone*	<0.01 mg/kg	SUB		<0.01		<0.01			
Bromoxynil*	<0.01 mg/kg	SUB		<0.01		<0.01			
Dicamba*	<0.01 mg/kg	SUB		<0.01		<0.01			
Diclofop*	<0.01 mg/kg	SUB		<0.01		<0.01			
Dinoseb*	<0.01 mg/kg	SUB		<0.01		<0.01			
DNOC*	<0.01 mg/kg	SUB		<0.01		<0.01			
Fluroxypyr*	<0.01 mg/kg	SUB		<0.01		<0.01			
Ioxynil*	<0.01 mg/kg	SUB		<0.01		<0.01			
2-methyl-4-Chlorophenoxyacetic acid (MCPA)*	<0.01 mg/kg	SUB		<0.01		<0.01			
4-(4-Chloro-o-tolyloxy) butyric acid (MCPB)*	<0.01 mg/kg	SUB		<0.01		<0.01			
Mecoprop (MCPP)*	<0.01 mg/kg	SUB		<0.01		<0.01			
Propoxycarbazone-sodium*	<0.01 mg/kg	SUB		<0.01		<0.01			
Triclopyr*	<0.01 mg/kg	SUB		<0.01		<0.01			
Triclosan*	<0.01 mg/kg	SUB		<0.01		<0.01			
Exchangeable Ammonia as N	<12 mg/kg	TM024			<12 M				
Phenol	<0.01 mg/kg	TM062 (S)			<0.01 M				
Cresols	<0.01 mg/kg	TM062 (S)			<0.01 M				
Xylenols	<0.015 mg/kg	TM062 (S)			<0.015 M				
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)			<0.035 M				
Soil Organic Matter (SOM)	<0.35 %	TM132			1.46 #				
pH	1 pH Units	TM133			7.3 M				
Chromium, Hexavalent	<0.6 mg/kg	TM151			<0.6 #				
Cyanide, Total	<1 mg/kg	TM153			<1 M				
Arsenic	<0.6 mg/kg	TM181			12.3 M				
Cadmium	<0.02 mg/kg	TM181			2.04 M				

CERTIFICATE OF ANALYSIS

SDG:	210422-159	**Client Reference:**	784-B026948	**Report Number:**	596361
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595951

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS08	WS08	WS12			
			Depth (m)	0.10 - 0.10	0.70 - 0.70	0.10 - 0.10			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	19/04/2021	19/04/2021	19/04/2021			
			Sample Time	.	.	.			
			Date Received	21/04/2021	21/04/2021	21/04/2021			
			SDG Ref	210422-159	210422-159	210422-159			
			Lab Sample No.(s)	24130535	24130548	24130573			
			AGS Reference	ES1	ES3	ES1			
Chromium	<0.9 mg/kg	TM181			27.8 M				
Copper	<1.4 mg/kg	TM181			16.7 M				
Iron	<1000 mg/kg	TM181			28600 #				
Lead	<0.7 mg/kg	TM181			55.2 M				
Mercury	<0.1 mg/kg	TM181			<0.1 M				
Nickel	<0.2 mg/kg	TM181			32.4 M				
Selenium	<1 mg/kg	TM181			1.01 #				
Vanadium	<0.2 mg/kg	TM181			42.8 #				
Zinc	<1.9 mg/kg	TM181			217 M				
Boron, water soluble	<1 mg/kg	TM222			<1 M				
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243			0.0332 M				
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248			1.81				
EPH (C5-C40)	<35 mg/kg	TM415			<35				
EPH Surrogate % recovery**	%	TM415			102				
EPH >C10-C40	<35 mg/kg	TM415			<35 M				

CERTIFICATE OF ANALYSIS

SDG:	210422-159	**Client Reference:**	784-B026948	**Report Number:**	596361
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595951

OC OP Pesticides and Triazine Herb

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS08	WS12				
			Depth (m)	0.10 - 0.10	0.10 - 0.10				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	19/04/2021	19/04/2021				
			Sample Time	.	.				
			Date Received	21/04/2021	21/04/2021				
			SDG Ref	210422-159	210422-159				
			Lab Sample No.(s)	24130535	24130573				
			AGS Reference	ES1	ES1				
Dichlorvos	<0.05 mg/kg	TM073		<0.05	<0.05				
Mevinphos	<0.05 mg/kg	TM073		<0.05	<0.05				
Phorate	<0.05 mg/kg	TM073		<0.05	<0.05				
alpha-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073		<0.05	<0.05				
Diazinon	<0.05 mg/kg	TM073		<0.05	<0.05				
gamma-Hexachlorocyclohexane (HCH / Lindane)	<0.05 mg/kg	TM073		<0.05	<0.05				
Disulfoton	<0.05 mg/kg	TM073		<0.05	<0.05				
Heptachlor	<0.05 mg/kg	TM073		<0.05	<0.05				
Aldrin	<0.05 mg/kg	TM073		<0.05	<0.05				
beta-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073		<0.05	<0.05				
Methyl parathion	<0.05 mg/kg	TM073		<0.05	<0.05				
Malathion	<0.05 mg/kg	TM073		<0.05	<0.05				
Fenitrothion	<0.05 mg/kg	TM073		<0.05	<0.05				
Heptachlor epoxide	<0.05 mg/kg	TM073		<0.05	<0.05				
Parathion	<0.05 mg/kg	TM073		<0.05	<0.05				
Endosulphan I	<0.05 mg/kg	TM073		<0.05	<0.05				
p,p-DDE	<0.05 mg/kg	TM073		<0.05	<0.05				
Dieldrin	<0.05 mg/kg	TM073		<0.05	<0.05				
Endrin	<0.05 mg/kg	TM073		<0.05	<0.05				
p,p-TDE (DDD)	<0.05 mg/kg	TM073		<0.05	<0.05				
Ethion	<0.05 mg/kg	TM073		<0.05	<0.05				
Endosulphan II	<0.05 mg/kg	TM073		<0.05	<0.05				
p,p-DDT	<0.05 mg/kg	TM073		<0.05	<0.05				
p,p-Methoxychlor	<0.05 mg/kg	TM073		<0.05	<0.05				
Endosulphan sulphate	<0.05 mg/kg	TM073		<0.05	<0.05				
Azinphos-methyl	<0.05 mg/kg	TM073		<0.05	<0.05				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210422-159	**Client Reference:**	784-B026948	**Report Number:**	596361
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595951

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	WS08
Depth (m)	0.70 - 0.70
Sample Type	Soil/Solid (S)
Date Sampled	19/04/2021
Sample Time	.
Date Received	21/04/2021
SDG Ref	210422-159
Lab Sample No.(s)	24130548
AGS Reference	ES3

Component	LOD/Units	Method	
Naphthalene-d8 % recovery**	%	TM218	87.2
Acenaphthene-d10 % recovery**	%	TM218	89.9
Phenanthrene-d10 % recovery**	%	TM218	86.3
Chrysene-d12 % recovery**	%	TM218	75.6
Perylene-d12 % recovery**	%	TM218	84.7
Naphthalene	<0.009 mg/kg	TM218	<0.009 M
Acenaphthylene	<0.012 mg/kg	TM218	<0.012 M
Acenaphthene	<0.008 mg/kg	TM218	<0.008 M
Fluorene	<0.01 mg/kg	TM218	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218	<0.015 M
Anthracene	<0.016 mg/kg	TM218	<0.016 M
Fluoranthene	<0.017 mg/kg	TM218	<0.017 M
Pyrene	<0.015 mg/kg	TM218	<0.015 M
Benz(a)anthracene	<0.014 mg/kg	TM218	<0.014 M
Chrysene	<0.01 mg/kg	TM218	<0.01 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	<0.015 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	<0.014 M
Benzo(a)pyrene	<0.015 mg/kg	TM218	<0.015 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	<0.018 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	<0.023 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	<0.024 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	<0.118

Validated

CERTIFICATE OF ANALYSIS

SDG:	210422-159	**Client Reference:**	784-B026948	**Report Number:**	596361
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595951

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	WS08
Depth (m)	0.70 - 0.70
Sample Type	Soil/Solid (S)
Date Sampled	19/04/2021
Sample Time	.
Date Received	21/04/2021
SDG Ref	210422-159
Lab Sample No.(s)	24130548
AGS Reference	ES3

Component	LOD/Units	Method	
GRO Surrogate % recovery**	%	TM089	108
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01
Aliphatics >C10-C12	<1 mg/kg	TM414	<1
Aliphatics >C12-C16	<1 mg/kg	TM414	<1
Aliphatics >C16-C21	<1 mg/kg	TM414	<1
Aliphatics >C21-C35	<1 mg/kg	TM414	1.41
Aliphatics >C35-C44	<1 mg/kg	TM414	<1
Total Aliphatics >C10-C44	<5 mg/kg	TM414	<5
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414	<10
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	<0.01
Aromatics > EC10-EC12	<1 mg/kg	TM414	<1
Aromatics > EC12-EC16	<1 mg/kg	TM414	<1
Aromatics > EC16-EC21	<1 mg/kg	TM414	<1
Aromatics > EC21-EC35	<1 mg/kg	TM414	<1
Aromatics >EC35-EC44	<1 mg/kg	TM414	1.2
Aromatics > EC40-EC44	<1 mg/kg	TM414	<1
Total Aromatics > EC10-EC44	<5 mg/kg	TM414	<5
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414	<10
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089	<0.05
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089	<0.05
GRO >C5-C10	<0.02 mg/kg	TM089	<0.02

Validated

CERTIFICATE OF ANALYSIS

SDG:	210422-159	**Client Reference:**	784-B026948	**Report Number:**	596361
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595951

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	WS08
Depth (m)	0.70 - 0.70
Sample Type	Soil/Solid (S)
Date Sampled	19/04/2021
Sample Time	.
Date Received	21/04/2021
SDG Ref	210422-159
Lab Sample No.(s)	24130548
AGS Reference	ES3

Component	LOD/Units	Method	
Dibromofluoromethane**	%	TM116	105
Toluene-d8**	%	TM116	97.8
4-Bromofluorobenzene**	%	TM116	105
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.2 M
Benzene	<0.009 mg/kg	TM116	<0.18 M
Toluene	<0.007 mg/kg	TM116	<0.14 M
Ethylbenzene	<0.004 mg/kg	TM116	<0.08 M
p/m-Xylene	<0.01 mg/kg	TM116	<0.2 #
o-Xylene	<0.01 mg/kg	TM116	<0.2 M
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4
Sum of BTEX	<0.04 mg/kg	TM116	<0.8

CERTIFICATE OF ANALYSIS

SDG:	210422-159	**Client Reference:**	784-B026948	**Report Number:**	596361
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595951

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref.	WS08ES3	26/04/2021	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	0.70 - 0.70										
Sample Type	SOLID										
Date Sampled	19/04/2021 00:00:00										
Date Receieved	21/04/2021 05:00:00										
SDG	210422-159										
Original Sample	24130548										
Method Number	TM048										

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
SUB		Subcontracted Test
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210422-159	**Client Reference:**	784-B026948	**Report Number:**	596361
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	595951

Test Completion Dates

Lab Sample No(s)	24130535	24130548	24130573
Customer Sample Ref.	WS08	WS08	WS12
AGS Ref.	ES1	ES3	ES1
Depth	0.10 - 0.10	0.70 - 0.70	0.10 - 0.10
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Acid herbicides*	04-May-2021		04-May-2021
Ammoniacal N as NH4 in 2:1 extract		27-Apr-2021	
Ammonium Soil by Titration		27-Apr-2021	
Anions by Kone (soil)		28-Apr-2021	
Asbestos ID in Solid Samples		26-Apr-2021	
Boron Water Soluble		28-Apr-2021	
Cyanide Comp/Free/Total/Thiocyanate		29-Apr-2021	
EPH		27-Apr-2021	
EPH by GCxGC-FID		27-Apr-2021	
EPH CWG GC (S)		27-Apr-2021	
GRO by GC-FID (S)		27-Apr-2021	
Hexavalent Chromium (s)		28-Apr-2021	
Metals in solid samples by OES		28-Apr-2021	
OC OP Pesticides and Triazine Herb	29-Apr-2021		29-Apr-2021
PAH by GCMS		26-Apr-2021	
pH		27-Apr-2021	
Phenols by HPLC (S)		28-Apr-2021	
Sample description	23-Apr-2021	23-Apr-2021	23-Apr-2021
Total Organic Carbon		29-Apr-2021	
TPH CWG GC (S)		27-Apr-2021	
VOC MS (S)		26-Apr-2021	

ASSOCIATED AQC DATA

Ammonium Soil by Titration

Component	Method Code	QC 2400
Exchangeable Ammonium as NH4	TM024	**87.06** 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2443
Chloride (soluble)	TM243	**146.63** 80.93 : 111.66
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**159.81** 70.00 : 130.00

Boron Water Soluble

Component	Method Code	QC 2438
Water Soluble Boron	TM222	**93.5** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2480
Free Cyanide	TM153	**100.99** 86.90 : 108.50
Thiocyanate	TM153	**105.13** 94.53 : 113.33
Total Cyanide	TM153	**97.9** 86.13 : 102.13

GRO by GC-FID (S)

Component	Method Code	QC 2477
QC	TM089	**89.78** 70.75 : 114.19

Hexavalent Chromium (s)

Component	Method Code	QC 2405
Hexavalent Chromium	TM151	**108.0** 92.00 : 111.20

Metals in solid samples by OES

Component	Method Code	QC 2461
Aluminium	TM181	**105.31** 77.46 : 123.98
Antimony	TM181	**101.22** 87.04 : 111.16
Arsenic	TM181	**101.16** 87.34 : 110.87
Barium	TM181	**101.83** 80.73 : 115.16
Beryllium	TM181	**101.87** 89.47 : 112.97
Boron	TM181	**95.7** 76.57 : 104.15
Cadmium	TM181	**90.53** 78.94 : 102.43
Chromium	TM181	**91.89** 77.55 : 104.47
Cobalt	TM181	**90.25** 82.95 : 107.41
Copper	TM181	**98.42** 84.36 : 106.14
Iron	TM181	**100.79** 81.43 : 115.79
Lead	TM181	**92.79** 81.95 : 107.63
Manganese	TM181	**108.61** 94.29 : 119.51
Mercury	TM181	**95.17** 82.73 : 106.36
Molybdenum	TM181	**100.0** 86.61 : 111.07
Nickel	TM181	**92.18** 79.72 : 103.80
Phosphorus	TM181	**115.15** 92.65 : 125.47
Selenium	TM181	**101.18** 88.36 : 111.25
Strontium	TM181	**95.55** 77.99 : 108.06
Thallium	TM181	**102.65** 88.60 : 116.73
Tin	TM181	**100.0** 89.77 : 112.62
Titanium	TM181	**87.02** 66.29 : 105.96
Vanadium	TM181	**95.97** 75.51 : 108.87
Zinc	TM181	**102.67** 84.02 : 111.24

PAH by GCMS

PAH by GCMS

Component	Method Code	QC 2496
Acenaphthene	TM218	**88.0** 76.79 : 103.90
Acenaphthylene	TM218	**85.5** 74.19 : 106.17
Anthracene	TM218	**84.5** 70.90 : 109.22
Benz(a)anthracene	TM218	**89.5** 73.77 : 119.26
Benzo(a)pyrene	TM218	**88.5** 73.20 : 114.18
Benzo(b)fluoranthene	TM218	**84.5** 75.36 : 117.58
Benzo(ghi)perylene	TM218	**85.0** 70.73 : 116.12
Benzo(k)fluoranthene	TM218	**85.5** 75.98 : 116.59
Chrysene	TM218	**87.0** 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	**81.0** 69.17 : 115.30
Fluoranthene	TM218	**87.5** 66.06 : 114.63
Fluorene	TM218	**85.5** 76.66 : 107.56
Indeno(123cd)pyrene	TM218	**90.5** 70.26 : 117.95
Naphthalene	TM218	**86.0** 74.70 : 101.83
Phenanthrene	TM218	**86.0** 73.62 : 109.34
Pyrene	TM218	**87.0** 71.46 : 117.00

pH

Component	Method Code	QC 2433
pH	TM133	**98.97** 97.51 : 101.32

Phenols by HPLC (S)

Component	Method Code	QC 2491
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**52.6** 69.38 : 125.27
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**47.95** 69.79 : 122.84
Cresols by HPLC (S)	TM062 (S)	**50.73** 77.98 : 111.41
Phenol by HPLC (S)	TM062 (S)	**52.32** 67.94 : 117.69
Xylenols by HPLC (S)	TM062 (S)	**51.35** 88.23 : 104.42

Phenols by HPLC (S)

Total Organic Carbon

Component	Method Code	QC 2491
Total Organic Carbon	TM132	**108.59** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2434
1,1,1,2-tetrachloroethane	TM116	**102.8** 84.84 : 116.25
1,1,1-Trichloroethane	TM116	**94.2** 73.73 : 118.05
1,1,2-Trichloroethane	TM116	**101.4** 77.12 : 116.04
1,1-Dichloroethane	TM116	**96.4** 74.46 : 129.15
1,2-Dichloroethane	TM116	**113.6** 92.38 : 131.65
1,4-Dichlorobenzene	TM116	**97.4** 83.64 : 126.18
2-Chlorotoluene	TM116	**92.6** 76.03 : 113.25
4-Chlorotoluene	TM116	**86.0** 66.90 : 112.46
Benzene	TM116	**99.2** 88.60 : 113.80
Carbon Disulphide	TM116	**89.0** 74.91 : 122.14
Carbontetrachloride	TM116	**100.2** 80.31 : 124.50
Chlorobenzene	TM116	**102.8** 83.81 : 114.18
Chloroform	TM116	**102.2** 87.40 : 122.49
Chloromethane	TM116	**88.8** 65.89 : 136.93
Cis-1,2-Dichloroethene	TM116	**98.6** 80.67 : 126.72
Dibromomethane	TM116	**106.0** 73.23 : 118.35
Dichloromethane	TM116	**106.8** 81.11 : 133.25
Ethylbenzene	TM116	**94.6** 75.92 : 110.41
Hexachlorobutadiene	TM116	**49.8** 12.82 : 152.73
Isopropylbenzene	TM116	**78.0** 55.79 : 97.59
Naphthalene	TM116	**106.2** 80.86 : 128.81

VOC MS (S)

		QC 2434
o-Xylene	TM116	**92.6** 69.99 : 108.74
p/m-Xylene	TM116	**90.4** 68.32 : 108.91
Sec-Butylbenzene	TM116	**59.4** 38.50 : 101.50
Tetrachloroethene	TM116	**106.4** 76.95 : 121.02
Toluene	TM116	**95.2** 74.24 : 107.42
Trichloroethene	TM116	**97.8** 85.28 : 109.36
Trichlorofluoromethane	TM116	**91.2** 83.80 : 126.37
Vinyl Chloride	TM116	**88.8** 68.02 : 143.37

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

Work Order	: **PR2136551**	Issue Date	: 04-May-2021
Customer	: **ALS Life Sciences Ltd**	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: [redacted]	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 210422-159	Page	: 1 of 2
Order number	: ----	Date Samples Received	: 26-Apr-2021
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 27-Apr-2021 - 04-May-2021
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories		*Position*
Zdeněk Jirák	[redacted]	Environmental Business Unit Manager

The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)

Analytical Results

Sub-Matrix: **SOIL**			Client sample ID	**24134466 WS08**		**24134799 WS12**		**----**	
			Laboratory sample ID	*PR2136551-001*		*PR2136551-002*		----	
			Client sampling date / time	23-Apr-2021		23-Apr-2021		----	
Parameter	*Method*	*LOR*	*Unit*	**Result**	**MU**	**Result**	**MU**	**Result**	**MU**
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	**81.3**	± 6.0%	**75.3**	± 6.0%	**----**	----
Pesticides									
2.4.5-T	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
2.4.5-TP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
2.4-D	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
2.4-DB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
2.4-DP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
4-CPP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Bentazone	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Dinoseb	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Fluroxypyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
MCPA	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
MCPB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
MCPP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Acifluorfen	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Bromoxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
DNOC	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Dicamba	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Diclofop	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Ioxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Propoxycarbazone-sodium	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Triclopyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Triclosan	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.
Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	*Method Descriptions*
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PESLMSA1	CZ_SOP_D06_03_182.B (CSN EN 15637, US EPA 1694) Determination of acidic herbicides and drug residues by liquid chromatography method with MS/MS detection.

A `*` symbol preceding any method indicates laboratory or subcontractor non-accredited test. In the case when a procedure belonging to an accredited method was used for non-accredited matrix, would apply that the reported results are non-accredited. Please refer to General Comment section on front page for information. If the report contains subcontracted analysis, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.
The calculation methods of summation parameters are available on request in the client service.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	04 May 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210422-160
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	596362

This report has been revised and directly supersedes 596162 in its entirety.

We received 11 samples on Wednesday April 21, 2021 and 3 of these samples were scheduled for analysis which was completed on Tuesday May 04, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Son

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210422-160	**Client Reference:**	784-B026948	**Report Number:**	596362
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596162

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24130699	BH17	ES7	1.80 - 1.80	21/04/2021
24130719	BH21	ES7	1.50 - 1.50	21/04/2021
24130673	WS13	ES1	0.10 - 0.10	21/04/2021
24130735	WS13	ES4	0.90 - 0.90	21/04/2021
24130749	WS13	ES7	1.80 - 1.80	21/04/2021
24130762	WS15	ES1	0.10 - 0.10	21/04/2021
24130774	WS15	ES4	0.60 - 0.60	21/04/2021
24130789	WS15	ES7	1.50 - 1.50	21/04/2021
24130804	WS17	ES1	0.10 - 0.10	21/04/2021
24130812	WS17	ES4	0.60 - 0.60	21/04/2021
24130821	WS17	ES7	1.80 - 1.80	21/04/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210422-160	**Client Reference:**	784-B026948	**Report Number:**	596362
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596162

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24130735			24130762			24130812
Customer Sample Reference			WS13			WS15			WS17
AGS Reference			ES4			ES1			ES4
Depth (m)			0.90 - 0.90			0.10 - 0.10			0.60 - 0.60
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S
Acid herbicides*	All	NDPs: 0 Tests: 1				X			
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 2		X				X	
Ammonium Soil by Titration	All	NDPs: 0 Tests: 2		X				X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 2		X				X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2	X				X		
Boron Water Soluble	All	NDPs: 0 Tests: 2		X				X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2		X				X	
EPH	All	NDPs: 0 Tests: 2		X				X	
EPH by GCxGC-FID	All	NDPs: 0 Tests: 2		X				X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 2		X				X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2			X				X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2		X				X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 2		X				X	
OC OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 1				X			
PAH by GCMS	All	NDPs: 0 Tests: 2		X				X	

Validated

CERTIFICATE OF ANALYSIS

SDG:	210422-160	**Client Reference:**	784-B026948	**Report Number:**	596362
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596162

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)							
			24130735			24130762			24130812	
			Customer Sample Reference							
			WS13			WS15			WS17	
			AGS Reference							
			ES4			ES1			ES4	
			Depth (m)							
			0.90 - 0.90			0.10 - 0.10			0.60 - 0.60	
			Container							
			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
			Sample Type							
			S	S	S	S	S	S	S	
pH	All	NDPs: 0 Tests: 2		X				X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 2		X				X		
Sample description	All	NDPs: 0 Tests: 3		X		X		X		
Total Organic Carbon	All	NDPs: 0 Tests: 2		X				X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 2		X				X		
VOC MS (S)	All	NDPs: 0 Tests: 2			X				X	

CERTIFICATE OF ANALYSIS

SDG:	210422-160	**Client Reference:**	784-B026948	**Report Number:**	596362
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596162

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24130735	WS13	0.90 - 0.90	Dark Brown	Sandy Clay Loam	Stones	Vegetation
24130762	WS15	0.10 - 0.10	Light Brown	Silty Clay Loam	Vegetation	None
24130812	WS17	0.60 - 0.60	Dark Brown	Silty Clay Loam	Vegetation	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210422-160	**Client Reference:**	784-B026948	**Report Number:**	596362
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596162

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS13	WS15	WS17			
			Depth (m)	0.90 - 0.90	0.10 - 0.10	0.60 - 0.60			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	21/04/2021	21/04/2021	21/04/2021			
			Sample Time	.	.	.			
			Date Received	21/04/2021	21/04/2021	21/04/2021			
			SDG Ref	210422-160	210422-160	210422-160			
			Lab Sample No.(s)	24130735	24130762	24130812			
			AGS Reference	ES4	ES1	ES4			
Moisture Content Ratio (% of as received sample)	%	PM024		19	18	21			
2,4,5-T*	<0.01 mg/kg	SUB			<0.01				
2,4,5-TP (Fenoprop)*	<0.01 mg/kg	SUB			<0.01				
2,4-D*	<0.01 mg/kg	SUB			<0.01				
2,4-DB*	<0.01 mg/kg	SUB			<0.01				
2,4-Dichloroprop (2,4 DP)*	<0.01 mg/kg	SUB			<0.01				
4-Chlorophenoxyacetic acid (4-CPA)*	<0.01 mg/kg	SUB			<0.01				
Acifluorfen*	<0.01 mg/kg	SUB			<0.01				
Bentazone*	<0.01 mg/kg	SUB			<0.01				
Bromoxynil*	<0.01 mg/kg	SUB			<0.01				
Dicamba*	<0.01 mg/kg	SUB			<0.01				
Diclofop*	<0.01 mg/kg	SUB			<0.01				
Dinoseb*	<0.01 mg/kg	SUB			<0.01				
DNOC*	<0.01 mg/kg	SUB			<0.01				
Fluroxypyr*	<0.01 mg/kg	SUB			<0.01				
Ioxynil*	<0.01 mg/kg	SUB			<0.01				
2-methyl-4-Chlorophenoxyacetic acid (MCPA)*	<0.01 mg/kg	SUB			<0.01				
4-(4-Chloro-o-tolyloxy) butyric acid (MCPB)*	<0.01 mg/kg	SUB			<0.01				
Mecoprop (MCPP)*	<0.01 mg/kg	SUB			<0.01				
Propoxycarbazone-sodium*	<0.01 mg/kg	SUB			<0.01				
Triclopyr*	<0.01 mg/kg	SUB			<0.01				
Triclosan*	<0.01 mg/kg	SUB			<0.01				
Exchangeable Ammonia as N	<12 mg/kg	TM024		<12 M		<12 M			
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 M		<0.01 M			
Cresols	<0.01 mg/kg	TM062 (S)		<0.01 M		<0.01 M			
Xylenols	<0.015 mg/kg	TM062 (S)		<0.015 M		<0.015 M			
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 M		<0.035 M			
Soil Organic Matter (SOM)	<0.35 %	TM132		0.845 #		2.6 #			
pH	1 pH Units	TM133		7.71 M		7.66 M			
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #		<0.6 #			
Cyanide, Total	<1 mg/kg	TM153		<1 M		<1 M			
Arsenic	<0.6 mg/kg	TM181		9.82 M		14.8 M			
Cadmium	<0.02 mg/kg	TM181		1.52 M		2.26 M			

CERTIFICATE OF ANALYSIS

SDG:	210422-160	**Client Reference:**	784-B026948	**Report Number:**	596362
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596162

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS13	WS15	WS17			
			Depth (m)	0.90 - 0.90	0.10 - 0.10	0.60 - 0.60			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	21/04/2021	21/04/2021	21/04/2021			
			Sample Time	.	.	.			
			Date Received	21/04/2021	21/04/2021	21/04/2021			
			SDG Ref	210422-160	210422-160	210422-160			
			Lab Sample No.(s)	24130735	24130762	24130812			
			AGS Reference	ES4	ES1	ES4			
Chromium	<0.9 mg/kg	TM181		19.6 M		34.2 M			
Copper	<1.4 mg/kg	TM181		15.3 M		27.8 M			
Iron	<1000 mg/kg	TM181		24800 #		36700 #			
Lead	<0.7 mg/kg	TM181		97.6 M		138 M			
Mercury	<0.1 mg/kg	TM181		<0.1 M		<0.1 M			
Nickel	<0.2 mg/kg	TM181		24.4 M		37.8 M			
Selenium	<1 mg/kg	TM181		<1 #		1.32 #			
Vanadium	<0.2 mg/kg	TM181		28.2 #		50.7 #			
Zinc	<1.9 mg/kg	TM181		188 M		288 M			
Boron, water soluble	<1 mg/kg	TM222		<1 M		<1 M			
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.0301 M		0.0203 M			
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248		2.31		2.26			
EPH (C5-C40)	<35 mg/kg	TM415		<35		<35			
EPH Surrogate % recovery**	%	TM415		90.3		104			
EPH >C10-C40	<35 mg/kg	TM415		<35 M		<35 M			

CERTIFICATE OF ANALYSIS

SDG:	210422-160	**Client Reference:**	784-B026948	**Report Number:**	596362
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596162

OC OP Pesticides and Triazine Herb

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	WS15
Depth (m)	0.10 - 0.10
Sample Type	Soil/Solid (S)
Date Sampled	21/04/2021
Sample Time	.
Date Received	21/04/2021
SDG Ref	210422-160
Lab Sample No.(s)	24130762
AGS Reference	ES1

Component	LOD/Units	Method	
Dichlorvos	<0.05 mg/kg	TM073	<0.05
Mevinphos	<0.05 mg/kg	TM073	<0.05
Phorate	<0.05 mg/kg	TM073	<0.05
alpha-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073	<0.05
Diazinon	<0.05 mg/kg	TM073	<0.05
gamma-Hexachlorocyclohexane (HCH / Lindane)	<0.05 mg/kg	TM073	<0.05
Disulfoton	<0.05 mg/kg	TM073	<0.05
Heptachlor	<0.05 mg/kg	TM073	<0.05
Aldrin	<0.05 mg/kg	TM073	<0.05
beta-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073	<0.05
Methyl parathion	<0.05 mg/kg	TM073	<0.05
Malathion	<0.05 mg/kg	TM073	<0.05
Fenitrothion	<0.05 mg/kg	TM073	<0.05
Heptachlor epoxide	<0.05 mg/kg	TM073	<0.05
Parathion	<0.05 mg/kg	TM073	<0.05
Endosulphan I	<0.05 mg/kg	TM073	<0.05
p,p-DDE	<0.05 mg/kg	TM073	<0.05
Dieldrin	<0.05 mg/kg	TM073	<0.05
Endrin	<0.05 mg/kg	TM073	<0.05
p,p-TDE (DDD)	<0.05 mg/kg	TM073	<0.05
Ethion	<0.05 mg/kg	TM073	<0.05
Endosulphan II	<0.05 mg/kg	TM073	<0.05
p,p-DDT	<0.05 mg/kg	TM073	<0.05
p,p-Methoxychlor	<0.05 mg/kg	TM073	<0.05
Endosulphan sulphate	<0.05 mg/kg	TM073	<0.05
Azinphos-methyl	<0.05 mg/kg	TM073	<0.05

Validated

CERTIFICATE OF ANALYSIS

SDG:	210422-160	**Client Reference:**	784-B026948	**Report Number:**	596362
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596162

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS13	WS17
			Depth (m)	0.90 - 0.90	0.60 - 0.60
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2021	21/04/2021
			Sample Time	.	.
			Date Received	21/04/2021	21/04/2021
			SDG Ref	210422-160	210422-160
			Lab Sample No.(s)	24130735	24130812
			AGS Reference	ES4	ES4
Naphthalene-d8 % recovery**	%	TM218		88.4	87.6
Acenaphthene-d10 % recovery**	%	TM218		88.4	92.4
Phenanthrene-d10 % recovery**	%	TM218		82.9	90.7
Chrysene-d12 % recovery**	%	TM218		71.5	71.8
Perylene-d12 % recovery**	%	TM218		87.1	75.9
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	<0.009 M
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 M	<0.012 M
Acenaphthene	<0.008 mg/kg	TM218		<0.008 M	<0.008 M
Fluorene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218		<0.015 M	0.0411 M
Anthracene	<0.016 mg/kg	TM218		<0.016 M	<0.016 M
Fluoranthene	<0.017 mg/kg	TM218		<0.017 M	0.121 M
Pyrene	<0.015 mg/kg	TM218		<0.015 M	0.109 M
Benz(a)anthracene	<0.014 mg/kg	TM218		<0.014 M	0.0649 M
Chrysene	<0.01 mg/kg	TM218		<0.01 M	0.0749 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		<0.015 M	0.101 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		<0.014 M	0.0329 M
Benzo(a)pyrene	<0.015 mg/kg	TM218		<0.015 M	0.0635 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		<0.018 M	0.0546 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	<0.023 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		<0.024 M	0.0535 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		<0.118	0.716

CERTIFICATE OF ANALYSIS

SDG:	210422-160	**Client Reference:**	784-B026948	**Report Number:**	596362
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596162

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS13	WS17				
			Depth (m)	0.90 - 0.90	0.60 - 0.60				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	21/04/2021	21/04/2021				
			Sample Time	.	.				
			Date Received	21/04/2021	21/04/2021				
			SDG Ref	210422-160	210422-160				
			Lab Sample No.(s)	24130735	24130812				
			AGS Reference	ES4	ES4				
GRO Surrogate % recovery**	%	TM089		101	101				
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C10-C12	<1 mg/kg	TM414		<1	<1				
Aliphatics >C12-C16	<1 mg/kg	TM414		<1	<1				
Aliphatics >C16-C21	<1 mg/kg	TM414		<1	<1				
Aliphatics >C21-C35	<1 mg/kg	TM414		<1	5.63				
Aliphatics >C35-C44	<1 mg/kg	TM414		<1	<1				
Total Aliphatics >C10-C44	<5 mg/kg	TM414		<5	6.16				
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		<10	<10				
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics > EC10-EC12	<1 mg/kg	TM414		<1	<1				
Aromatics > EC12-EC16	<1 mg/kg	TM414		<1	<1				
Aromatics > EC16-EC21	<1 mg/kg	TM414		<1	<1				
Aromatics > EC21-EC35	<1 mg/kg	TM414		1.15	1.24				
Aromatics >EC35-EC44	<1 mg/kg	TM414		<1	<1				
Aromatics > EC40-EC44	<1 mg/kg	TM414		<1	<1				
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		<5	<5				
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		<10	<10				
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		<0.05	<0.05				
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		<0.05	<0.05				
GRO >C5-C10	<0.02 mg/kg	TM089		<0.02	<0.02				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210422-160	**Client Reference:**	784-B026948	**Report Number:**	596362
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596162

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS13	WS17
			Depth (m)	0.90 - 0.90	0.60 - 0.60
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	21/04/2021	21/04/2021
			Sample Time	.	.
			Date Received	21/04/2021	21/04/2021
			SDG Ref	210422-160	210422-160
			Lab Sample No.(s)	24130735	24130812
			AGS Reference	ES4	ES4
Dibromofluoromethane**	%	TM116		114	109
Toluene-d8**	%	TM116		97.3	97.1
4-Bromofluorobenzene**	%	TM116		97.9	96.9
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
Benzene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M
Toluene	<0.007 mg/kg	TM116		<0.14 M	<0.14 M
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 M	<0.08 M
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #
o-Xylene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4	<0.4
Sum of BTEX	<0.04 mg/kg	TM116		<0.8	<0.8

CERTIFICATE OF ANALYSIS

SDG:	210422-160	**Client Reference:**	784-B026948	**Report Number:**	596362
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596162

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS13ES4 0.90 - 0.90 SOLID 21/04/2021 00:00:00 21/04/2021 05:00:00 210422-160 24130735 TM048	29/04/2021	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS17ES4 0.60 - 0.60 SOLID 21/04/2021 00:00:00 21/04/2021 05:00:00 210422-160 24130812 TM048	27/04/2021	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	210422-160	**Client Reference:**	784-B026948	**Report Number:**	596362
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596162

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
SUB		Subcontracted Test
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210422-160	**Client Reference:**	784-B026948	**Report Number:**	596362
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596162

Test Completion Dates

Lab Sample No(s)	24130735	24130762	24130812
Customer Sample Ref.	WS13	WS15	WS17
AGS Ref.	ES4	ES1	ES4
Depth	0.90 - 0.90	0.10 - 0.10	0.60 - 0.60
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Acid herbicides*		04-May-2021	
Ammoniacal N as NH4 in 2:1 extract	27-Apr-2021		27-Apr-2021
Ammonium Soil by Titration	27-Apr-2021		27-Apr-2021
Anions by Kone (soil)	28-Apr-2021		28-Apr-2021
Asbestos ID in Solid Samples	29-Apr-2021		27-Apr-2021
Boron Water Soluble	28-Apr-2021		28-Apr-2021
Cyanide Comp/Free/Total/Thiocyanate	27-Apr-2021		28-Apr-2021
EPH	28-Apr-2021		29-Apr-2021
EPH by GCxGC-FID	27-Apr-2021		29-Apr-2021
EPH CWG GC (S)	29-Apr-2021		28-Apr-2021
GRO by GC-FID (S)	28-Apr-2021		28-Apr-2021
Hexavalent Chromium (s)	30-Apr-2021		30-Apr-2021
Metals in solid samples by OES	28-Apr-2021		28-Apr-2021
OC OP Pesticides and Triazine Herb		29-Apr-2021	
PAH by GCMS	29-Apr-2021		26-Apr-2021
pH	28-Apr-2021		28-Apr-2021
Phenols by HPLC (S)	28-Apr-2021		28-Apr-2021
Sample description	23-Apr-2021	23-Apr-2021	23-Apr-2021
Total Organic Carbon	30-Apr-2021		30-Apr-2021
TPH CWG GC (S)	29-Apr-2021		28-Apr-2021
VOC MS (S)	28-Apr-2021		28-Apr-2021

ASSOCIATED AQC DATA

Ammonium Soil by Titration

Component	Method Code	QC 2412
Exchangeable Ammonium as NH4	TM024	**88.06** 76.20 : 110.13

Boron Water Soluble

Component	Method Code	QC 2458	QC 2417
Water Soluble Boron	TM222	**100.5** 84.00 : 111.00	**96.0** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2427	QC 2480
Free Cyanide	TM153	**98.81** 79.00 : 115.00	**91.98** 79.00 : 115.00
Thiocyanate	TM153	**102.56** 94.09 : 113.89	**97.44** 94.09 : 113.89
Total Cyanide	TM153	**100.7** 73.07 : 107.47	**96.5** 73.07 : 107.47

EPH CWG GC (S)

Component	Method Code	QC 2439
EPH >C8-C40 Raw	TM414	**105.85** 69.95 : 114.99
Total Aliphatics Raw	TM414	**112.13** 68.45 : 114.88
Total Aromatics Raw	TM414	**120.53** 67.31 : 129.37

GRO by GC-FID (S)

Component	Method Code	QC 2468
QC	TM089	**89.41** 70.75 : 114.19

Hexavalent Chromium (s)

Component	Method Code	QC 2435
Hexavalent Chromium	TM151	**110.0** 91.40 : 115.40

Metals in solid samples by OES

Component	Method Code	QC 2402	QC 2427
Aluminium	TM181	**97.35** 77.46 : 123.98	**115.04** 77.46 : 123.98
Antimony	TM181	**97.97** 87.04 : 111.16	**100.41** 87.04 : 111.16
Arsenic	TM181	**98.55** 87.34 : 110.87	**102.91** 87.34 : 110.87
Barium	TM181	**96.33** 80.73 : 115.16	**103.67** 80.73 : 115.16
Beryllium	TM181	**96.27** 89.47 : 112.97	**102.24** 89.47 : 112.97
Boron	TM181	**89.4** 76.57 : 104.15	**103.15** 76.57 : 104.15
Cadmium	TM181	**91.77** 78.94 : 102.43	**97.12** 78.94 : 102.43
Chromium	TM181	**87.63** 77.55 : 104.47	**95.54** 77.55 : 104.47
Cobalt	TM181	**87.42** 82.95 : 107.41	**91.82** 82.95 : 107.41
Copper	TM181	**94.72** 84.36 : 106.14	**97.18** 84.36 : 106.14
Iron	TM181	**96.03** 81.43 : 115.79	**104.76** 81.43 : 115.79
Lead	TM181	**89.64** 81.95 : 107.63	**91.67** 81.95 : 107.63
Manganese	TM181	**103.06** 94.29 : 119.51	**108.61** 94.29 : 119.51
Mercury	TM181	**91.55** 82.73 : 106.36	**94.93** 82.73 : 106.36
Molybdenum	TM181	**95.88** 86.61 : 111.07	**100.0** 86.61 : 111.07
Nickel	TM181	**89.0** 79.72 : 103.80	**95.84** 79.72 : 103.80
Phosphorus	TM181	**108.48** 92.65 : 125.47	**116.97** 92.65 : 125.47
Selenium	TM181	**98.04** 88.36 : 111.25	**102.35** 88.36 : 111.25
Strontium	TM181	**90.2** 77.99 : 108.06	**96.66** 77.99 : 108.06
Thallium	TM181	**99.12** 88.60 : 116.73	**102.21** 88.60 : 116.73
Tin	TM181	**97.34** 89.77 : 112.62	**100.76** 89.77 : 112.62
Titanium	TM181	**80.15** 66.29 : 105.96	**96.18** 66.29 : 105.96
Vanadium	TM181	**89.01** 75.51 : 108.87	**98.9** 75.51 : 108.87
Zinc	TM181	**98.77** 84.02 : 111.24	**105.34** 84.02 : 111.24

PAH by GCMS

PAH by GCMS

Component	Method Code	QC 2426	QC 2417
Acenaphthene	TM218	**92.0** 73.47 : 109.80	**85.0** 76.79 : 103.90
Acenaphthylene	TM218	**89.5** 70.00 : 130.00	**84.0** 74.19 : 106.17
Anthracene	TM218	**90.0** 68.68 : 111.89	**82.0** 70.90 : 109.22
Benz(a)anthracene	TM218	**92.0** 68.12 : 118.39	**85.0** 73.77 : 119.26
Benzo(a)pyrene	TM218	**88.0** 71.72 : 115.31	**89.5** 73.20 : 114.18
Benzo(b)fluoranthene	TM218	**88.5** 66.89 : 120.40	**91.5** 75.36 : 117.58
Benzo(ghi)perylene	TM218	**88.0** 67.82 : 118.49	**90.5** 70.73 : 116.12
Benzo(k)fluoranthene	TM218	**89.5** 73.10 : 117.03	**88.0** 75.98 : 116.59
Chrysene	TM218	**87.5** 69.58 : 115.47	**83.5** 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	**84.0** 67.32 : 121.35	**87.0** 69.17 : 115.30
Fluoranthene	TM218	**95.0** 75.16 : 117.28	**84.0** 66.06 : 114.63
Fluorene	TM218	**90.5** 73.81 : 108.66	**84.5** 76.66 : 107.56
Indeno(123cd)pyrene	TM218	**87.5** 68.91 : 117.62	**87.0** 70.26 : 117.95
Naphthalene	TM218	**88.5** 72.12 : 106.18	**84.5** 74.70 : 101.83
Phenanthrene	TM218	**91.0** 69.01 : 113.72	**85.0** 73.62 : 109.34
Pyrene	TM218	**94.5** 64.28 : 115.75	**84.0** 71.46 : 117.00

pH

Component	Method Code	QC 2488	QC 2419
pH	TM133	**100.29** 98.41 : 102.48	**100.15** 98.41 : 102.48

Phenols by HPLC (S)

Component	Method Code	QC 2494
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**52.6** 69.38 : 125.27
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**45.61** 69.79 : 122.84
Cresols by HPLC (S)	TM062 (S)	**50.52** 77.98 : 111.41
Phenol by HPLC (S)	TM062 (S)	**51.66** 67.94 : 117.69
Xylenols by HPLC (S)	TM062 (S)	**51.15** 88.23 : 104.42

Phenols by HPLC (S)

Total Organic Carbon

Component	Method Code	QC 2420	QC 2442
Total Organic Carbon	TM132	**109.77** 87.02 : 113.45	**102.73** 84.82 : 117.61

VOC MS (S)

Component	Method Code	QC 2489
1,1,1,2-tetrachloroethane	TM116	**107.6** 79.10 : 119.66
1,1,1-Trichloroethane	TM116	**106.4** 88.34 : 114.50
1,1,2-Trichloroethane	TM116	**101.0** 81.29 : 113.79
1,1-Dichloroethane	TM116	**113.4** 86.77 : 122.11
1,2-Dichloroethane	TM116	**114.6** 90.04 : 132.28
1,4-Dichlorobenzene	TM116	**100.8** 80.81 : 125.07
2-Chlorotoluene	TM116	**95.2** 73.13 : 114.13
4-Chlorotoluene	TM116	**89.2** 68.66 : 109.13
Benzene	TM116	**106.2** 84.29 : 112.22
Carbon Disulphide	TM116	**107.6** 75.11 : 124.81
Carbontetrachloride	TM116	**100.8** 82.35 : 126.46
Chlorobenzene	TM116	**108.0** 82.88 : 122.42
Chloroform	TM116	**112.2** 90.35 : 120.38
Chloromethane	TM116	**115.6** 67.89 : 143.51
Cis-1,2-Dichloroethene	TM116	**109.2** 78.27 : 128.90
Dibromomethane	TM116	**97.2** 76.00 : 120.73
Dichloromethane	TM116	**114.8** 92.27 : 134.36
Ethylbenzene	TM116	**98.2** 70.95 : 113.07
Hexachlorobutadiene	TM116	**57.8** 14.55 : 147.92
Isopropylbenzene	TM116	**91.6** 52.00 : 108.19
Naphthalene	TM116	**108.0** 80.29 : 135.77

VOC MS (S)

		QC 2489
o-Xylene	TM116	**97.2** 68.34 : 101.99
p/m-Xylene	TM116	**92.0** 69.47 : 97.31
Sec-Butylbenzene	TM116	**67.6** 27.03 : 135.73
Tetrachloroethene	TM116	**109.0** 81.43 : 126.65
Toluene	TM116	**96.8** 82.44 : 103.50
Trichloroethene	TM116	**101.0** 79.80 : 112.33
Trichlorofluoromethane	TM116	**106.4** 89.67 : 132.09
Vinyl Chloride	TM116	**121.0** 69.66 : 136.55

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

Work Order	: **PR2136550**	Issue Date	: 04-May-2021
Customer	: **ALS Life Sciences Ltd**	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: [redacted]	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 210422-160	Page	: 1 of 2
Order number	: ----	Date Samples Received	: 26-Apr-2021
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 27-Apr-2021 - 04-May-2021
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories		*Position*
Zdeněk Jirák	[redacted]	Environmental Business Unit Manager

The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)

Analytical Results

Sub-Matrix: **SOIL**			Client sample ID	**24135506 WS15**		**----**		**----**	
			Laboratory sample ID	*PR2136550-001*		----		----	
			Client sampling date / time	23-Apr-2021		----		----	
Parameter	*Method*	*LOR*	*Unit*	**Result**	**MU**	**Result**	**MU**	**Result**	**MU**
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	**81.3**	± 6.0%	**----**	----	**----**	----
Pesticides									
2.4.5-T	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4.5-TP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-D	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
4-CPP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bentazone	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dinoseb	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Fluroxypyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPA	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Acifluorfen	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bromoxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
DNOC	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dicamba	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Diclofop	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Ioxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Propoxycarbazone-sodium	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclopyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclosan	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.
Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	*Method Descriptions*
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PESLMSA1	CZ_SOP_D06_03_182.B (CSN EN 15637, US EPA 1694) Determination of acidic herbicides and drug residues by liquid chromatography method with MS/MS detection.

A `*` symbol preceding any method indicates laboratory or subcontractor non-accredited test. In the case when a procedure belonging to an accredited method was used for non-accredited matrix, would apply that the reported results are non-accredited. Please refer to General Comment section on front page for information. If the report contains subcontracted analysis, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.
The calculation methods of summation parameters are available on request in the client service.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	09 May 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210429-61
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	597132

This report has been revised and directly supersedes 596959 in its entirety.

We received 11 samples on Monday April 26, 2021 and 3 of these samples were scheduled for analysis which was completed on Sunday May 09, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210429-61	**Client Reference:**	784-B026948	**Report Number:**	597132
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596959

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24175111	BH22	ES1	0.20 - 0.20	22/04/2021
24175121	BH22	ES4	0.50 - 0.50	22/04/2021
24175148	TP48	ES1	0.10 - 0.10	22/04/2021
24175157	TP48	ES3	0.60 - 0.60	22/04/2021
24175169	WS28	ES1	0.10 - 0.10	22/04/2021
24175181	WS28	ES3	0.70 - 0.70	22/04/2021
24175100	WS28	ES6	1.80 - 1.80	22/04/2021
24175105	WS28	ES9	2.80 - 2.80	22/04/2021
24175087	WS73	ES1	0.10 - 0.10	22/04/2021
24175131	WS73	ES4	0.80 - 0.80	22/04/2021
24175142	WS73	ES6	1.50 - 1.50	22/04/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 210429-61 **Client Reference:** 784-B026948 **Report Number:** 597132
Location: A46 Newark Northern Bypass **Order Number:** 7001649 **Superseded Report:** 596959

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24175169	24175181			24175087		
Customer Sample Reference			WS28	WS28			WS73		
AGS Reference			ES1	ES3			ES1		
Depth (m)			0.10 - 0.10	0.70 - 0.70			0.10 - 0.10		
Container			250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S
Acid herbicides*	All	NDPs: 0 Tests: 1	X						
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 2			X			X	
Ammonium Soil by Titration	All	NDPs: 0 Tests: 2			X			X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 2			X			X	
Anions by Kone (w)	All	NDPs: 0 Tests: 1		X					
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2		X			X		
Boron Water Soluble	All	NDPs: 0 Tests: 2			X			X	
CEN Readings	All	NDPs: 0 Tests: 1		X					
Coronene	All	NDPs: 0 Tests: 1			X				
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2			X			X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1		X					
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1		X					
EPH	All	NDPs: 0 Tests: 2			X			X	
EPH by GCxGC-FID	All	NDPs: 0 Tests: 2			X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 2			X			X	

09:10:47 09/05/2021

Validated

CERTIFICATE OF ANALYSIS

SDG:	210429-61	**Client Reference:**	784-B026948	**Report Number:**	597132
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596959

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
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US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24175169			24175181			24175087	
Customer Sample Reference			WS28			WS28			WS73	
AGS Reference			ES1			ES3			ES1	
Depth (m)			0.10 - 0.10			0.70 - 0.70			0.10 - 0.10	
Container			250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	S	S	S	S	
Fluoride	All	NDPs: 0 Tests: 1		X						
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2				X			X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2			X			X		
Mercury Dissolved	All	NDPs: 0 Tests: 1		X						
Metals in solid samples by OES	All	NDPs: 0 Tests: 2			X			X		
OC OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 1	X							
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1			X					
PAH by GCMS	All	NDPs: 0 Tests: 2			X			X		
PCBs by GCMS	All	NDPs: 0 Tests: 1			X					
pH	All	NDPs: 0 Tests: 2			X			X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 2			X			X		
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1		X						
Sample description	All	NDPs: 0 Tests: 3	X		X			X		
Total Dissolved Solids	All	NDPs: 0 Tests: 1		X						
Total Organic Carbon	All	NDPs: 0 Tests: 2			X			X		

Validated

CERTIFICATE OF ANALYSIS

SDG:	210429-61	**Client Reference:**	784-B026948	**Report Number:**	597132
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596959

Results Legend

- X Test
- N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

	Lab Sample No(s)		24175169	24175181			24175087		
	Customer Sample Reference		WS28	WS28			WS73		
	AGS Reference		ES1	ES3			ES1		
	Depth (m)		0.10 - 0.10	0.70 - 0.70			0.10 - 0.10		
	Container		250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
	Sample Type		S	S	S	S	S	S	S
TPH CWG GC (S)	All	NDPs: 0 Tests: 2			X			X	
VOC MS (S)	All	NDPs: 0 Tests: 2				X			X

09:10:47 09/05/2021

CERTIFICATE OF ANALYSIS

SDG:	210429-61	**Client Reference:**	784-B026948	**Report Number:**	597132
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596959

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24175169	WS28	0.10 - 0.10	Dark Brown	Sandy Clay Loam	Vegetation	None
24175181	WS28	0.70 - 0.70	Dark Brown	Clay Loam	Stones	None
24175087	WS73	0.10 - 0.10	Dark Brown	Loamy Sand	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210429-61	**Client Reference:**	784-B026948	**Report Number:**	597132
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596959

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS28	WS28	WS73			
			Depth (m)	0.10 - 0.10	0.70 - 0.70	0.10 - 0.10			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	22/04/2021	22/04/2021	22/04/2021			
			Sample Time	.	.	.			
			Date Received	26/04/2021	26/04/2021	26/04/2021			
			SDG Ref	210429-61	210429-61	210429-61			
			Lab Sample No.(s)	24175169	24175181	24175087			
			AGS Reference	ES1	ES3	ES1			
Moisture Content Ratio (% of as received sample)	%	PM024		21	19	3.6			
2,4,5-T*	<0.01 mg/kg	SUB		<0.01					
2,4,5-TP (Fenoprop)*	<0.01 mg/kg	SUB		<0.01					
2,4-D*	<0.01 mg/kg	SUB		<0.01					
2,4-DB*	<0.01 mg/kg	SUB		<0.01					
2,4-Dichloroprop (2,4 DP)*	<0.01 mg/kg	SUB		<0.01					
4-Chlorophenoxyacetic acid (4-CPA)*	<0.01 mg/kg	SUB		<0.01					
Acifluorfen*	<0.01 mg/kg	SUB		<0.01					
Bentazone*	<0.01 mg/kg	SUB		<0.01					
Bromoxynil*	<0.01 mg/kg	SUB		<0.01					
Dicamba*	<0.01 mg/kg	SUB		<0.01					
Diclofop*	<0.01 mg/kg	SUB		<0.01					
Dinoseb*	<0.01 mg/kg	SUB		<0.01					
DNOC*	<0.01 mg/kg	SUB		<0.01					
Fluroxypyr*	<0.01 mg/kg	SUB		<0.01					
Ioxynil*	<0.01 mg/kg	SUB		<0.01					
2-methyl-4-Chlorophenoxyacetic acid (MCPA)*	<0.01 mg/kg	SUB		<0.01					
4-(4-Chloro-o-tolyloxy) butyric acid (MCPB)*	<0.01 mg/kg	SUB		<0.01					
Mecoprop (MCPP)*	<0.01 mg/kg	SUB		<0.01					
Propoxycarbazone-sodium*	<0.01 mg/kg	SUB		<0.01					
Triclopyr*	<0.01 mg/kg	SUB		<0.01					
Triclosan*	<0.01 mg/kg	SUB		<0.01					
Exchangeable Ammonia as N	<12 mg/kg	TM024			<12 M	<12 M			
Phenol	<0.01 mg/kg	TM062 (S)			<0.01 M	<0.01 M			
Cresols	<0.01 mg/kg	TM062 (S)			<0.01 M	0.0104 M			
Xylenols	<0.015 mg/kg	TM062 (S)			<0.015 M	<0.015 M			
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)			<0.035 M	<0.035 M			
Organic Carbon, Total	<0.2 %	TM132			0.372 M				
Soil Organic Matter (SOM)	<0.35 %	TM132			0.641 #	2.36 #			
pH	1 pH Units	TM133			7.42 M	7.36 M			
Chromium, Hexavalent	<0.6 mg/kg	TM151			<0.6 #	<0.6 #			
Cyanide, Total	<1 mg/kg	TM153			<1 @ M	<1 @ M			
PCB congener 28	<0.003 mg/kg	TM168			<0.003 M				

CERTIFICATE OF ANALYSIS

SDG:	210429-61	**Client Reference:**	784-B026948	**Report Number:**	597132
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596959

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS28	WS28	WS73			
			Depth (m)	0.10 - 0.10	0.70 - 0.70	0.10 - 0.10			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	22/04/2021	22/04/2021	22/04/2021			
			Sample Time	.	.	.			
			Date Received	26/04/2021	26/04/2021	26/04/2021			
			SDG Ref	210429-61	210429-61	210429-61			
			Lab Sample No.(s)	24175169	24175181	24175087			
			AGS Reference	ES1	ES3	ES1			
PCB congener 52	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 101	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 118	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 138	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 153	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 180	<0.003 mg/kg	TM168			<0.003 M				
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168			<0.021				
Arsenic	<0.6 mg/kg	TM181			15.7 M	6.38 M			
Cadmium	<0.02 mg/kg	TM181			3.64 M	0.272 M			
Chromium	<0.9 mg/kg	TM181			17.4 M	5.81 M			
Copper	<1.4 mg/kg	TM181			16.5 M	13.9 M			
Iron	<1000 mg/kg	TM181			31800 #	9690 #			
Lead	<0.7 mg/kg	TM181			69.1 M	38.8 M			
Mercury	<0.1 mg/kg	TM181			<0.1 M	<0.1 M			
Nickel	<0.2 mg/kg	TM181			36.8 M	5.42 M			
Selenium	<1 mg/kg	TM181			<1 #	<1 #			
Vanadium	<0.2 mg/kg	TM181			33.1 #	9.91 #			
Zinc	<1.9 mg/kg	TM181			273 M	41.8 M			
Boron, water soluble	<1 mg/kg	TM222			<1 M	<1 M			
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243			0.0195 M	0.156 M			
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248			0.909	2.5			
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410			<10				
Coronene	<0.2 mg/kg	TM410			<0.2				
EPH (C5-C40)	<35 mg/kg	TM415			<35	<35			
EPH Surrogate % recovery**	%	TM415			101	112			
EPH >C10-C40	<35 mg/kg	TM415			<35 M	<35 M			
Mineral Oil >C10-C40	<5 mg/kg	TM415			<5				

CERTIFICATE OF ANALYSIS

SDG:	210429-61	**Client Reference:**	784-B026948	**Report Number:**	597132
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596959

OC OP Pesticides and Triazine Herb

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	WS28
Depth (m)	0.10 - 0.10
Sample Type	Soil/Solid (S)
Date Sampled	22/04/2021
Sample Time	.
Date Received	26/04/2021
SDG Ref	210429-61
Lab Sample No.(s)	24175169
AGS Reference	ES1

Component	LOD/Units	Method	
Dichlorvos	<0.05 mg/kg	TM073	<0.05
Mevinphos	<0.05 mg/kg	TM073	<0.05
Phorate	<0.05 mg/kg	TM073	<0.05
alpha-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073	<0.05
Diazinon	<0.05 mg/kg	TM073	<0.05
gamma-Hexachlorocyclohexane (HCH / Lindane)	<0.05 mg/kg	TM073	<0.05
Disulfoton	<0.05 mg/kg	TM073	<0.05
Heptachlor	<0.05 mg/kg	TM073	<0.05
Aldrin	<0.05 mg/kg	TM073	<0.05
beta-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073	<0.05
Methyl parathion	<0.05 mg/kg	TM073	<0.05
Malathion	<0.05 mg/kg	TM073	<0.05
Fenitrothion	<0.05 mg/kg	TM073	<0.05
Heptachlor epoxide	<0.05 mg/kg	TM073	<0.05
Parathion	<0.05 mg/kg	TM073	<0.05
Endosulphan I	<0.05 mg/kg	TM073	<0.05
p,p-DDE	<0.05 mg/kg	TM073	<0.05
Dieldrin	<0.05 mg/kg	TM073	<0.05
Endrin	<0.05 mg/kg	TM073	<0.05
p,p-TDE (DDD)	<0.05 mg/kg	TM073	<0.05
Ethion	<0.05 mg/kg	TM073	<0.05
Endosulphan II	<0.05 mg/kg	TM073	<0.05
p,p-DDT	<0.05 mg/kg	TM073	<0.05
p,p-Methoxychlor	<0.05 mg/kg	TM073	<0.05
Endosulphan sulphate	<0.05 mg/kg	TM073	<0.05
Azinphos-methyl	<0.05 mg/kg	TM073	<0.05

Validated

CERTIFICATE OF ANALYSIS

SDG:	210429-61	**Client Reference:**	784-B026948	**Report Number:**	597132
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596959

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS28	WS73
			Depth (m)	0.70 - 0.70	0.10 - 0.10
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	22/04/2021	22/04/2021
			Sample Time	.	.
			Date Received	26/04/2021	26/04/2021
			SDG Ref	210429-61	210429-61
			Lab Sample No.(s)	24175181	24175087
			AGS Reference	ES3	ES1
Naphthalene-d8 % recovery**	%	TM218		76.5	83
Acenaphthene-d10 % recovery**	%	TM218		77.1	84.6
Phenanthrene-d10 % recovery**	%	TM218		80	87.6
Chrysene-d12 % recovery**	%	TM218		86.1	96.4
Perylene-d12 % recovery**	%	TM218		78.2	96.6
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	0.0218 M
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 M	0.0471 M
Acenaphthene	<0.008 mg/kg	TM218		<0.008 M	<0.008 M
Fluorene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218		<0.015 M	0.109 M
Anthracene	<0.016 mg/kg	TM218		<0.016 M	0.0277 M
Fluoranthene	<0.017 mg/kg	TM218		<0.017 M	0.271 M
Pyrene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M
Benz(a)anthracene	<0.014 mg/kg	TM218		<0.014 M	0.163 M
Chrysene	<0.01 mg/kg	TM218		<0.01 M	0.181 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		<0.015 M	0.302 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		<0.014 M	0.146 M
Benzo(a)pyrene	<0.015 mg/kg	TM218		<0.015 M	0.207 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		<0.018 M	0.181 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	0.0356 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		<0.024 M	0.185 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		<0.118	1.88

Validated

CERTIFICATE OF ANALYSIS

SDG:	210429-61	**Client Reference:**	784-B026948	**Report Number:**	597132
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596959

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS28	WS73				
			Depth (m)	0.70 - 0.70	0.10 - 0.10				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	22/04/2021	22/04/2021				
			Sample Time	.	.				
			Date Received	26/04/2021	26/04/2021				
			SDG Ref	210429-61	210429-61				
			Lab Sample No.(s)	24175181	24175087				
			AGS Reference	ES3	ES1				
GRO Surrogate % recovery**	%	TM089		122	99.2				
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C10-C12	<1 mg/kg	TM414		<1	<1				
Aliphatics >C12-C16	<1 mg/kg	TM414		<1	<1				
Aliphatics >C16-C21	<1 mg/kg	TM414		<1	<1				
Aliphatics >C21-C35	<1 mg/kg	TM414		<1	7.88				
Aliphatics >C35-C44	<1 mg/kg	TM414		<1	<1				
Total Aliphatics >C10-C44	<5 mg/kg	TM414		<5	8.49				
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		<10	17.9				
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics > EC10-EC12	<1 mg/kg	TM414		<1	<1				
Aromatics > EC12-EC16	<1 mg/kg	TM414		<1	<1				
Aromatics > EC16-EC21	<1 mg/kg	TM414		<1	<1				
Aromatics > EC21-EC35	<1 mg/kg	TM414		<1	7				
Aromatics >EC35-EC44	<1 mg/kg	TM414		<1	<1				
Aromatics > EC40-EC44	<1 mg/kg	TM414		<1	<1				
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		<5	9.43				
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		<10	17.9				
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		<0.05	<0.05				
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		<0.05	<0.05				
GRO >C5-C10	<0.02 mg/kg	TM089		<0.02	<0.02				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210429-61	**Client Reference:**	784-B026948	**Report Number:**	597132
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596959

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS28	WS73
			Depth (m)	0.70 - 0.70	0.10 - 0.10
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	22/04/2021	22/04/2021
			Sample Time	.	.
			Date Received	26/04/2021	26/04/2021
			SDG Ref	210429-61	210429-61
			Lab Sample No.(s)	24175181	24175087
			AGS Reference	ES3	ES1
Dibromofluoromethane**	%	TM116		106	104
Toluene-d8**	%	TM116		113	108
4-Bromofluorobenzene**	%	TM116		85.4	102
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
Benzene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M
Toluene	<0.007 mg/kg	TM116		<0.14 M	<0.14 M
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 M	<0.08 M
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #
o-Xylene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4	<0.4
Sum of BTEX	<0.04 mg/kg	TM116		<0.8	<0.8

CERTIFICATE OF ANALYSIS

SDG:	210429-61	**Client Reference:**	784-B026948	**Report Number:**	597132
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596959

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS28ES3 0.70 - 0.70 SOLID 22/04/2021 00:00:00 26/04/2021 05:00:00 210429-61 24175181 TM048	05/05/2021	Agnieszka Chelmowska	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS73ES1 0.10 - 0.10 SOLID 22/04/2021 00:00:00 26/04/2021 05:00:00 210429-61 24175087 TM048	05/05/2021	Paul Poynton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG:	210429-61	**Client Reference:**	784-B026948	**Report Number:**	597132
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596959

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.113	**Natural Moisture Content (%)**	24.5
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	80.3
Particle Size <4mm	>95%		

Case	
SDG	210429-61
Lab Sample Number(s)	24175181
Sampled Date	22-Apr-2021
Customer Sample Ref.	WS28 ES3
Depth (m)	0.70 - 0.70

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.372	3	5	6
Loss on Ignition (%)	-	-	-	-
Sum of BTEX (mg/kg)	<0.8	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	7.42	-	>6	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.0123	<0.0002	0.123	<0.002	20	100	300
Cadmium	0.000152	<0.00008	0.00152	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	<0.0003	<0.0003	<0.003	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	<0.0004	<0.0004	<0.004	<0.004	0.4	10	40
Lead	0.000675	<0.0002	0.00675	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.0566	<0.001	0.566	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	9.3	<2	93	<20	1000	20000	50000
Total Dissolved Solids	46	<5	460	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.24	<3	42.4	<30	500	800	1000

Leach Test Information

Date Prepared	30-Apr-2021
pH (pH Units)	6.95
Conductivity (µS/cm)	46.90
Temperature (°C)	22.50
Volume Leachant (Litres)	0.878

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation

09/05/2021 09:11:17

09:10:47 09/05/2021

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210429-61	**Client Reference:**	784-B026948	**Report Number:**	597132
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596959

Test Completion Dates

Lab Sample No(s)	24175169	24175181	24175087
Customer Sample Ref.	WS28	WS28	WS73
AGS Ref.	ES1	ES3	ES1
Depth	0.10 - 0.10	0.70 - 0.70	0.10 - 0.10
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Acid herbicides*	07-May-2021		
Ammoniacal N as NH4 in 2:1 extract		05-May-2021	05-May-2021
Ammonium Soil by Titration		04-May-2021	30-Apr-2021
Anions by Kone (soil)		07-May-2021	07-May-2021
Anions by Kone (w)		07-May-2021	
Asbestos ID in Solid Samples		05-May-2021	05-May-2021
Boron Water Soluble		07-May-2021	07-May-2021
CEN 10:1 Leachate (1 Stage)		01-May-2021	
CEN Readings		05-May-2021	
Coronene		05-May-2021	
Cyanide Comp/Free/Total/Thiocyanate		07-May-2021	07-May-2021
Dissolved Metals by ICP-MS		06-May-2021	
Dissolved Organic/Inorganic Carbon		09-May-2021	
EPH		06-May-2021	06-May-2021
EPH by GCxGC-FID		06-May-2021	06-May-2021
EPH CWG GC (S)		07-May-2021	06-May-2021
Fluoride		06-May-2021	
GRO by GC-FID (S)		06-May-2021	06-May-2021
Hexavalent Chromium (s)		07-May-2021	07-May-2021
Mercury Dissolved		06-May-2021	
Metals in solid samples by OES		08-May-2021	05-May-2021
Moisture at 105C		30-Apr-2021	
OC OP Pesticides and Triazine Herb	07-May-2021		
PAH 16 & 17 Calc		05-May-2021	
PAH by GCMS		05-May-2021	06-May-2021
PCBs by GCMS		05-May-2021	
pH		06-May-2021	06-May-2021
Phenols by HPLC (S)		05-May-2021	05-May-2021
Phenols by HPLC (W)		06-May-2021	
Sample description	29-Apr-2021	29-Apr-2021	29-Apr-2021
Total Dissolved Solids		06-May-2021	
Total Organic Carbon		07-May-2021	07-May-2021
TPH CWG GC (S)		07-May-2021	06-May-2021
VOC MS (S)		06-May-2021	06-May-2021

ASSOCIATED AQC DATA

Anions by Kone (w)

Component	Method Code	QC 2439
Chloride	TM184	**106.0** 92.93 : 115.43
Sulphate (soluble)	TM184	**101.2** 90.53 : 113.03

Boron Water Soluble

Component	Method Code	QC 2491
Water Soluble Boron	TM222	**93.0** 84.00 : 111.00

Coronene

Component	Method Code	QC 2481
Coronene RAW	TM410	**98.0** 79.43 : 137.78

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2472
Free Cyanide	TM153	**100.0** 86.90 : 108.50
Thiocyanate	TM153	**100.64** 94.53 : 113.33
Total Cyanide	TM153	**104.9** 86.13 : 102.13

Dissolved Metals by ICP-MS

Component	Method Code	QC 2428
Aluminium	TM152	**113.67** 90.98 : 111.82
Antimony	TM152	**102.67** 90.44 : 113.04
Arsenic	TM152	**100.0** 88.00 : 112.00
Barium	TM152	**102.33** 90.20 : 111.19
Beryllium	TM152	**102.17** 87.77 : 113.97
Bismuth	TM152	**101.0** 91.90 : 112.20
Borate	TM152	**104.94** 88.00 : 112.00

Dissolved Metals by ICP-MS

		QC 2428
Boron	TM152	**105.33** 96.48 : 114.93
Cadmium	TM152	**101.83** 96.43 : 110.53
Calcium	TM152	**104.0** 81.38 : 119.09
Chromium	TM152	**97.67** 91.84 : 108.67
Cobalt	TM152	**97.83** 88.00 : 112.00
Copper	TM152	**98.5** 92.47 : 118.11
Iron	TM152	**99.33** 92.00 : 113.00
Lead	TM152	**100.5** 88.00 : 112.00
Lithium	TM152	**104.17** 91.62 : 113.12
Magnesium	TM152	**99.33** 93.14 : 107.91
Manganese	TM152	**99.67** 95.03 : 110.58
Molybdenum	TM152	**97.67** 88.00 : 112.00
Nickel	TM152	**97.67** 88.00 : 112.00
Phosphorus	TM152	**102.0** 88.00 : 112.00
Potassium	TM152	**103.33** 93.90 : 112.36
Selenium	TM152	**102.33** 91.58 : 115.98
Silver	TM152	**98.83** 88.80 : 122.30
Sodium	TM152	**99.33** 91.50 : 108.35
Strontium	TM152	**103.33** 88.00 : 112.00
Tellurium	TM152	**101.5** 93.32 : 114.66
Thallium	TM152	**81.5** 88.00 : 112.00
Tin	TM152	**103.83** 92.63 : 109.70
Titanium	TM152	**105.33** 95.58 : 111.68
Tungsten	TM152	**104.0** 81.32 : 124.72
Uranium	TM152	**98.83** 88.00 : 112.00
Vanadium	TM152	**101.0** 88.00 : 112.00
Zinc	TM152	**99.0** 92.98 : 118.95

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2458
Dissolved Inorganic Carbon	TM090	**108.5** 93.58 : 112.28
Dissolved Organic Carbon	TM090	**100.67** 96.13 : 109.53

EPH CWG GC (S)

Component	Method Code	QC 2466
EPH >C8-C40 Raw	TM414	**105.23** 71.20 : 116.13
Total Aliphatics Raw	TM414	**111.53** 70.55 : 116.56
Total Aromatics Raw	TM414	**119.38** 58.66 : 132.26

Fluoride

Component	Method Code	QC 2465
Fluoride	TM104	**104.67** 96.67 : 108.67

GRO by GC-FID (S)

Component	Method Code	QC 2498
QC	TM089	**85.96** 70.75 : 114.19

Hexavalent Chromium (s)

Component	Method Code	QC 2472	QC 2420
Hexavalent Chromium	TM151	**110.0** 91.40 : 115.40	**112.0** 91.40 : 115.40

Metals in solid samples by OES

Component	Method Code	QC 2441	QC 2448
Aluminium	TM181	**99.12** 77.46 : 123.98	**93.81** 77.46 : 123.98
Antimony	TM181	**95.53** 87.04 : 111.16	
Arsenic	TM181	**103.2** 87.34 : 110.87	**98.55** 87.34 : 110.87
Barium	TM181	**93.58** 80.73 : 115.16	**94.5** 80.73 : 115.16

CERTIFICATE OF ANALYSIS

SDG:	210429-61	**Client Reference:**	784-B026948	**Report Number:**	597132
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596959

Metals in solid samples by OES

		QC 2441	QC 2448
Beryllium	TM181	**93.66** 89.47 : 112.97	**102.24** 89.47 : 112.97
Boron	TM181	**90.83** 76.57 : 104.15	**88.54** 76.57 : 104.15
Cadmium	TM181	**91.36** 78.94 : 102.43	**94.24** 78.94 : 102.43
Chromium	TM181	**82.96** 77.55 : 104.47	**88.64** 77.55 : 104.47
Cobalt	TM181	**86.79** 82.95 : 107.41	**88.68** 82.95 : 107.41
Copper	TM181	**90.14** 84.36 : 106.14	**93.49** 84.36 : 106.14
Iron	TM181	**94.44** 81.43 : 115.79	**96.03** 81.43 : 115.79
Lead	TM181	**89.41** 81.95 : 107.63	**92.12** 81.95 : 107.63
Manganese	TM181	**117.78** 94.29 : 119.51	**104.44** 94.29 : 119.51
Mercury	TM181	**96.86** 82.73 : 106.36	**93.24** 82.73 : 106.36
Molybdenum	TM181	**97.12** 86.61 : 111.07	**97.53** 86.61 : 111.07
Nickel	TM181	**85.82** 79.72 : 103.80	**87.78** 79.72 : 103.80
Phosphorus	TM181	**130.91** 92.65 : 125.47	**105.86** 92.65 : 125.47
Selenium	TM181	**100.78** 88.36 : 111.25	**98.04** 88.36 : 111.25
Strontium	TM181	**83.74** 77.99 : 108.06	**92.2** 77.99 : 108.06
Thallium	TM181	**99.12** 88.60 : 116.73	**101.77** 88.60 : 116.73
Tin	TM181	**92.02** 89.77 : 112.62	**99.62** 89.77 : 112.62
Titanium	TM181	**84.73** 66.29 : 105.96	**77.1** 66.29 : 105.96
Vanadium	TM181	**87.18** 75.51 : 108.87	**96.34** 75.51 : 108.87
Zinc	TM181	**97.33** 84.02 : 111.24	**98.56** 84.02 : 111.24

PAH by GCMS

Component	Method Code	QC 2479	QC 2498
Acenaphthene	TM218	**91.5** 78.59 : 112.16	**92.0** 78.59 : 112.16
Acenaphthylene	TM218	**90.0** 75.11 : 109.01	**91.5** 75.11 : 109.01
Anthracene	TM218	**90.0** 73.99 : 113.85	**89.5** 73.99 : 113.85
Benz(a)anthracene	TM218	**96.0** 69.31 : 119.18	**103.0** 69.31 : 119.18
Benzo(a)pyrene	TM218	**91.0** 66.97 : 114.92	**98.0** 66.97 : 114.92

PAH by GCMS

		QC 2479	QC 2498
Benzo(b)fluoranthene	TM218	**95.0** 67.41 : 114.46	**91.0** 67.41 : 114.46
Benzo(ghi)perylene	TM218	**91.5** 62.92 : 114.36	**96.5** 62.92 : 114.36
Benzo(k)fluoranthene	TM218	**93.5** 69.98 : 116.49	**110.0** 69.98 : 116.49
Chrysene	TM218	**97.5** 69.86 : 114.50	**101.5** 69.86 : 114.50
Dibenzo(ah)anthracene	TM218	**91.5** 64.54 : 115.22	**96.5** 64.54 : 115.22
Fluoranthene	TM218	**85.0** 72.56 : 111.70	**90.5** 72.56 : 111.70
Fluorene	TM218	**90.5** 79.13 : 111.49	**92.0** 79.13 : 111.49
Indeno(123cd)pyrene	TM218	**92.5** 61.22 : 113.25	**90.0** 61.22 : 113.25
Naphthalene	TM218	**89.5** 77.96 : 110.91	**91.5** 77.96 : 110.91
Phenanthrene	TM218	**89.0** 76.83 : 113.25	**92.0** 76.83 : 113.25
Pyrene	TM218	**84.0** 72.45 : 110.77	**92.5** 72.45 : 110.77

PCBs by GCMS

Component	Method Code	QC 2488
PCB congener 101	TM168	**77.2** 65.66 : 110.06
PCB congener 105	TM168	**75.9** 58.10 : 106.34
PCB congener 114	TM168	**74.7** 59.38 : 106.48
PCB congener 118	TM168	**77.4** 60.02 : 106.23
PCB congener 123	TM168	**74.8** 65.01 : 99.81
PCB congener 126	TM168	**73.9** 59.31 : 109.23
PCB congener 138	TM168	**77.4** 63.95 : 107.63
PCB congener 153	TM168	**79.1** 62.65 : 108.85
PCB congener 156	TM168	**74.4** 61.69 : 112.27
PCB congener 157	TM168	**72.2** 55.37 : 104.81
PCB congener 167	TM168	**74.3** 65.58 : 109.14
PCB congener 169	TM168	**75.8** 56.84 : 112.10
PCB congener 180	TM168	**78.3** 66.99 : 111.63
PCB congener 189	TM168	**73.8** 57.75 : 112.59

PCBs by GCMS

		QC 2488
PCB congener 28	TM168	**80.2** 73.68 : 105.96
PCB congener 52	TM168	**77.8** 67.24 : 107.62
PCB congener 77	TM168	**78.9** 64.87 : 108.49
PCB congener 81	TM168	**79.4** 70.78 : 110.80

pH

Component	Method Code	QC 2470
pH	TM133	**99.85** 98.41 : 102.48

Phenols by HPLC (S)

Component	Method Code	QC 2418
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**53.9** 70.71 : 116.42
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**46.2** 64.54 : 117.79
Cresols by HPLC (S)	TM062 (S)	**49.9** 74.40 : 108.98
Phenol by HPLC (S)	TM062 (S)	**52.32** 69.44 : 122.18
Xylenols by HPLC (S)	TM062 (S)	**51.67** 76.56 : 106.38

Phenols by HPLC (W)

Component	Method Code	QC 2452
2.3.5 Trimethyl-Phenol by HPLC (W)	TM259	**99.61** 77.41 : 127.55
2-Isopropyl Phenol by HPLC (W)	TM259	**93.69** 82.77 : 126.51
Cresols by HPLC (W)	TM259	**100.0** 76.60 : 126.28
Napthol by HPLC (W)	TM259	**91.8** 75.40 : 129.40
Phenol by HPLC (W)	TM259	**96.41** 85.77 : 125.91
Xylenols by HPLC (W)	TM259	**97.47** 79.09 : 131.82

Total Dissolved Solids

Total Dissolved Solids

Component	Method Code	QC 2499
Total Dissolved Solids	TM123	**100.0** 97.30 : 100.92

Total Organic Carbon

Component	Method Code	QC 2484	QC 2400
Total Organic Carbon	TM132	**106.25** 87.02 : 113.45	**106.64** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2440
1,1,1,2-tetrachloroethane	TM116	**93.2** 84.84 : 116.25
1,1,1-Trichloroethane	TM116	**97.6** 73.73 : 118.05
1,1,2-Trichloroethane	TM116	**84.6** 77.12 : 116.04
1,1-Dichloroethane	TM116	**89.2** 74.46 : 129.15
1,2-Dichloroethane	TM116	**106.8** 92.38 : 131.65
1,4-Dichlorobenzene	TM116	**101.8** 83.64 : 126.18
2-Chlorotoluene	TM116	**89.6** 76.03 : 113.25
4-Chlorotoluene	TM116	**88.8** 66.90 : 112.46
Benzene	TM116	**97.4** 88.60 : 113.80
Carbon Disulphide	TM116	**93.8** 74.91 : 122.14
Carbontetrachloride	TM116	**99.4** 80.31 : 124.50
Chlorobenzene	TM116	**94.6** 83.81 : 114.18
Chloroform	TM116	**99.2** 87.40 : 122.49
Chloromethane	TM116	**106.8** 65.89 : 136.93
Cis-1,2-Dichloroethene	TM116	**91.8** 80.67 : 126.72
Dibromomethane	TM116	**94.2** 73.23 : 118.35
Dichloromethane	TM116	**99.2** 81.11 : 133.25
Ethylbenzene	TM116	**88.0** 75.92 : 110.41

		QC 2440
Hexachlorobutadiene	TM116	**49.2** 12.82 : 152.73
Isopropylbenzene	TM116	**72.4** 55.79 : 97.59
Naphthalene	TM116	**99.0** 80.86 : 128.81
o-Xylene	TM116	**86.8** 69.99 : 108.74
p/m-Xylene	TM116	**82.4** 68.32 : 108.91
Sec-Butylbenzene	TM116	**66.6** 38.50 : 101.50
Tetrachloroethene	TM116	**95.8** 76.95 : 121.02
Toluene	TM116	**80.2** 74.24 : 107.42
Trichloroethene	TM116	**93.4** 85.28 : 109.36
Trichlorofluoromethane	TM116	**97.6** 83.80 : 126.37
Vinyl Chloride	TM116	**104.8** 68.02 : 143.37

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

Work Order	: **PR2138968**	Issue Date	: 07-May-2021
Customer	: **ALS Life Sciences Ltd**	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: [redacted]	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 210429-61	Page	: 1 of 2
Order number	: ----	Date Samples Received	: 03-May-2021
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 03-May-2021 - 07-May-2021
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories		*Position*
Zdeněk Jirák	[redacted]	Environmental Business Unit Manager

The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)

Analytical Results

Sub-Matrix: **SOIL**			Client sample ID	**24181010 WS28**		**----**		**----**	
			Laboratory sample ID	*PR2138968-001*		----		----	
			Client sampling date / time	29-Apr-2021		----		----	
Parameter	*Method*	*LOR*	*Unit*	**Result**	**MU**	**Result**	**MU**	**Result**	**MU**
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	**76.0**	± 6.0%	**----**	----	**----**	----
Pesticides									
2.4.5-T	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4.5-TP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-D	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
4-CPP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bentazone	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dinoseb	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Fluroxypyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPA	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Acifluorfen	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bromoxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
DNOC	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dicamba	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Diclofop	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Ioxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Propoxycarbazone-sodium	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclopyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclosan	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.
Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	*Method Descriptions*
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PESLMSA1	CZ_SOP_D06_03_182.B (CSN EN 15637, US EPA 1694) Determination of acidic herbicides and drug residues by liquid chromatography method with MS/MS detection.

A `*` symbol preceding any method indicates laboratory or subcontractor non-accredited test. In the case when a procedure belonging to an accredited method was used for non-accredited matrix, would apply that the reported results are non-accredited. Please refer to General Comment section on front page for information. If the report contains subcontracted analysis, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.
The calculation methods of summation parameters are available on request in the client service.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	09 May 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210429-64
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	597133

This report has been revised and directly supersedes 596960 in its entirety.

We received 15 samples on Friday April 23, 2021 and 4 of these samples were scheduled for analysis which was completed on Sunday May 09, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

So

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210429-64	**Client Reference:**	784-B026948	**Report Number:**	597133
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596960

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24175227	BH15	ES7	1.90 - 1.90	21/04/2021
24175324	TP35	ES1	0.10 - 0.10	21/04/2021
24175341	TP35	ES3	0.70 - 0.70	21/04/2021
24175351	TP36	ES1	0.10 - 0.10	21/04/2021
24175361	TP36	ES4	1.00 - 1.00	21/04/2021
24175381	TP38	ES1	0.10 - 0.10	21/04/2021
24175401	TP38	ES3	0.60 - 0.60	21/04/2021
24175240	TP40	ES1	0.10 - 0.10	21/04/2021
24175257	TP40	ES4	1.00 - 1.00	21/04/2021
24175298	TP41	ES1	0.10 - 0.10	21/04/2021
24175314	TP41	ES4	1.00 - 1.00	21/04/2021
24175267	TP42	ES1	0.10 - 0.10	21/04/2021
24175280	TP42	ES3	0.70 - 0.70	21/04/2021
24175419	TP49	ES1	0.10 - 0.10	21/04/2021
24175436	TP49	ES3	0.70 - 0.70	21/04/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	210429-64	**Client Reference:**	784-B026948	**Report Number:**	597133
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596960

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24175341			24175381			24175280			24175419												
Customer Sample Reference			TP35			TP38			TP42			TP49												
AGS Reference			ES3			ES1			ES3			ES1												
Depth (m)			0.70 - 0.70			0.10 - 0.10			0.70 - 0.70			0.10 - 0.10												
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)										
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S										
Acid herbicides*	All	NDPs: 0 Tests: 1					X																	
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 4		X			X			X			X											
Ammonium Soil by Titration	All	NDPs: 0 Tests: 4		X			X			X			X											
Anions by Kone (soil)	All	NDPs: 0 Tests: 4		X			X			X			X											
Anions by Kone (w)	All	NDPs: 0 Tests: 1	X																					
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 4	X			X			X			X												
Boron Water Soluble	All	NDPs: 0 Tests: 4		X			X			X			X											
CEN Readings	All	NDPs: 0 Tests: 1	X																					
Coronene	All	NDPs: 0 Tests: 1		X																				
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 4		X			X			X			X											
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1	X																					
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1	X																					
EPH	All	NDPs: 0 Tests: 4		X			X			X			X											
EPH by GCxGC-FID	All	NDPs: 0 Tests: 4		X			X			X			X											
EPH CWG GC (S)	All	NDPs: 0 Tests: 4		X			X			X			X											

Validated

CERTIFICATE OF ANALYSIS

SDG:	210429-64	**Client Reference:**	784-B026948	**Report Number:**	597133
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596960

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24175341			24175381			24175280			24175419			
Customer Sample Reference			TP35			TP38			TP42			TP49			
AGS Reference			ES3			ES1			ES3			ES1			
Depth (m)			0.70 - 0.70			0.10 - 0.10			0.70 - 0.70			0.10 - 0.10			
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	
Fluoride	All	NDPs: 0 Tests: 1	X												
GRO by GC-FID (S)	All	NDPs: 0 Tests: 4			X			X			X			X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 4		X			X			X			X		
Mercury Dissolved	All	NDPs: 0 Tests: 1	X												
Metals in solid samples by OES	All	NDPs: 0 Tests: 4		X			X			X			X		
OC OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 1					X								
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1		X											
PAH by GCMS	All	NDPs: 0 Tests: 4		X			X			X			X		
PCBs by GCMS	All	NDPs: 0 Tests: 1		X											
pH	All	NDPs: 0 Tests: 4		X			X			X			X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 4		X			X			X			X		
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1	X												
Sample description	All	NDPs: 0 Tests: 4		X			X			X			X		
Total Dissolved Solids	All	NDPs: 0 Tests: 1	X												
Total Organic Carbon	All	NDPs: 0 Tests: 4		X			X			X			X		

Validated

CERTIFICATE OF ANALYSIS

SDG:	210429-64	**Client Reference:**	784-B026948	**Report Number:**	597133
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596960

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)				24175341			24175381			24175280			24175419		
Customer Sample Reference				TP35			TP38			TP42			TP49		
AGS Reference				ES3			ES1			ES3			ES1		
Depth (m)				0.70 - 0.70			0.10 - 0.10			0.70 - 0.70			0.10 - 0.10		
Container				1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type				S	S	S	S	S	S	S	S	S	S	S	S
TPH CWG GC (S)	All	NDPs: 0 Tests: 4			X			X			X			X	
VOC MS (S)	All	NDPs: 0 Tests: 4				X			X			X			X

CERTIFICATE OF ANALYSIS

SDG:	210429-64	**Client Reference:**	784-B026948	**Report Number:**	597133
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596960

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24175341	TP35	0.70 - 0.70	Dark Brown	Sand	Stones	None
24175381	TP38	0.10 - 0.10	Dark Brown	Loamy Sand	Stones	Vegetation
24175280	TP42	0.70 - 0.70	Dark Brown	Sand	Stones	Vegetation
24175419	TP49	0.10 - 0.10	Dark Brown	Sandy Loam	Vegetation	Stones

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210429-64	**Client Reference:**	784-B026948	**Report Number:**	597133
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596960

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	TP35	TP38	TP42	TP49		
			Depth (m)	0.70 - 0.70	0.10 - 0.10	0.70 - 0.70	0.10 - 0.10		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	21/04/2021	21/04/2021	21/04/2021	21/04/2021		
			Sample Time	.	.	.	.		
			Date Received	23/04/2021	23/04/2021	23/04/2021	23/04/2021		
			SDG Ref	210429-64	210429-64	210429-64	210429-64		
			Lab Sample No.(s)	24175341	24175381	24175280	24175419		
			AGS Reference	ES3	ES1	ES3	ES1		
Moisture Content Ratio (% of as received sample)	%	PM024		13	4.6	3.9	4.5		
2,4,5-T*	<0.01 mg/kg	SUB			<0.01				
2,4,5-TP (Fenoprop)*	<0.01 mg/kg	SUB			<0.01				
2,4-D*	<0.01 mg/kg	SUB			<0.01				
2,4-DB*	<0.01 mg/kg	SUB			<0.01				
2,4-Dichloroprop (2,4 DP)*	<0.01 mg/kg	SUB			<0.01				
4-Chlorophenoxyacetic acid (4-CPA)*	<0.01 mg/kg	SUB			<0.01				
Acifluorfen*	<0.01 mg/kg	SUB			<0.01				
Bentazone*	<0.01 mg/kg	SUB			<0.01				
Bromoxynil*	<0.01 mg/kg	SUB			<0.01				
Dicamba*	<0.01 mg/kg	SUB			<0.01				
Diclofop*	<0.01 mg/kg	SUB			<0.01				
Dinoseb*	<0.01 mg/kg	SUB			<0.01				
DNOC*	<0.01 mg/kg	SUB			<0.01				
Fluroxypyr*	<0.01 mg/kg	SUB			<0.01				
Ioxynil*	<0.01 mg/kg	SUB			<0.01				
2-methyl-4-Chlorophenoxyacetic acid (MCPA)*	<0.01 mg/kg	SUB			<0.01				
4-(4-Chloro-o-tolyloxy) butyric acid (MCPB)*	<0.01 mg/kg	SUB			<0.01				
Mecoprop (MCPP)*	<0.01 mg/kg	SUB			<0.01				
Propoxycarbazone-sodium*	<0.01 mg/kg	SUB			<0.01				
Triclopyr*	<0.01 mg/kg	SUB			<0.01				
Triclosan*	<0.01 mg/kg	SUB			<0.01				
Exchangeable Ammonia as N	<12 mg/kg	TM024		<12 M	30.5 M	<12 M	<12 M		
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 M	<0.01 M	<0.01 M	<0.01 M		
Cresols	<0.01 mg/kg	TM062 (S)		<0.01 M	0.0105 M	<0.01 M	0.0105 M		
Xylenols	<0.015 mg/kg	TM062 (S)		<0.015 M	<0.015 M	<0.015 M	<0.015 M		
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 M	<0.035 M	<0.035 M	<0.035 M		
Organic Carbon, Total	<0.2 %	TM132		<0.2 M					
Soil Organic Matter (SOM)	<0.35 %	TM132		<0.35 #	1.27 #	<0.35 #	1.66 #		
pH	1 pH Units	TM133		7.49 M	6.7 M	8 M	6.46 M		
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #		
Cyanide, Total	<1 mg/kg	TM153		<1 @ M	<1 @ M	<1 @ M	<1 @ M		
PCB congener 28	<0.003 mg/kg	TM168		<0.003 M					

CERTIFICATE OF ANALYSIS

SDG:	210429-64	**Client Reference:**	784-B026948	**Report Number:**	597133
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596960

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	TP35	TP38	TP42	TP49		
			Depth (m)	0.70 - 0.70	0.10 - 0.10	0.70 - 0.70	0.10 - 0.10		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	21/04/2021	21/04/2021	21/04/2021	21/04/2021		
			Sample Time	.	.	.	.		
			Date Received	23/04/2021	23/04/2021	23/04/2021	23/04/2021		
			SDG Ref	210429-64	210429-64	210429-64	210429-64		
			Lab Sample No.(s)	24175341	24175381	24175280	24175419		
			AGS Reference	ES3	ES1	ES3	ES1		
PCB congener 52	<0.003 mg/kg	TM168		<0.003 M					
PCB congener 101	<0.003 mg/kg	TM168		<0.003 M					
PCB congener 118	<0.003 mg/kg	TM168		<0.003 M					
PCB congener 138	<0.003 mg/kg	TM168		<0.003 M					
PCB congener 153	<0.003 mg/kg	TM168		<0.003 M					
PCB congener 180	<0.003 mg/kg	TM168		<0.003 M					
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168		<0.021					
Arsenic	<0.6 mg/kg	TM181		5.79 M	5.31 M	8.44 M	5.67 M		
Cadmium	<0.02 mg/kg	TM181		1.13 M	0.312 M	0.263 M	0.324 M		
Chromium	<0.9 mg/kg	TM181		9.13 M	6.58 M	7.14 M	6.15 M		
Copper	<1.4 mg/kg	TM181		9.63 M	9.57 M	8.79 M	14.2 M		
Iron	<1000 mg/kg	TM181		16700 #	12500 #	17200 #	10900 #		
Lead	<0.7 mg/kg	TM181		9.56 M	20.7 M	10.4 M	37.5 M		
Mercury	<0.1 mg/kg	TM181		<0.1 M	<0.1 M	<0.1 M	<0.1 M		
Nickel	<0.2 mg/kg	TM181		22.8 M	6.26 M	8.25 M	6.11 M		
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #		
Vanadium	<0.2 mg/kg	TM181		14.4 #	11.6 #	13.9 #	10.5 #		
Zinc	<1.9 mg/kg	TM181		52.5 M	40.3 M	33.2 M	53.3 M		
Boron, water soluble	<1 mg/kg	TM222		<1 M	<1 M	<1 M	<1 M		
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.0049 M	0.0111 M	<0.004 M	0.0146 M		
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248		2.24	13.2	2.36	3.45		
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410		<10					
Coronene	<0.2 mg/kg	TM410		<0.2					
EPH (C5-C40)	<35 mg/kg	TM415		<35	67.7	<35	<35		
EPH Surrogate % recovery**	%	TM415		108	104	100	102		
EPH >C10-C40	<35 mg/kg	TM415		<35 @ M	67.7 M	<35 @ M	<35 M		
Mineral Oil >C10-C40	<5 mg/kg	TM415		<5					

CERTIFICATE OF ANALYSIS

SDG:	210429-64	**Client Reference:**	784-B026948	**Report Number:**	597133
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596960

OC OP Pesticides and Triazine Herb

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	TP38
Depth (m)	0.10 - 0.10
Sample Type	Soil/Solid (S)
Date Sampled	21/04/2021
Sample Time	.
Date Received	23/04/2021
SDG Ref	210429-64
Lab Sample No.(s)	24175381
AGS Reference	ES1

Component	LOD/Units	Method	
Dichlorvos	<0.05 mg/kg	TM073	<0.05
Mevinphos	<0.05 mg/kg	TM073	<0.05
Phorate	<0.05 mg/kg	TM073	<0.05
alpha-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073	<0.05
Diazinon	<0.05 mg/kg	TM073	<0.05
gamma-Hexachlorocyclohexane (HCH / Lindane)	<0.05 mg/kg	TM073	<0.05
Disulfoton	<0.05 mg/kg	TM073	<0.05
Heptachlor	<0.05 mg/kg	TM073	<0.05
Aldrin	<0.05 mg/kg	TM073	<0.05
beta-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073	<0.05
Methyl parathion	<0.05 mg/kg	TM073	<0.05
Malathion	<0.05 mg/kg	TM073	<0.05
Fenitrothion	<0.05 mg/kg	TM073	<0.05
Heptachlor epoxide	<0.05 mg/kg	TM073	<0.05
Parathion	<0.05 mg/kg	TM073	<0.05
Endosulphan I	<0.05 mg/kg	TM073	<0.05
p,p-DDE	<0.05 mg/kg	TM073	<0.05
Dieldrin	<0.05 mg/kg	TM073	<0.05
Endrin	<0.05 mg/kg	TM073	<0.05
p,p-TDE (DDD)	<0.05 mg/kg	TM073	<0.05
Ethion	<0.05 mg/kg	TM073	<0.05
Endosulphan II	<0.05 mg/kg	TM073	<0.05
p,p-DDT	<0.05 mg/kg	TM073	<0.05
p,p-Methoxychlor	<0.05 mg/kg	TM073	<0.05
Endosulphan sulphate	<0.05 mg/kg	TM073	<0.05
Azinphos-methyl	<0.05 mg/kg	TM073	<0.05

Validated

CERTIFICATE OF ANALYSIS

SDG:	210429-64	**Client Reference:**	784-B026948	**Report Number:**	597133
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596960

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	TP35	TP38	TP42	TP49		
			Depth (m)	0.70 - 0.70	0.10 - 0.10	0.70 - 0.70	0.10 - 0.10		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	21/04/2021	21/04/2021	21/04/2021	21/04/2021		
			Sample Time	.	.	.	.		
			Date Received	23/04/2021	23/04/2021	23/04/2021	23/04/2021		
			SDG Ref	210429-64	210429-64	210429-64	210429-64		
			Lab Sample No.(s)	24175341	24175381	24175280	24175419		
			AGS Reference	ES3	ES1	ES3	ES1		
Naphthalene-d8 % recovery**	%	TM218		78.5	84.4	79.4	82.8		
Acenaphthene-d10 % recovery**	%	TM218		80.8	85	82.8	80.9		
Phenanthrene-d10 % recovery**	%	TM218		81.9	84.7	82.5	77.4		
Chrysene-d12 % recovery**	%	TM218		91.4	93.4	85.2	84		
Perylene-d12 % recovery**	%	TM218		85.2	94.9	82.9	92		
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	<0.009 @ M	<0.009 @ M	<0.009 @ M		
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 M	<0.012 @ M	<0.012 @ M	<0.012 @ M		
Acenaphthene	<0.008 mg/kg	TM218		<0.008 M	<0.008 @ M	<0.008 @ M	<0.008 @ M		
Fluorene	<0.01 mg/kg	TM218		<0.01 M	<0.01 @ M	<0.01 @ M	<0.01 @ M		
Phenanthrene	<0.015 mg/kg	TM218		<0.015 M	0.0295 @ M	<0.015 @ M	0.0543 @ M		
Anthracene	<0.016 mg/kg	TM218		<0.016 M	<0.016 @ M	<0.016 @ M	<0.016 @ M		
Fluoranthene	<0.017 mg/kg	TM218		<0.017 M	0.0811 @ M	<0.017 @ M	0.149 @ M		
Pyrene	<0.015 mg/kg	TM218		<0.015 M	0.0689 @ M	<0.015 @ M	0.137 @ M		
Benz(a)anthracene	<0.014 mg/kg	TM218		<0.014 M	0.0488 @ M	<0.014 @ M	0.0902 @ M		
Chrysene	<0.01 mg/kg	TM218		<0.01 M	0.0533 @ M	<0.01 @ M	0.0954 @ M		
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		<0.015 M	0.0945 @ M	<0.015 @ M	0.205 @ M		
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		<0.014 M	0.0305 @ M	<0.014 @ M	0.0606 @ M		
Benzo(a)pyrene	<0.015 mg/kg	TM218		<0.015 M	0.0533 @ M	<0.015 @ M	0.111 @ M		
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		<0.018 M	0.0468 @ M	<0.018 @ M	0.139 @ M		
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	<0.023 @ M	<0.023 @ M	<0.023 @ M		
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		<0.024 M	0.0442 @ M	<0.024 @ M	0.104 @ M		
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		<0.118	0.551	<0.118	1.15		

CERTIFICATE OF ANALYSIS

SDG:	210429-64	**Client Reference:**	784-B026948	**Report Number:**	597133
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596960

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	TP35	TP38	TP42	TP49		
			Depth (m)	0.70 - 0.70	0.10 - 0.10	0.70 - 0.70	0.10 - 0.10		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	21/04/2021	21/04/2021	21/04/2021	21/04/2021		
			Sample Time	.	.	.	.		
			Date Received	23/04/2021	23/04/2021	23/04/2021	23/04/2021		
			SDG Ref	210429-64	210429-64	210429-64	210429-64		
			Lab Sample No.(s)	24175341	24175381	24175280	24175419		
			AGS Reference	ES3	ES1	ES3	ES1		
GRO Surrogate % recovery**	%	TM089		116 @	91.5 @	97.5 @	85.7 @		
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01 @	<0.01 @	<0.01 @	<0.01 @		
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01 @	<0.01 @	<0.01 @	<0.01 @		
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01 @	<0.01 @	<0.01 @	<0.01 @		
Aliphatics >C10-C12	<1 mg/kg	TM414		<1	<1	<1	<1		
Aliphatics >C12-C16	<1 mg/kg	TM414		<1	<1	<1	<1		
Aliphatics >C16-C21	<1 mg/kg	TM414		<1	<1	<1	<1		
Aliphatics >C21-C35	<1 mg/kg	TM414		<1	11.2	<1	9.22		
Aliphatics >C35-C44	<1 mg/kg	TM414		<1	1.13	<1	1.15		
Total Aliphatics >C10-C44	<5 mg/kg	TM414		<5	12.8	<5	10.4		
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		<10	22.1	<10	19.6		
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01 @	<0.01 @	<0.01 @	<0.01 @		
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01 @	<0.01 @	<0.01 @	<0.01 @		
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01 @	<0.01 @	<0.01 @	<0.01 @		
Aromatics > EC10-EC12	<1 mg/kg	TM414		<1	<1	<1	<1		
Aromatics > EC12-EC16	<1 mg/kg	TM414		<1	<1	<1	<1		
Aromatics > EC16-EC21	<1 mg/kg	TM414		<1	<1	<1	<1		
Aromatics > EC21-EC35	<1 mg/kg	TM414		<1	7.75	<1	7.65		
Aromatics >EC35-EC44	<1 mg/kg	TM414		<1	1.03	<1	<1		
Aromatics > EC40-EC44	<1 mg/kg	TM414		<1	<1	<1	<1		
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		<5	9.36	<5	9.17		
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		<10	22.1	<10	19.6		
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		<0.05 @	<0.05 @	<0.05 @	<0.05 @		
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		<0.05 @	<0.05 @	<0.05 @	<0.05 @		
GRO >C5-C10	<0.02 mg/kg	TM089		<0.02 @	<0.02 @	<0.02 @	<0.02 @		

Validated

CERTIFICATE OF ANALYSIS

SDG:	210429-64	**Client Reference:**	784-B026948	**Report Number:**	597133
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596960

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	TP35	TP38	TP42	TP49		
			Depth (m)	0.70 - 0.70	0.10 - 0.10	0.70 - 0.70	0.10 - 0.10		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	21/04/2021	21/04/2021	21/04/2021	21/04/2021		
			Sample Time	.	.	.	.		
			Date Received	23/04/2021	23/04/2021	23/04/2021	23/04/2021		
			SDG Ref	210429-64	210429-64	210429-64	210429-64		
			Lab Sample No.(s)	24175341	24175381	24175280	24175419		
			AGS Reference	ES3	ES1	ES3	ES1		
Dibromofluoromethane**	%	TM116		104 @	109 @	105 @	105 @		
Toluene-d8**	%	TM116		100 @	99.1 @	99.5 @	101 @		
4-Bromofluorobenzene**	%	TM116		105 @	98.7 @	99.6 @	96 @		
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 @ M	<0.2 @ M	<0.2 @ M	<0.2 @ M		
Benzene	<0.009 mg/kg	TM116		<0.18 @ M	<0.18 @ M	<0.18 @ M	<0.18 @ M		
Toluene	<0.007 mg/kg	TM116		<0.14 @ M	<0.14 @ M	<0.14 @ M	<0.14 @ M		
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 @ M	<0.08 @ M	<0.08 @ M	<0.08 @ M		
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 @ #	<0.2 @ #	<0.2 @ #	<0.2 @ #		
o-Xylene	<0.01 mg/kg	TM116		<0.2 @ M	<0.2 @ M	<0.2 @ M	<0.2 @ M		
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4 @	<0.4 @	<0.4 @	<0.4 @		
Sum of BTEX	<0.04 mg/kg	TM116		<0.8 @	<0.8 @	<0.8 @	<0.8 @		

CERTIFICATE OF ANALYSIS

SDG:	210429-64	**Client Reference:**	784-B026948	**Report Number:**	597133
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596960

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&+$@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP35ES3 0.70 - 0.70 SOLID 21/04/2021 00:00:00 23/04/2021 05:00:00 210429-64 24175341 TM048	05.05.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP38ES1 0.10 - 0.10 SOLID 21/04/2021 00:00:00 23/04/2021 05:00:00 210429-64 24175381 TM048	05.05.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP42ES3 0.70 - 0.70 SOLID 21/04/2021 00:00:00 23/04/2021 05:00:00 210429-64 24175280 TM048	05/05/2021	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP49ES1 0.10 - 0.10 SOLID 21/04/2021 00:00:00 23/04/2021 05:00:00 210429-64 24175419 TM048	05/05/2021	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG:	210429-64	**Client Reference:**	784-B026948	**Report Number:**	597133
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596960

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.103	**Natural Moisture Content (%)**	14.4
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	87.4
Particle Size <4mm	>95%		

Case	
SDG	210429-64
Lab Sample Number(s)	24175341
Sampled Date	21-Apr-2021
Customer Sample Ref.	TP35 ES3
Depth (m)	0.70 - 0.70

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	-	-	-	-
Sum of BTEX (mg/kg)	<0.8	6	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	7.49	-	>6	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.000603	<0.0005	0.00603	<0.005	0.5	2	25
Barium	0.0183	<0.0002	0.183	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	0.00166	<0.001	0.0166	<0.01	0.5	10	70
Copper	0.00251	<0.0003	0.0251	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00127	<0.0004	0.0127	<0.004	0.4	10	40
Lead	0.000543	<0.0002	0.00543	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.0135	<0.001	0.135	<0.01	4	50	200
Chloride	2.3	<2	23	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	44.3	<5	443	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.22	<3	32.2	<30	500	800	1000

Leach Test Information

Date Prepared	30-Apr-2021
pH (pH Units)	7.55
Conductivity (µS/cm)	44.80
Temperature (°C)	22.20
Volume Leachant (Litres)	0.887

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation

09/05/2021 09:12:34

09:12:16 09/05/2021

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210429-64	**Client Reference:**	784-B026948	**Report Number:**	597133
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596960

Test Completion Dates

Lab Sample No(s)	24175341	24175381	24175280	24175419
Customer Sample Ref.	TP35	TP38	TP42	TP49
AGS Ref.	ES3	ES1	ES3	ES1
Depth	0.70 - 0.70	0.10 - 0.10	0.70 - 0.70	0.10 - 0.10
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Acid herbicides*		07-May-2021		
Ammoniacal N as NH4 in 2:1 extract	05-May-2021	05-May-2021	05-May-2021	05-May-2021
Ammonium Soil by Titration	04-May-2021	30-Apr-2021	04-May-2021	04-May-2021
Anions by Kone (soil)	07-May-2021	07-May-2021	07-May-2021	07-May-2021
Anions by Kone (w)	07-May-2021			
Asbestos ID in Solid Samples	05-May-2021	05-May-2021	05-May-2021	05-May-2021
Boron Water Soluble	06-May-2021	07-May-2021	06-May-2021	07-May-2021
CEN 10:1 Leachate (1 Stage)	01-May-2021			
CEN Readings	05-May-2021			
Coronene	05-May-2021			
Cyanide Comp/Free/Total/Thiocyanate	07-May-2021	07-May-2021	07-May-2021	07-May-2021
Dissolved Metals by ICP-MS	07-May-2021			
Dissolved Organic/Inorganic Carbon	09-May-2021			
EPH	06-May-2021	06-May-2021	07-May-2021	06-May-2021
EPH by GCxGC-FID	06-May-2021	06-May-2021	07-May-2021	06-May-2021
EPH CWG GC (S)	06-May-2021	06-May-2021	06-May-2021	06-May-2021
Fluoride	06-May-2021			
GRO by GC-FID (S)	06-May-2021	06-May-2021	06-May-2021	06-May-2021
Hexavalent Chromium (s)	07-May-2021	07-May-2021	07-May-2021	07-May-2021
Mercury Dissolved	06-May-2021			
Metals in solid samples by OES	08-May-2021	08-May-2021	08-May-2021	08-May-2021
Moisture at 105C	30-Apr-2021			
OC OP Pesticides and Triazine Herb		07-May-2021		
PAH 16 & 17 Calc	05-May-2021			
PAH by GCMS	05-May-2021	06-May-2021	05-May-2021	06-May-2021
PCBs by GCMS	05-May-2021			
pH	06-May-2021	06-May-2021	06-May-2021	06-May-2021
Phenols by HPLC (S)	05-May-2021	05-May-2021	05-May-2021	05-May-2021
Phenols by HPLC (W)	06-May-2021			
Sample description	29-Apr-2021	29-Apr-2021	01-May-2021	29-Apr-2021
Total Dissolved Solids	06-May-2021			
Total Organic Carbon	07-May-2021	07-May-2021	07-May-2021	07-May-2021
TPH CWG GC (S)	06-May-2021	06-May-2021	06-May-2021	06-May-2021
VOC MS (S)	05-May-2021	05-May-2021	05-May-2021	05-May-2021

ASSOCIATED AQC DATA

Ammonium Soil by Titration

Component	Method Code	QC 2432
Exchangeable Ammonium as NH4	TM024	**97.51** 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2475
Chloride (soluble)	TM243	**140.93** 80.93 : 111.66
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**161.21** 70.00 : 130.00

Anions by Kone (w)

Component	Method Code	QC 2439
Chloride	TM184	**106.0** 92.93 : 115.43
Sulphate (soluble)	TM184	**101.2** 90.53 : 113.03

Boron Water Soluble

Component	Method Code	QC 2491	QC 2414
Water Soluble Boron	TM222	**93.0** 84.00 : 111.00	**97.0** 84.00 : 111.00

Coronene

Component	Method Code	QC 2481
Coronene RAW	TM410	**98.0** 79.43 : 137.78

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2468	QC 2443	QC 2472
Free Cyanide	TM153	**96.14** 86.90 : 108.50	**96.44** 86.90 : 108.50	**100.0** 86.90 : 108.50
Thiocyanate	TM153	**99.36** 94.53 : 113.33	**98.72** 94.53 : 113.33	**100.64** 94.53 : 113.33
Total Cyanide	TM153	**100.0** 86.13 : 102.13	**98.6** 86.13 : 102.13	**104.9** 86.13 : 102.13

CERTIFICATE OF ANALYSIS

SDG:	210429-64	**Client Reference:**	784-B026948	**Report Number:**	597133
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596960

Dissolved Metals by ICP-MS

Component	Method Code	QC 2474
Aluminium	TM152	**103.33** 94.21 : 111.52
Antimony	TM152	**102.5** 88.37 : 130.57
Arsenic	TM152	**102.67** 92.62 : 113.52
Barium	TM152	**100.33** 88.62 : 113.14
Beryllium	TM152	**102.33** 87.08 : 111.38
Bismuth	TM152	**100.67** 92.62 : 115.02
Boron	TM152	**102.0** 86.31 : 120.88
Cadmium	TM152	**100.5** 93.85 : 111.65
Calcium	TM152	**104.0** 89.20 : 126.91
Chromium	TM152	**101.67** 92.50 : 113.03
Cobalt	TM152	**102.33** 85.01 : 114.87
Copper	TM152	**102.67** 89.87 : 119.73
Iron	TM152	**103.33** 93.02 : 113.86
Lead	TM152	**100.83** 91.11 : 116.98
Lithium	TM152	**102.5** 87.70 : 115.90
Magnesium	TM152	**101.33** 89.60 : 116.61
Manganese	TM152	**104.0** 93.97 : 112.46
Molybdenum	TM152	**99.33** 89.07 : 110.96
Nickel	TM152	**102.33** 93.70 : 112.15
Phosphorus	TM152	**100.33** 89.24 : 114.18
Potassium	TM152	**104.67** 93.20 : 115.55
Selenium	TM152	**99.67** 91.69 : 117.12
Silver	TM152	**101.67** 90.93 : 121.73
Sodium	TM152	**102.0** 92.42 : 113.24
Strontium	TM152	**103.67** 92.14 : 116.24
Tellurium	TM152	**100.17** 89.88 : 111.78
Thallium	TM152	**97.17** 82.43 : 113.83

Dissolved Metals by ICP-MS

		QC 2474
Tin	TM152	**102.83** 94.62 : 107.79
Titanium	TM152	**105.33** 90.29 : 115.23
Tungsten	TM152	**103.33** 77.61 : 132.31
Uranium	TM152	**97.0** 86.97 : 115.76
Vanadium	TM152	**103.67** 89.61 : 115.48
Zinc	TM152	**103.0** 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2458
Dissolved Inorganic Carbon	TM090	**108.5** 93.58 : 112.28
Dissolved Organic Carbon	TM090	**100.67** 96.13 : 109.53

EPH by GCxGC-FID

Component	Method Code	QC 2493
EPH >C10-C40 Raw	TM415	**96.93** 56.36 : 129.92

Fluoride

Component	Method Code	QC 2465
Fluoride	TM104	**104.67** 96.67 : 108.67

GRO by GC-FID (S)

Component	Method Code	QC 2491
QC	TM089	**88.38** 70.34 : 111.95

Hexavalent Chromium (s)

Hexavalent Chromium (s)

Component	Method Code	QC 2472	QC 2420	QC 2467
Hexavalent Chromium	TM151	**110.0** 91.40 : 115.40	**112.0** 91.40 : 115.40	**110.0** 91.40 : 115.40

Metals in solid samples by OES

Component	Method Code	QC 2448	QC 2439	QC 2494
Aluminium	TM181	**93.81** 77.46 : 123.98	**109.73** 77.46 : 123.98	**108.85** 77.46 : 123.98
Antimony	TM181		**90.65** 87.04 : 111.16	**92.68** 87.04 : 111.16
Arsenic	TM181	**98.55** 87.34 : 110.87	**102.91** 87.34 : 110.87	**100.29** 87.34 : 110.87
Barium	TM181	**94.5** 80.73 : 115.16	**101.83** 80.73 : 115.16	**101.83** 80.73 : 115.16
Beryllium	TM181	**102.24** 89.47 : 112.97	**100.37** 89.47 : 112.97	**97.76** 89.47 : 112.97
Boron	TM181	**88.54** 76.57 : 104.15	**101.15** 76.57 : 104.15	**89.68** 76.57 : 104.15
Cadmium	TM181	**94.24** 78.94 : 102.43	**93.83** 78.94 : 102.43	**95.47** 78.94 : 102.43
Chromium	TM181	**88.64** 77.55 : 104.47	**88.44** 77.55 : 104.47	**86.61** 77.55 : 104.47
Cobalt	TM181	**88.68** 82.95 : 107.41	**92.77** 82.95 : 107.41	**91.51** 82.95 : 107.41
Copper	TM181	**93.49** 84.36 : 106.14	**96.3** 84.36 : 106.14	**95.07** 84.36 : 106.14
Iron	TM181	**96.03** 81.43 : 115.79	**101.59** 81.43 : 115.79	**103.17** 81.43 : 115.79
Lead	TM181	**92.12** 81.95 : 107.63	**95.05** 81.95 : 107.63	**96.17** 81.95 : 107.63
Manganese	TM181	**104.44** 94.29 : 119.51	**113.61** 94.29 : 119.51	**109.44** 94.29 : 119.51
Mercury	TM181	**93.24** 82.73 : 106.36	**101.45** 82.73 : 106.36	**98.79** 82.73 : 106.36
Molybdenum	TM181	**97.53** 86.61 : 111.07	**100.82** 86.61 : 111.07	**98.77** 86.61 : 111.07
Nickel	TM181	**87.78** 79.72 : 103.80	**89.49** 79.72 : 103.80	**87.53** 79.72 : 103.80
Phosphorus	TM181	**105.86** 92.65 : 125.47	**121.21** 92.65 : 125.47	**119.8** 92.65 : 125.47
Selenium	TM181	**98.04** 88.36 : 111.25	**106.27** 88.36 : 111.25	**101.57** 88.36 : 111.25
Strontium	TM181	**92.2** 77.99 : 108.06	**91.31** 77.99 : 108.06	**90.2** 77.99 : 108.06
Thallium	TM181	**101.77** 88.60 : 116.73	**106.19** 88.60 : 116.73	**103.98** 88.60 : 116.73
Tin	TM181	**99.62** 89.77 : 112.62	**98.48** 89.77 : 112.62	**98.1** 89.77 : 112.62
Titanium	TM181	**77.1** 66.29 : 105.96	**92.37** 66.29 : 105.96	**94.66** 66.29 : 105.96

Metals in solid samples by OES

		QC 2448	QC 2439	QC 2494
Vanadium	TM181	**96.34** 75.51 : 108.87	**101.47** 75.51 : 108.87	**97.8** 75.51 : 108.87
Zinc	TM181	**98.56** 84.02 : 111.24	**103.29** 84.02 : 111.24	**101.44** 84.02 : 111.24

PAH by GCMS

Component	Method Code	QC 2479	QC 2414	QC 2410	QC 2498
Acenaphthene	TM218	**91.5** 78.59 : 112.16	**90.0** 73.47 : 109.80	**89.5** 76.79 : 103.90	**92.0** 78.59 : 112.16
Acenaphthylene	TM218	**90.0** 75.11 : 109.01	**86.0** 70.00 : 130.00	**90.0** 74.19 : 106.17	**91.5** 75.11 : 109.01
Anthracene	TM218	**90.0** 73.99 : 113.85	**87.5** 68.68 : 111.89	**81.0** 70.90 : 109.22	**89.5** 73.99 : 113.85
Benz(a)anthracene	TM218	**96.0** 69.31 : 119.18	**92.0** 68.12 : 118.39	**102.5** 73.77 : 119.26	**103.0** 69.31 : 119.18
Benzo(a)pyrene	TM218	**91.0** 66.97 : 114.92	**89.0** 71.72 : 115.31	**104.5** 73.20 : 114.18	**98.0** 66.97 : 114.92
Benzo(b)fluoranthene	TM218	**95.0** 67.41 : 114.46	**86.0** 66.89 : 120.40	**108.5** 75.36 : 117.58	**91.0** 67.41 : 114.46
Benzo(ghi)perylene	TM218	**91.5** 62.92 : 114.36	**88.5** 67.82 : 118.49	**102.5** 70.73 : 116.12	**96.5** 62.92 : 114.36
Benzo(k)fluoranthene	TM218	**93.5** 69.98 : 116.49	**99.5** 73.10 : 117.03	**102.5** 75.98 : 116.59	**110.0** 69.98 : 116.49
Chrysene	TM218	**97.5** 69.86 : 114.50	**90.0** 69.58 : 115.47	**99.0** 74.82 : 114.18	**101.5** 69.86 : 114.50
Dibenzo(ah)anthracene	TM218	**91.5** 64.54 : 115.22	**90.0** 67.32 : 121.35	**100.5** 69.17 : 115.30	**96.5** 64.54 : 115.22
Fluoranthene	TM218	**85.0** 72.56 : 111.70	**79.0** 75.16 : 117.28	**82.5** 66.06 : 114.63	**90.5** 72.56 : 111.70
Fluorene	TM218	**90.5** 79.13 : 111.49	**90.0** 73.81 : 108.66	**83.5** 76.66 : 107.56	**92.0** 79.13 : 111.49
Indeno(123cd)pyrene	TM218	**92.5** 61.22 : 113.25	**85.5** 68.91 : 117.62	**106.5** 70.26 : 117.95	**90.0** 61.22 : 113.25
Naphthalene	TM218	**89.5** 77.96 : 110.91	**81.0** 72.12 : 106.18	**90.5** 74.70 : 101.83	**91.5** 77.96 : 110.91
Phenanthrene	TM218	**89.0** 76.83 : 113.25	**88.0** 69.01 : 113.72	**82.0** 73.62 : 109.34	**92.0** 76.83 : 113.25
Pyrene	TM218	**84.0** 72.45 : 110.77	**81.5** 64.28 : 115.75	**84.5** 71.46 : 117.00	**92.5** 72.45 : 110.77

PCBs by GCMS

Component	Method Code	QC 2488
PCB congener 101	TM168	**77.2** 65.66 : 110.06
PCB congener 105	TM168	**75.9** 58.10 : 106.34
PCB congener 114	TM168	**74.7** 59.38 : 106.48
PCB congener 118	TM168	**77.4** 60.02 : 106.23
PCB congener 123	TM168	**74.8** 65.01 : 99.81

PCBs by GCMS

		QC 2488
PCB congener 126	TM168	**73.9** 59.31 : 109.23
PCB congener 138	TM168	**77.4** 63.95 : 107.63
PCB congener 153	TM168	**79.1** 62.65 : 108.85
PCB congener 156	TM168	**74.4** 61.69 : 112.27
PCB congener 157	TM168	**72.2** 55.37 : 104.81
PCB congener 167	TM168	**74.3** 65.58 : 109.14
PCB congener 169	TM168	**75.8** 56.84 : 112.10
PCB congener 180	TM168	**78.3** 66.99 : 111.63
PCB congener 189	TM168	**73.8** 57.75 : 112.59
PCB congener 28	TM168	**80.2** 73.68 : 105.96
PCB congener 52	TM168	**77.8** 67.24 : 107.62
PCB congener 77	TM168	**78.9** 64.87 : 108.49
PCB congener 81	TM168	**79.4** 70.78 : 110.80

pH

Component	Method Code	QC 2470	QC 2444
pH	TM133	**99.85** 98.41 : 102.48	**99.41** 98.41 : 102.48

Phenols by HPLC (S)

Component	Method Code	QC 2418	QC 2426	QC 2440
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**53.9** 70.71 : 116.42	**46.75** 70.71 : 116.42	**44.81** 70.71 : 116.42
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**46.2** 64.54 : 117.79	**39.18** 64.54 : 117.79	**38.6** 64.54 : 117.79
Cresols by HPLC (S)	TM062 (S)	**49.9** 74.40 : 108.98	**43.84** 74.40 : 108.98	**42.8** 74.40 : 108.98
Phenol by HPLC (S)	TM062 (S)	**52.32** 69.44 : 122.18	**45.7** 69.44 : 122.18	**44.37** 69.44 : 122.18
Xylenols by HPLC (S)	TM062 (S)	**51.67** 76.56 : 106.38	**44.17** 76.56 : 106.38	**43.65** 76.56 : 106.38

Phenols by HPLC (W)

Phenols by HPLC (W)

Component	Method Code	QC 2478
2.3.5 Trimethyl-Phenol by HPLC (W)	TM259	**91.8** 76.00 : 124.00
2-Isopropyl Phenol by HPLC (W)	TM259	**80.31** 76.00 : 124.00
Cresols by HPLC (W)	TM259	**96.71** 76.00 : 124.00
Napthol by HPLC (W)	TM259	**87.89** 76.00 : 124.00
Phenol by HPLC (W)	TM259	**92.63** 76.00 : 124.00
Xylenols by HPLC (W)	TM259	**94.94** 76.00 : 124.00

Total Dissolved Solids

Component	Method Code	QC 2499
Total Dissolved Solids	TM123	**100.0** 97.30 : 100.92

Total Organic Carbon

Component	Method Code	QC 2466	QC 2478	QC 2490
Total Organic Carbon	TM132	**101.95** 87.02 : 113.45	**96.48** 87.02 : 113.45	**102.34** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2402
1,1,1,2-tetrachloroethane	TM116	**97.2** 86.59 : 118.97
1,1,1-Trichloroethane	TM116	**98.0** 86.26 : 117.53
1,1,2-Trichloroethane	TM116	**90.8** 75.16 : 112.70
1,1-Dichloroethane	TM116	**101.6** 83.27 : 122.16
1,2-Dichloroethane	TM116	**99.6** 89.30 : 133.10
1,4-Dichlorobenzene	TM116	**107.2** 82.59 : 123.23
2-Chlorotoluene	TM116	**96.2** 66.81 : 118.43
4-Chlorotoluene	TM116	**96.8** 65.88 : 114.76
Benzene	TM116	**94.2** 93.16 : 123.63
Carbon Disulphide	TM116	**101.0** 75.11 : 124.81

		QC 2402
Carbontetrachloride	TM116	**97.2** 82.35 : 126.46
Chlorobenzene	TM116	**99.4** 85.07 : 118.13
Chloroform	TM116	**103.0** 88.13 : 122.71
Chloromethane	TM116	**108.8** 61.62 : 145.66
Cis-1,2-Dichloroethene	TM116	**99.2** 78.27 : 128.90
Dibromomethane	TM116	**96.2** 77.47 : 121.29
Dichloromethane	TM116	**107.8** 87.89 : 134.72
Ethylbenzene	TM116	**87.6** 79.92 : 110.05
Hexachlorobutadiene	TM116	**68.6** 16.78 : 153.29
Isopropylbenzene	TM116	**79.2** 64.20 : 119.59
Naphthalene	TM116	**105.0** 79.29 : 125.59
o-Xylene	TM116	**85.0** 72.86 : 102.10
p/m-Xylene	TM116	**81.7** 74.06 : 106.47
Sec-Butylbenzene	TM116	**70.4** 44.71 : 117.87
Tetrachloroethene	TM116	**97.2** 77.82 : 125.00
Toluene	TM116	**89.6** 87.82 : 116.21
Trichloroethene	TM116	**93.6** 79.80 : 112.33
Trichlorofluoromethane	TM116	**95.2** 80.52 : 132.12
Vinyl Chloride	TM116	**103.0** 74.57 : 146.88

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

Work Order	: **PR2138969**	Issue Date	: 07-May-2021
Customer	: **ALS Life Sciences Ltd**	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: [redacted]	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 210429-64	Page	: 1 of 2
Order number	: ----	Date Samples Received	: 03-May-2021
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 03-May-2021 - 07-May-2021
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories		*Position*
Zdeněk Jirák	[redacted]	Environmental Business Unit Manager

The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)

Analytical Results

Sub-Matrix: **SOIL**			Client sample ID	**24179836 TP38**		**----**		**----**	
			Laboratory sample ID	*PR2138969-001*		----		----	
			Client sampling date / time	29-Apr-2021		----		----	
Parameter	*Method*	*LOR*	*Unit*	**Result**	**MU**	**Result**	**MU**	**Result**	**MU**
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	**95.1**	± 6.0%	**----**	----	**----**	----
Pesticides									
2.4.5-T	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4.5-TP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-D	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
4-CPP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bentazone	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dinoseb	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Fluroxypyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPA	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Acifluorfen	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bromoxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
DNOC	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dicamba	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Diclofop	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Ioxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Propoxycarbazone-sodium	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclopyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclosan	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.
Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	*Method Descriptions*
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PESLMSA1	CZ_SOP_D06_03_182.B (CSN EN 15637, US EPA 1694) Determination of acidic herbicides and drug residues by liquid chromatography method with MS/MS detection.

A `*` symbol preceding any method indicates laboratory or subcontractor non-accredited test. In the case when a procedure belonging to an accredited method was used for non-accredited matrix, would apply that the reported results are non-accredited. Please refer to General Comment section on front page for information. If the report contains subcontracted analysis, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.
The calculation methods of summation parameters are available on request in the client service.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	08 May 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210429-65
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	597111

We received 8 samples on Tuesday April 27, 2021 and 1 of these samples were scheduled for analysis which was completed on Saturday May 08, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

So

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210429-65	**Client Reference:**	784-B026948	**Report Number:**	597111
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24175453	TP15	ES1	0.10 - 0.10	23/04/2021
24175467	TP15	ES4	1.00 - 1.00	23/04/2021
24175410	WS29	ES1	0.10 - 0.10	23/04/2021
24175430	WS29	ES4	0.90 - 0.90	23/04/2021
24175443	WS29	ES8	2.10 - 2.10	23/04/2021
24175358	WS31	ES1	0.10 - 0.10	23/04/2021
24175380	WS31	ES3	0.90 - 0.90	23/04/2021
24175400	WS31	ES7	1.90 - 1.90	23/04/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210429-65	**Client Reference:**	784-B026948	**Report Number:**	597111
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24175410			
Customer Sample Reference			WS29			
AGS Reference			ES1			
Depth (m)			0.10 - 0.10			
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 1		X		
Ammonium Soil by Titration	All	NDPs: 0 Tests: 1		X		
Anions by Kone (soil)	All	NDPs: 0 Tests: 1		X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1	X			
Boron Water Soluble	All	NDPs: 0 Tests: 1		X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 1		X		
EPH	All	NDPs: 0 Tests: 1		X		
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1		X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 1		X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1			X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1		X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 1		X		
PAH by GCMS	All	NDPs: 0 Tests: 1		X		
pH	All	NDPs: 0 Tests: 1		X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1		X		

CERTIFICATE OF ANALYSIS

SDG:	210429-65	**Client Reference:**	784-B026948	**Report Number:**	597111
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24175410		
Customer Sample Reference			WS29		
AGS Reference			ES1		
Depth (m)			0.10 - 0.10		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S
Sample description	All	NDPs: 0 Tests: 1		X	
Total Organic Carbon	All	NDPs: 0 Tests: 1		X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 1		X	
VOC MS (S)	All	NDPs: 0 Tests: 1			X

CERTIFICATE OF ANALYSIS

SDG:	210429-65	**Client Reference:**	784-B026948	**Report Number:**	597111
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24175410	WS29	0.10 - 0.10	Dark Brown	Sandy Loam	Vegetation	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210429-65	**Client Reference:**	784-B026948	**Report Number:**	597111
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			WS29	0.10 - 0.10	Soil/Solid (S)	23/04/2021	.	27/04/2021	210429-65	24175410	ES1
Moisture Content Ratio (% of as received sample)	%	PM024	23								
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12 M								
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M								
Cresols	<0.01 mg/kg	TM062 (S)	0.0129 M								
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M								
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M								
Soil Organic Matter (SOM)	<0.35 %	TM132	5.38 #								
pH	1 pH Units	TM133	6.53 M								
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #								
Cyanide, Total	<1 mg/kg	TM153	<1 M								
Arsenic	<0.6 mg/kg	TM181	15.9 M								
Cadmium	<0.02 mg/kg	TM181	2.09 M								
Chromium	<0.9 mg/kg	TM181	29.1 M								
Copper	<1.4 mg/kg	TM181	27.6 M								
Iron	<1000 mg/kg	TM181	35700 #								
Lead	<0.7 mg/kg	TM181	140 M								
Mercury	<0.1 mg/kg	TM181	<0.1 M								
Nickel	<0.2 mg/kg	TM181	34.7 M								
Selenium	<1 mg/kg	TM181	1.16 #								
Vanadium	<0.2 mg/kg	TM181	48.4 #								
Zinc	<1.9 mg/kg	TM181	282 M								
Boron, water soluble	<1 mg/kg	TM222	1.33 M								
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0054 M								
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248	1.76								
EPH (C5-C40)	<35 mg/kg	TM415	<35								
EPH Surrogate % recovery**	%	TM415	105								
EPH >C10-C40	<35 mg/kg	TM415	<35 M								

Validated

CERTIFICATE OF ANALYSIS

SDG:	210429-65	**Client Reference:**	784-B026948	**Report Number:**	597111
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	WS29
Depth (m)	0.10 - 0.10
Sample Type	Soil/Solid (S)
Date Sampled	23/04/2021
Sample Time	.
Date Received	27/04/2021
SDG Ref	210429-65
Lab Sample No.(s)	24175410
AGS Reference	ES1

Component	LOD/Units	Method	
Naphthalene-d8 % recovery**	%	TM218	80.3
Acenaphthene-d10 % recovery**	%	TM218	84
Phenanthrene-d10 % recovery**	%	TM218	90.5
Chrysene-d12 % recovery**	%	TM218	95
Perylene-d12 % recovery**	%	TM218	91.5
Naphthalene	<0.009 mg/kg	TM218	<0.009 M
Acenaphthylene	<0.012 mg/kg	TM218	<0.012 M
Acenaphthene	<0.008 mg/kg	TM218	<0.008 M
Fluorene	<0.01 mg/kg	TM218	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218	0.0468 M
Anthracene	<0.016 mg/kg	TM218	<0.016 M
Fluoranthene	<0.017 mg/kg	TM218	0.129 M
Pyrene	<0.015 mg/kg	TM218	0.113 M
Benz(a)anthracene	<0.014 mg/kg	TM218	0.0687 M
Chrysene	<0.01 mg/kg	TM218	0.0678 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	0.109 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	0.0359 M
Benzo(a)pyrene	<0.015 mg/kg	TM218	0.0647 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	0.0483 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	<0.023 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	0.0466 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	0.729

Validated

CERTIFICATE OF ANALYSIS

SDG:	210429-65	**Client Reference:**	784-B026948	**Report Number:**	597111
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	WS29
Depth (m)	0.10 - 0.10
Sample Type	Soil/Solid (S)
Date Sampled	23/04/2021
Sample Time	.
Date Received	27/04/2021
SDG Ref	210429-65
Lab Sample No.(s)	24175410
AGS Reference	ES1

Component	LOD/Units	Method	
GRO Surrogate % recovery**	%	TM089	95.2
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01
Aliphatics >C10-C12	<1 mg/kg	TM414	<1
Aliphatics >C12-C16	<1 mg/kg	TM414	<1
Aliphatics >C16-C21	<1 mg/kg	TM414	<1
Aliphatics >C21-C35	<1 mg/kg	TM414	6.94
Aliphatics >C35-C44	<1 mg/kg	TM414	<1
Total Aliphatics >C10-C44	<5 mg/kg	TM414	8.27
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414	15.9
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	<0.01
Aromatics > EC10-EC12	<1 mg/kg	TM414	<1
Aromatics > EC12-EC16	<1 mg/kg	TM414	<1
Aromatics > EC16-EC21	<1 mg/kg	TM414	<1
Aromatics > EC21-EC35	<1 mg/kg	TM414	6.08
Aromatics >EC35-EC44	<1 mg/kg	TM414	<1
Aromatics > EC40-EC44	<1 mg/kg	TM414	<1
Total Aromatics > EC10-EC44	<5 mg/kg	TM414	7.6
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414	15.9
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089	<0.05
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089	<0.05
GRO >C5-C10	<0.02 mg/kg	TM089	<0.02

CERTIFICATE OF ANALYSIS

SDG:	210429-65	**Client Reference:**	784-B026948	**Report Number:**	597111
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	WS29
Depth (m)	0.10 - 0.10
Sample Type	Soil/Solid (S)
Date Sampled	23/04/2021
Sample Time	.
Date Received	27/04/2021
SDG Ref	210429-65
Lab Sample No.(s)	24175410
AGS Reference	ES1

Component	LOD/Units	Method	
Dibromofluoromethane**	%	TM116	115
Toluene-d8**	%	TM116	100
4-Bromofluorobenzene**	%	TM116	94.1
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.2 M
Benzene	<0.009 mg/kg	TM116	<0.18 M
Toluene	<0.007 mg/kg	TM116	<0.14 M
Ethylbenzene	<0.004 mg/kg	TM116	<0.08 M
p/m-Xylene	<0.01 mg/kg	TM116	<0.2 #
o-Xylene	<0.01 mg/kg	TM116	<0.2 M
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4
Sum of BTEX	<0.04 mg/kg	TM116	<0.8

CERTIFICATE OF ANALYSIS

SDG:	210429-65	**Client Reference:**	784-B026948	**Report Number:**	597111
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref.	WS29ES1	05/05/2021	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	0.10 - 0.10										
Sample Type	SOLID										
Date Sampled	23/04/2021 00:00:00										
Date Receieved	27/04/2021 05:00:00										
SDG	210429-65										
Original Sample	24175410										
Method Number	TM048										

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210429-65	**Client Reference:**	784-B026948	**Report Number:**	597111
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24175410
Customer Sample Ref.	WS29
AGS Ref.	ES1
Depth	0.10 - 0.10
Type	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	05-May-2021
Ammonium Soil by Titration	04-May-2021
Anions by Kone (soil)	07-May-2021
Asbestos ID in Solid Samples	05-May-2021
Boron Water Soluble	07-May-2021
Cyanide Comp/Free/Total/Thiocyanate	07-May-2021
EPH	06-May-2021
EPH by GCxGC-FID	06-May-2021
EPH CWG GC (S)	07-May-2021
GRO by GC-FID (S)	06-May-2021
Hexavalent Chromium (s)	07-May-2021
Metals in solid samples by OES	08-May-2021
PAH by GCMS	06-May-2021
pH	06-May-2021
Phenols by HPLC (S)	05-May-2021
Sample description	29-Apr-2021
Total Organic Carbon	07-May-2021
TPH CWG GC (S)	07-May-2021
VOC MS (S)	06-May-2021

ASSOCIATED AQC DATA

Boron Water Soluble

Component	Method Code	QC 2491
Water Soluble Boron	TM222	**93.0** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2443
Free Cyanide	TM153	**96.44** 86.90 : 108.50
Thiocyanate	TM153	**98.72** 94.53 : 113.33
Total Cyanide	TM153	**98.6** 86.13 : 102.13

EPH by GCxGC-FID

Component	Method Code	QC 2493
EPH >C10-C40 Raw	TM415	**96.93** 56.36 : 129.92

EPH CWG GC (S)

Component	Method Code	QC 2466
EPH >C8-C40 Raw	TM414	**105.23** 71.20 : 116.13
Total Aliphatics Raw	TM414	**111.53** 70.55 : 116.56
Total Aromatics Raw	TM414	**119.38** 58.66 : 132.26

GRO by GC-FID (S)

Component	Method Code	QC 2498
QC	TM089	**85.96** 70.75 : 114.19

Hexavalent Chromium (s)

Component	Method Code	QC 2472
Hexavalent Chromium	TM151	**110.0** 91.40 : 115.40

Metals in solid samples by OES

Component	Method Code	QC 2448
Aluminium	TM181	**93.81** 77.46 : 123.98
Arsenic	TM181	**98.55** 87.34 : 110.87
Barium	TM181	**94.5** 80.73 : 115.16
Beryllium	TM181	**102.24** 89.47 : 112.97
Boron	TM181	**88.54** 76.57 : 104.15
Cadmium	TM181	**94.24** 78.94 : 102.43
Chromium	TM181	**88.64** 77.55 : 104.47
Cobalt	TM181	**88.68** 82.95 : 107.41
Copper	TM181	**93.49** 84.36 : 106.14
Iron	TM181	**96.03** 81.43 : 115.79
Lead	TM181	**92.12** 81.95 : 107.63
Manganese	TM181	**104.44** 94.29 : 119.51
Mercury	TM181	**93.24** 82.73 : 106.36
Molybdenum	TM181	**97.53** 86.61 : 111.07
Nickel	TM181	**87.78** 79.72 : 103.80
Phosphorus	TM181	**105.86** 92.65 : 125.47
Selenium	TM181	**98.04** 88.36 : 111.25
Strontium	TM181	**92.2** 77.99 : 108.06
Thallium	TM181	**101.77** 88.60 : 116.73
Tin	TM181	**99.62** 89.77 : 112.62
Titanium	TM181	**77.1** 66.29 : 105.96
Vanadium	TM181	**96.34** 75.51 : 108.87
Zinc	TM181	**98.56** 84.02 : 111.24

PAH by GCMS

PAH by GCMS

Component	Method Code	QC 2498
Acenaphthene	TM218	**92.0** 78.59 : 112.16
Acenaphthylene	TM218	**91.5** 75.11 : 109.01
Anthracene	TM218	**89.5** 73.99 : 113.85
Benz(a)anthracene	TM218	**103.0** 69.31 : 119.18
Benzo(a)pyrene	TM218	**98.0** 66.97 : 114.92
Benzo(b)fluoranthene	TM218	**91.0** 67.41 : 114.46
Benzo(ghi)perylene	TM218	**96.5** 62.92 : 114.36
Benzo(k)fluoranthene	TM218	**110.0** 69.98 : 116.49
Chrysene	TM218	**101.5** 69.86 : 114.50
Dibenzo(ah)anthracene	TM218	**96.5** 64.54 : 115.22
Fluoranthene	TM218	**90.5** 72.56 : 111.70
Fluorene	TM218	**92.0** 79.13 : 111.49
Indeno(123cd)pyrene	TM218	**90.0** 61.22 : 113.25
Naphthalene	TM218	**91.5** 77.96 : 110.91
Phenanthrene	TM218	**92.0** 76.83 : 113.25
Pyrene	TM218	**92.5** 72.45 : 110.77

pH

Component	Method Code	QC 2444
pH	TM133	**99.12** 98.41 : 102.48

Phenols by HPLC (S)

Component	Method Code	QC 2426
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**46.75** 70.71 : 116.42
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**39.18** 64.54 : 117.79
Cresols by HPLC (S)	TM062 (S)	**43.84** 74.40 : 108.98
Phenol by HPLC (S)	TM062 (S)	**45.7** 69.44 : 122.18
Xylenols by HPLC (S)	TM062 (S)	**44.17** 76.56 : 106.38

Phenols by HPLC (S)

Total Organic Carbon

Component	Method Code	QC 2400
Total Organic Carbon	TM132	**106.64** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2440
1,1,1,2-tetrachloroethane	TM116	**93.2** 84.84 : 116.25
1,1,1-Trichloroethane	TM116	**97.6** 73.73 : 118.05
1,1,2-Trichloroethane	TM116	**84.6** 77.12 : 116.04
1,1-Dichloroethane	TM116	**89.2** 74.46 : 129.15
1,2-Dichloroethane	TM116	**106.8** 92.38 : 131.65
1,4-Dichlorobenzene	TM116	**101.8** 83.64 : 126.18
2-Chlorotoluene	TM116	**89.6** 76.03 : 113.25
4-Chlorotoluene	TM116	**88.8** 66.90 : 112.46
Benzene	TM116	**97.4** 88.60 : 113.80
Carbon Disulphide	TM116	**93.8** 74.91 : 122.14
Carbontetrachloride	TM116	**99.4** 80.31 : 124.50
Chlorobenzene	TM116	**94.6** 83.81 : 114.18
Chloroform	TM116	**99.2** 87.40 : 122.49
Chloromethane	TM116	**106.8** 65.89 : 136.93
Cis-1,2-Dichloroethene	TM116	**91.8** 80.67 : 126.72
Dibromomethane	TM116	**94.2** 73.23 : 118.35
Dichloromethane	TM116	**99.2** 81.11 : 133.25
Ethylbenzene	TM116	**88.0** 75.92 : 110.41
Hexachlorobutadiene	TM116	**49.2** 12.82 : 152.73
Isopropylbenzene	TM116	**72.4** 55.79 : 97.59
Naphthalene	TM116	**99.0** 80.86 : 128.81

VOC MS (S)

		QC 2440
o-Xylene	TM116	**86.8** 69.99 : 108.74
p/m-Xylene	TM116	**82.4** 68.32 : 108.91
Sec-Butylbenzene	TM116	**66.6** 38.50 : 101.50
Tetrachloroethene	TM116	**95.8** 76.95 : 121.02
Toluene	TM116	**80.2** 74.24 : 107.42
Trichloroethene	TM116	**93.4** 85.28 : 109.36
Trichlorofluoromethane	TM116	**97.6** 83.80 : 126.37
Vinyl Chloride	TM116	**104.8** 68.02 : 143.37

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
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Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	09 May 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210430-43
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	597134

This report has been revised and directly supersedes 596961 in its entirety.

We received 10 samples on Thursday April 29, 2021 and 5 of these samples were scheduled for analysis which was completed on Sunday May 09, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.

Approved By:

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210430-43	**Client Reference:**	784-B026948	**Report Number:**	597134
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596961

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24184167	BH03	ES1	0.10 - 0.10	26/04/2021
24184174	BH03	ES4	0.50 - 0.50	26/04/2021
24184181	BH16	ES1	0.10 - 0.10	26/04/2021
24184137	BH16	ES4	0.70 - 0.70	26/04/2021
24184130	WS23	ES1	0.10 - 0.10	27/04/2021
24184144	WS23	ES4	0.90 - 0.90	27/04/2021
24184151	WS23	ES6	1.50 - 1.50	27/04/2021
24184155	WS25	ES1	0.10 - 0.10	27/04/2021
24184159	WS25	ES4	0.60 - 0.60	27/04/2021
24184163	WS25	ES9	2.00 - 2.00	27/04/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210430-43	**Client Reference:**	784-B026948	**Report Number:**	597134
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596961

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24184174		24184181			24184137			24184130		24184144	
Customer Sample Reference			BH03		BH16			BH16			WS23		WS23	
AGS Reference			ES4		ES1			ES4			ES1		ES4	
Depth (m)			0.50 - 0.50		0.10 - 0.10			0.70 - 0.70			0.10 - 0.10		0.90 - 0.90	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S
Acid herbicides*	All	NDPs: 0 Tests: 2					X					X			
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 3		X						X				X	
Ammonium Soil by Titration	All	NDPs: 0 Tests: 3		X						X				X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 3		X						X				X	
Anions by Kone (w)	All	NDPs: 0 Tests: 1				X									
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 3	X						X				X		
Boron Water Soluble	All	NDPs: 0 Tests: 3		X						X				X	
CEN Readings	All	NDPs: 0 Tests: 1				X									
Coronene	All	NDPs: 0 Tests: 1					X								
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 3		X						X				X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1				X									
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1				X									
EPH	All	NDPs: 0 Tests: 3		X						X				X	
EPH by GCxGC-FID	All	NDPs: 0 Tests: 4		X			X			X				X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 3		X						X				X	

Validated

CERTIFICATE OF ANALYSIS

SDG:	210430-43	**Client Reference:**	784-B026948	**Report Number:**	597134
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596961

Results Legend

- X Test
- N No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

Lab Sample No(s)			24184174			24184181			24184137			24184130	24184144		
Customer Sample Reference			BH03			BH16			BH16			WS23	WS23		
AGS Reference			ES4			ES1			ES4			ES1	ES4		
Depth (m)			0.50 - 0.50			0.10 - 0.10			0.70 - 0.70			0.10 - 0.10	0.90 - 0.90		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S
Fluoride	All	NDPs: 0 Tests: 1				X									
GRO by GC-FID (S)	All	NDPs: 0 Tests: 3			X						X				X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 3		X						X				X	
Mercury Dissolved	All	NDPs: 0 Tests: 1				X									
Metals in solid samples by OES	All	NDPs: 0 Tests: 3		X						X				X	
OC OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 2					X					X			
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1					X								
PAH by GCMS	All	NDPs: 0 Tests: 4		X			X			X				X	
PCBs by GCMS	All	NDPs: 0 Tests: 1					X								
pH	All	NDPs: 0 Tests: 3		X						X				X	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 3		X						X				X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1				X									
Sample description	All	NDPs: 0 Tests: 5		X			X			X		X		X	
Total Dissolved Solids	All	NDPs: 0 Tests: 1				X									
Total Organic Carbon	All	NDPs: 0 Tests: 4		X			X			X				X	

CERTIFICATE OF ANALYSIS

SDG:	210430-43	**Client Reference:**	784-B026948	**Report Number:**	597134
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596961

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24184174		24184181			24184137			24184130		24184144	
Customer Sample Reference			BH03		BH16			BH16			WS23		WS23	
AGS Reference			ES4		ES1			ES4			ES1		ES4	
Depth (m)			0.50 - 0.50		0.10 - 0.10			0.70 - 0.70			0.10 - 0.10		0.90 - 0.90	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S
TPH CWG GC (S)	All	NDPs: 0 Tests: 3		X						X				X	
VOC MS (S)	All	NDPs: 0 Tests: 4			X			X			X				X

CERTIFICATE OF ANALYSIS

SDG:	210430-43	**Client Reference:**	784-B026948	**Report Number:**	597134
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596961

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24184174	BH03	0.50 - 0.50	Dark Brown	Sandy Loam	Stones	Vegetation
24184137	BH16	0.70 - 0.70	Light Brown	Silty Sand	Stones	None
24184181	BH16	0.10 - 0.10	Dark Brown	Loamy Sand	Stones	Vegetation
24184130	WS23	0.10 - 0.10	Dark Brown	Loamy Sand	None	Stones
24184144	WS23	0.90 - 0.90	Dark Brown	Loamy Sand	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210430-43	**Client Reference:**	784-B026948	**Report Number:**	597134
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596961

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH03	BH16	BH16	WS23	WS23
			Depth (m)	0.50 - 0.50	0.10 - 0.10	0.70 - 0.70	0.10 - 0.10	0.90 - 0.90
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	26/04/2021	26/04/2021	26/04/2021	27/04/2021	27/04/2021
			Sample Time	.	.	.	.	.
			Date Received	29/04/2021	29/04/2021	29/04/2021	29/04/2021	29/04/2021
			SDG Ref	210430-43	210430-43	210430-43	210430-43	210430-43
			Lab Sample No.(s)	24184174	24184181	24184137	24184130	24184144
			AGS Reference	ES4	ES1	ES4	ES1	ES4
Moisture Content Ratio (% of as received sample)	%	PM024		15	13	4.8	19	19
2,4,5-T*	<0.01 mg/kg	SUB			<0.01		<0.01	
2,4,5-TP (Fenoprop)*	<0.01 mg/kg	SUB			<0.01		<0.01	
2,4-D*	<0.01 mg/kg	SUB			<0.01		<0.01	
2,4-DB*	<0.01 mg/kg	SUB			<0.01		<0.01	
2,4-Dichloroprop (2,4 DP)*	<0.01 mg/kg	SUB			<0.01		<0.01	
4-Chlorophenoxyacetic acid (4-CPA)*	<0.01 mg/kg	SUB			<0.01		<0.01	
Acifluorfen*	<0.01 mg/kg	SUB			<0.01		<0.01	
Bentazone*	<0.01 mg/kg	SUB			<0.01		<0.01	
Bromoxynil*	<0.01 mg/kg	SUB			<0.01		<0.01	
Dicamba*	<0.01 mg/kg	SUB			<0.01		<0.01	
Diclofop*	<0.01 mg/kg	SUB			<0.01		<0.01	
Dinoseb*	<0.01 mg/kg	SUB			<0.01		<0.01	
DNOC*	<0.01 mg/kg	SUB			<0.01		<0.01	
Fluroxypyr*	<0.01 mg/kg	SUB			<0.01		<0.01	
Ioxynil*	<0.01 mg/kg	SUB			<0.01		<0.01	
2-methyl-4-Chlorophenoxyacetic acid (MCPA)*	<0.01 mg/kg	SUB			<0.01		<0.01	
4-(4-Chloro-o-tolyloxy) butyric acid (MCPB)*	<0.01 mg/kg	SUB			<0.01		<0.01	
Mecoprop (MCPP)*	<0.01 mg/kg	SUB			<0.01		<0.01	
Propoxycarbazone-sodium*	<0.01 mg/kg	SUB			<0.01		<0.01	
Triclopyr*	<0.01 mg/kg	SUB			<0.01		<0.01	
Triclosan*	<0.01 mg/kg	SUB			<0.01		<0.01	
Exchangeable Ammonia as N	<12 mg/kg	TM024		<12 M		<12 M		<12 M
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 M		<0.01 M		<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)		0.0118 M		<0.01 M		<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)		<0.015 M		<0.015 M		<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 M		<0.035 M		<0.035 M
Organic Carbon, Total	<0.2 %	TM132			1.99 M			
Soil Organic Matter (SOM)	<0.35 %	TM132		2.76 #		<0.35 #		1.38 #
pH	1 pH Units	TM133		7.87 M		7.62 M		7.66 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #		<0.6 #		<0.6 #
Cyanide, Total	<1 mg/kg	TM153		<1 M		<1 M		<1 M
PCB congener 28	<0.003 mg/kg	TM168			<0.003 M			

CERTIFICATE OF ANALYSIS

SDG:	210430-43	**Client Reference:**	784-B026948	**Report Number:**	597134
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596961

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH03	BH16	BH16	WS23	WS23
			Depth (m)	0.50 - 0.50	0.10 - 0.10	0.70 - 0.70	0.10 - 0.10	0.90 - 0.90
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	26/04/2021	26/04/2021	26/04/2021	27/04/2021	27/04/2021
			Sample Time	.	.	.	.	.
			Date Received	29/04/2021	29/04/2021	29/04/2021	29/04/2021	29/04/2021
			SDG Ref	210430-43	210430-43	210430-43	210430-43	210430-43
			Lab Sample No.(s)	24184174	24184181	24184137	24184130	24184144
			AGS Reference	ES4	ES1	ES4	ES1	ES4
PCB congener 52	<0.003 mg/kg	TM168			<0.003 M			
PCB congener 101	<0.003 mg/kg	TM168			<0.003 M			
PCB congener 118	<0.003 mg/kg	TM168			<0.003 M			
PCB congener 138	<0.003 mg/kg	TM168			<0.003 M			
PCB congener 153	<0.003 mg/kg	TM168			<0.003 M			
PCB congener 180	<0.003 mg/kg	TM168			<0.003 M			
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168			<0.021			
Arsenic	<0.6 mg/kg	TM181		13.2 M		5.12 M		18.8 M
Cadmium	<0.02 mg/kg	TM181		1.63 M		0.553 M		3.83 M
Chromium	<0.9 mg/kg	TM181		27.5 M		5.83 M		34.1 M
Copper	<1.4 mg/kg	TM181		29.4 M		10.8 M		27.8 M
Iron	<1000 mg/kg	TM181		25800 #		13400 #		43000 #
Lead	<0.7 mg/kg	TM181		139 M		7.65 M		97.2 M
Mercury	<0.1 mg/kg	TM181		<0.1 M		<0.1 M		<0.1 M
Nickel	<0.2 mg/kg	TM181		27.6 M		14.3 M		46.9 M
Selenium	<1 mg/kg	TM181		<1 #		<1 #		<1 #
Vanadium	<0.2 mg/kg	TM181		36.9 #		9.57 #		50.1 #
Zinc	<1.9 mg/kg	TM181		197 M		29.7 M		389 M
Boron, water soluble	<1 mg/kg	TM222		<1 M		<1 M		<1 M
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.0147 M		0.0065 M		0.0246 M
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248		1.63		3.35		1.24
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410			14.2			
Coronene	<0.2 mg/kg	TM410			0.234			
EPH (C5-C40)	<35 mg/kg	TM415		<35		<35		<35
EPH Surrogate % recovery**	%	TM415		104	115	100		103
EPH >C10-C40	<35 mg/kg	TM415		<35 M		<35 M		<35 M
Mineral Oil >C10-C40	<5 mg/kg	TM415			8.37			

CERTIFICATE OF ANALYSIS

SDG:	210430-43	**Client Reference:**	784-B026948	**Report Number:**	597134
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596961

OC OP Pesticides and Triazine Herb

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH16	WS23				
			Depth (m)	0.10 - 0.10	0.10 - 0.10				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	26/04/2021	27/04/2021				
			Sample Time	.	.				
			Date Received	29/04/2021	29/04/2021				
			SDG Ref	210430-43	210430-43				
			Lab Sample No.(s)	24184181	24184130				
			AGS Reference	ES1	ES1				
Dichlorvos	<0.05 mg/kg	TM073		<0.5	<0.05				
Mevinphos	<0.05 mg/kg	TM073		<0.5	<0.05				
Phorate	<0.05 mg/kg	TM073		<0.5	<0.05				
alpha-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073		<0.5	<0.05				
Diazinon	<0.05 mg/kg	TM073		<0.5	<0.05				
gamma-Hexachlorocyclohexane (HCH / Lindane)	<0.05 mg/kg	TM073		<0.5	<0.05				
Disulfoton	<0.05 mg/kg	TM073		<0.5	<0.05				
Heptachlor	<0.05 mg/kg	TM073		<0.5	<0.05				
Aldrin	<0.05 mg/kg	TM073		<0.5	<0.05				
beta-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073		<0.5	<0.05				
Methyl parathion	<0.05 mg/kg	TM073		<0.5	<0.05				
Malathion	<0.05 mg/kg	TM073		<0.5	<0.05				
Fenitrothion	<0.05 mg/kg	TM073		<0.5	<0.05				
Heptachlor epoxide	<0.05 mg/kg	TM073		<0.5	<0.05				
Parathion	<0.05 mg/kg	TM073		<0.5	<0.05				
Endosulphan I	<0.05 mg/kg	TM073		<0.5	<0.05				
p,p-DDE	<0.05 mg/kg	TM073		<0.5	<0.05				
Dieldrin	<0.05 mg/kg	TM073		<0.5	<0.05				
Endrin	<0.05 mg/kg	TM073		<0.5	<0.05				
p,p-TDE (DDD)	<0.05 mg/kg	TM073		<0.5	<0.05				
Ethion	<0.05 mg/kg	TM073		<0.5	<0.05				
Endosulphan II	<0.05 mg/kg	TM073		<0.5	<0.05				
p,p-DDT	<0.05 mg/kg	TM073		<0.5	<0.05				
p,p-Methoxychlor	<0.05 mg/kg	TM073		<0.5	<0.05				
Endosulphan sulphate	<0.05 mg/kg	TM073		<0.5	<0.05				
Azinphos-methyl	<0.05 mg/kg	TM073		<0.5	<0.05				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210430-43	**Client Reference:**	784-B026948	**Report Number:**	597134
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596961

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH03	BH16	WS23			
			Depth (m)	0.50 - 0.50	0.70 - 0.70	0.90 - 0.90			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	26/04/2021	26/04/2021	27/04/2021			
			Sample Time	.	.	.			
			Date Received	29/04/2021	29/04/2021	29/04/2021			
			SDG Ref	210430-43	210430-43	210430-43			
			Lab Sample No.(s)	24184174	24184137	24184144			
			AGS Reference	ES4	ES4	ES4			
Naphthalene-d8 % recovery**	%	TM218		74.7	86.9	87.6			
Acenaphthene-d10 % recovery**	%	TM218		72.1	78.7	76.8			
Phenanthrene-d10 % recovery**	%	TM218		70.1	73.1	74.1			
Chrysene-d12 % recovery**	%	TM218		77.5	81.3	78.6			
Perylene-d12 % recovery**	%	TM218		77.1	87.8	78.5			
Naphthalene	<0.009 mg/kg	TM218		<0.045 M	<0.009 M	<0.009 M			
Acenaphthylene	<0.012 mg/kg	TM218		<0.06 M	<0.012 M	<0.012 M			
Acenaphthene	<0.008 mg/kg	TM218		<0.04 M	<0.008 M	<0.008 M			
Fluorene	<0.01 mg/kg	TM218		<0.05 M	<0.01 M	<0.01 M			
Phenanthrene	<0.015 mg/kg	TM218		0.184 M	<0.015 M	<0.015 M			
Anthracene	<0.016 mg/kg	TM218		<0.08 M	<0.016 M	<0.016 M			
Fluoranthene	<0.017 mg/kg	TM218		0.488 M	<0.017 M	<0.017 M			
Pyrene	<0.015 mg/kg	TM218		0.442 M	<0.015 M	<0.015 M			
Benz(a)anthracene	<0.014 mg/kg	TM218		0.319 M	<0.014 M	<0.014 M			
Chrysene	<0.01 mg/kg	TM218		0.308 M	<0.01 M	<0.01 M			
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		0.566 M	<0.015 M	<0.015 M			
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.198 M	<0.014 M	<0.014 M			
Benzo(a)pyrene	<0.015 mg/kg	TM218		0.392 M	<0.015 M	<0.015 M			
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.4 M	<0.018 M	<0.018 M			
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.115 M	<0.023 M	<0.023 M			
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.347 M	<0.024 M	<0.024 M			
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		3.64	<0.118	<0.118			

Validated

CERTIFICATE OF ANALYSIS

SDG:	210430-43	**Client Reference:**	784-B026948	**Report Number:**	597134
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596961

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
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aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	BH03	BH16	WS23			
Customer Sample Ref.			BH03	BH16	WS23			
Depth (m)			0.50 - 0.50	0.70 - 0.70	0.90 - 0.90			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			26/04/2021	26/04/2021	27/04/2021			
Sample Time			.	.	.			
Date Received			29/04/2021	29/04/2021	29/04/2021			
SDG Ref			210430-43	210430-43	210430-43			
Lab Sample No.(s)			24184174	24184137	24184144			
AGS Reference			ES4	ES4	ES4			
GRO Surrogate % recovery**	%	TM089	90	99	108			
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01			
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01			
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01			
Aliphatics >C10-C12	<1 mg/kg	TM414	<1	<1	<1			
Aliphatics >C12-C16	<1 mg/kg	TM414	<1	<1	<1			
Aliphatics >C16-C21	<1 mg/kg	TM414	<1	<1	<1			
Aliphatics >C21-C35	<1 mg/kg	TM414	5.33	<1	1.59			
Aliphatics >C35-C44	<1 mg/kg	TM414	<1	<1	<1			
Total Aliphatics >C10-C44	<5 mg/kg	TM414	5.69	<5	<5			
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414	12.2	<10	<10			
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01			
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01			
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01			
Aromatics > EC10-EC12	<1 mg/kg	TM414	<1	<1	<1			
Aromatics > EC12-EC16	<1 mg/kg	TM414	<1	<1	<1			
Aromatics > EC16-EC21	<1 mg/kg	TM414	1.1	<1	<1			
Aromatics > EC21-EC35	<1 mg/kg	TM414	4.39	<1	<1			
Aromatics >EC35-EC44	<1 mg/kg	TM414	<1	<1	1.86			
Aromatics > EC40-EC44	<1 mg/kg	TM414	<1	<1	<1			
Total Aromatics > EC10-EC44	<5 mg/kg	TM414	6.53	<5	<5			
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414	12.2	<10	<10			
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089	<0.05	<0.05	<0.05			
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089	<0.05	<0.05	<0.05			
GRO >C5-C10	<0.02 mg/kg	TM089	<0.02	<0.02	<0.02			

Validated

CERTIFICATE OF ANALYSIS

SDG:	210430-43	**Client Reference:**	784-B026948	**Report Number:**	597134
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596961

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
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*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH03	BH16	BH16	WS23		
			Depth (m)	0.50 - 0.50	0.10 - 0.10	0.70 - 0.70	0.90 - 0.90		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	26/04/2021	26/04/2021	26/04/2021	27/04/2021		
			Sample Time	.	.	.	.		
			Date Received	29/04/2021	29/04/2021	29/04/2021	29/04/2021		
			SDG Ref	210430-43	210430-43	210430-43	210430-43		
			Lab Sample No.(s)	24184174	24184181	24184137	24184144		
			AGS Reference	ES4	ES1	ES4	ES4		
Dibromofluoromethane**	%	TM116		113	114	113	112		
Toluene-d8**	%	TM116		100	99.5	101	101		
4-Bromofluorobenzene**	%	TM116		101	95.2	107	100		
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M	<0.2 M		
Benzene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M	<0.18 M	<0.18 M		
Toluene	<0.007 mg/kg	TM116		<0.14 M	<0.14 M	<0.14 M	<0.14 M		
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 M	<0.08 M	<0.08 M	<0.08 M		
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #	<0.2 #	<0.2 #		
o-Xylene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M	<0.2 M		
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4		<0.4	<0.4		
Sum of BTEX	<0.04 mg/kg	TM116		<0.8		<0.8	<0.8		

CERTIFICATE OF ANALYSIS

SDG:	210430-43	**Client Reference:**	784-B026948	**Report Number:**	597134
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596961

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&+$@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH03ES4 0.50 - 0.50 SOLID 26/04/2021 00:00:00 29/04/2021 05:00:00 210430-43 24184174 TM048	05.05.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH16ES4 0.70 - 0.70 SOLID 26/04/2021 00:00:00 29/04/2021 05:00:00 210430-43 24184137 TM048	05/05/2021	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	WS23ES4 0.90 - 0.90 SOLID 27/04/2021 00:00:00 29/04/2021 05:00:00 210430-43 24184144 TM048	05.05.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG:	210430-43	**Client Reference:**	784-B026948	**Report Number:**	597134
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596961

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.103	**Natural Moisture Content (%)**	15.4
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	86.6
Particle Size <4mm	>95%		

Case	
SDG	210430-43
Lab Sample Number(s)	24184181
Sampled Date	26-Apr-2021
Customer Sample Ref.	BH16 ES1
Depth (m)	0.10 - 0.10

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	1.99	3	5	6
Loss on Ignition (%)	-	-	-	-
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	8.37	500	-	-
PAH Sum of 17 (mg/kg)	14.2	100	-	-
pH (pH Units)	-	-	-	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00231	<0.0005	0.0231	<0.005	0.5	2	25
Barium	0.00787	<0.0002	0.0787	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00658	<0.0003	0.0658	<0.003	2	50	100
Mercury Dissolved (CVAF)	0.0000151	<0.00001	0.000151	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00102	<0.0004	0.0102	<0.004	0.4	10	40
Lead	0.000658	<0.0002	0.00658	<0.002	0.5	10	50
Antimony	0.00138	<0.001	0.0138	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00255	<0.001	0.0255	<0.01	4	50	200
Chloride	4.6	<2	46	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	63.6	<5	636	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.19	<3	41.9	<30	500	800	1000

Leach Test Information

Date Prepared	01-May-2021
pH (pH Units)	7.45
Conductivity (µS/cm)	65.90
Temperature (°C)	22.40
Volume Leachant (Litres)	0.887

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation

09/05/2021 09:13:46

09:13:27 09/05/2021

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210430-43	**Client Reference:**	784-B026948	**Report Number:**	597134
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	596961

Test Completion Dates

Lab Sample No(s)	24184174	24184137	24184181	24184130	24184144
Customer Sample Ref.	BH03	BH16	BH16	WS23	WS23
AGS Ref.	ES4	ES4	ES1	ES1	ES4
Depth	0.50 - 0.50	0.70 - 0.70	0.10 - 0.10	0.10 - 0.10	0.90 - 0.90
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Acid herbicides*			07-May-2021	07-May-2021	
Ammoniacal N as NH4 in 2:1 extract	05-May-2021	05-May-2021			05-May-2021
Ammonium Soil by Titration	04-May-2021	04-May-2021			04-May-2021
Anions by Kone (soil)	07-May-2021	07-May-2021			07-May-2021
Anions by Kone (w)			07-May-2021		
Asbestos ID in Solid Samples	05-May-2021	05-May-2021			05-May-2021
Boron Water Soluble	06-May-2021	07-May-2021			06-May-2021
CEN 10:1 Leachate (1 Stage)			01-May-2021		
CEN Readings			05-May-2021		
Coronene			05-May-2021		
Cyanide Comp/Free/Total/Thiocyanate	07-May-2021	07-May-2021			07-May-2021
Dissolved Metals by ICP-MS			06-May-2021		
Dissolved Organic/Inorganic Carbon			09-May-2021		
EPH	06-May-2021	06-May-2021			06-May-2021
EPH by GCxGC-FID	06-May-2021	06-May-2021	07-May-2021		06-May-2021
EPH CWG GC (S)	06-May-2021	06-May-2021			06-May-2021
Fluoride			07-May-2021		
GRO by GC-FID (S)	06-May-2021	06-May-2021			06-May-2021
Hexavalent Chromium (s)	07-May-2021	07-May-2021			07-May-2021
Mercury Dissolved			06-May-2021		
Metals in solid samples by OES	07-May-2021	07-May-2021			07-May-2021
Moisture at 105C			01-May-2021		
OC OP Pesticides and Triazine Herb			07-May-2021	07-May-2021	
PAH 16 & 17 Calc			05-May-2021		
PAH by GCMS	06-May-2021	06-May-2021	05-May-2021		06-May-2021
PCBs by GCMS			05-May-2021		
pH	06-May-2021	06-May-2021			06-May-2021
Phenols by HPLC (S)	04-May-2021	04-May-2021			04-May-2021
Phenols by HPLC (W)			05-May-2021		
Sample description	30-Apr-2021	30-Apr-2021	30-Apr-2021	30-Apr-2021	30-Apr-2021
Total Dissolved Solids			06-May-2021		
Total Organic Carbon	07-May-2021	07-May-2021	07-May-2021		07-May-2021
TPH CWG GC (S)	06-May-2021	06-May-2021			06-May-2021
VOC MS (S)	05-May-2021	05-May-2021	05-May-2021		05-May-2021

ASSOCIATED AQC DATA

Ammonium Soil by Titration

Component	Method Code	QC 2432
Exchangeable Ammonium as NH4	TM024	**97.51** 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2475
Chloride (soluble)	TM243	**140.93** 80.93 : 111.66
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**161.21** 70.00 : 130.00

Anions by Kone (w)

Component	Method Code	QC 2439
Chloride	TM184	**106.0** 92.93 : 115.43
Sulphate (soluble)	TM184	**101.2** 90.53 : 113.03

Boron Water Soluble

Component	Method Code	QC 2491	QC 2404	QC 2414
Water Soluble Boron	TM222	**93.0** 84.00 : 111.00	**92.5** 84.00 : 111.00	**97.0** 84.00 : 111.00

Coronene

Component	Method Code	QC 2481
Coronene RAW	TM410	**98.0** 79.43 : 137.78

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2468
Free Cyanide	TM153	**96.14** 86.90 : 108.50
Thiocyanate	TM153	**99.36** 94.53 : 113.33
Total Cyanide	TM153	**100.0** 86.13 : 102.13

Dissolved Metals by ICP-MS

Component	Method Code	QC 2428
Aluminium	TM152	**113.67** 90.98 : 111.82
Antimony	TM152	**102.67** 90.44 : 113.04
Arsenic	TM152	**100.0** 88.00 : 112.00
Barium	TM152	**102.33** 90.20 : 111.19
Beryllium	TM152	**102.17** 87.77 : 113.97
Bismuth	TM152	**101.0** 91.90 : 112.20
Borate	TM152	**104.94** 88.00 : 112.00
Boron	TM152	**105.33** 96.48 : 114.93
Cadmium	TM152	**101.83** 96.43 : 110.53
Calcium	TM152	**104.0** 81.38 : 119.09
Chromium	TM152	**97.67** 91.84 : 108.67
Cobalt	TM152	**97.83** 88.00 : 112.00
Copper	TM152	**98.5** 92.47 : 118.11
Iron	TM152	**99.33** 92.00 : 113.00
Lead	TM152	**100.5** 88.00 : 112.00
Lithium	TM152	**104.17** 91.62 : 113.12
Magnesium	TM152	**99.33** 93.14 : 107.91
Manganese	TM152	**99.67** 95.03 : 110.58
Molybdenum	TM152	**97.67** 88.00 : 112.00
Nickel	TM152	**97.67** 88.00 : 112.00
Phosphorus	TM152	**102.0** 88.00 : 112.00
Potassium	TM152	**103.33** 93.90 : 112.36
Selenium	TM152	**102.33** 91.58 : 115.98
Silver	TM152	**98.83** 88.80 : 122.30
Sodium	TM152	**99.33** 91.50 : 108.35
Strontium	TM152	**103.33** 88.00 : 112.00
Tellurium	TM152	**101.5** 93.32 : 114.66

Dissolved Metals by ICP-MS

		QC 2428
Thallium	TM152	**81.5** 88.00 : 112.00
Tin	TM152	**103.83** 92.63 : 109.70
Titanium	TM152	**105.33** 95.58 : 111.68
Tungsten	TM152	**104.0** 81.32 : 124.72
Uranium	TM152	**98.83** 88.00 : 112.00
Vanadium	TM152	**101.0** 88.00 : 112.00
Zinc	TM152	**99.0** 92.98 : 118.95

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2458
Dissolved Inorganic Carbon	TM090	**108.5** 93.58 : 112.28
Dissolved Organic Carbon	TM090	**100.67** 96.13 : 109.53

EPH by GCxGC-FID

Component	Method Code	QC 2493
EPH >C10-C40 Raw	TM415	**96.93** 56.36 : 129.92

EPH CWG GC (S)

Component	Method Code	QC 2422
EPH >C8-C40 Raw	TM414	**98.18** 67.87 : 120.05
Total Aliphatics Raw	TM414	**106.04** 66.68 : 120.89
Total Aromatics Raw	TM414	**96.79** 61.16 : 129.42

Fluoride

Component	Method Code	QC 2431
Fluoride	TM104	**102.67** 96.67 : 108.67

GRO by GC-FID (S)

GRO by GC-FID (S)

Component	Method Code	QC 2492
QC	TM089	**88.97** 72.28 : 114.54

Hexavalent Chromium (s)

Component	Method Code	QC 2420	QC 2437
Hexavalent Chromium	TM151	**112.0** 91.40 : 115.40	**118.0** 91.40 : 115.40

Metals in solid samples by OES

Component	Method Code	QC 2417
Aluminium	TM181	**118.58** 77.46 : 123.98
Antimony	TM181	**84.15** 87.04 : 111.16
Arsenic	TM181	**108.43** 87.34 : 110.87
Barium	TM181	**105.5** 80.73 : 115.16
Beryllium	TM181	**105.22** 89.47 : 112.97
Boron	TM181	**106.3** 76.57 : 104.15
Cadmium	TM181	**97.12** 78.94 : 102.43
Chromium	TM181	**93.31** 77.55 : 104.47
Cobalt	TM181	**94.03** 82.95 : 107.41
Copper	TM181	**102.11** 84.36 : 106.14
Iron	TM181	**111.11** 81.43 : 115.79
Lead	TM181	**94.82** 81.95 : 107.63
Manganese	TM181	**113.89** 94.29 : 119.51
Mercury	TM181	**100.72** 82.73 : 106.36
Molybdenum	TM181	**100.41** 86.61 : 111.07
Nickel	TM181	**92.18** 79.72 : 103.80
Phosphorus	TM181	**117.98** 92.65 : 125.47
Selenium	TM181	**108.24** 88.36 : 111.25

Metals in solid samples by OES

		QC 2417
Strontium	TM181	**100.67** 77.99 : 108.06
Thallium	TM181	**108.41** 88.60 : 116.73
Tin	TM181	**101.9** 89.77 : 112.62
Titanium	TM181	**100.0** 66.29 : 105.96
Vanadium	TM181	**102.93** 75.51 : 108.87
Zinc	TM181	**106.57** 84.02 : 111.24

PAH by GCMS

Component	Method Code	QC 2479	QC 2410
Acenaphthene	TM218	**91.5** 78.59 : 112.16	**89.5** 76.79 : 103.90
Acenaphthylene	TM218	**90.0** 75.11 : 109.01	**90.0** 74.19 : 106.17
Anthracene	TM218	**90.0** 73.99 : 113.85	**81.0** 70.90 : 109.22
Benz(a)anthracene	TM218	**96.0** 69.31 : 119.18	**102.5** 73.77 : 119.26
Benzo(a)pyrene	TM218	**91.0** 66.97 : 114.92	**104.5** 73.20 : 114.18
Benzo(b)fluoranthene	TM218	**95.0** 67.41 : 114.46	**108.5** 75.36 : 117.58
Benzo(ghi)perylene	TM218	**91.5** 62.92 : 114.36	**102.5** 70.73 : 116.12
Benzo(k)fluoranthene	TM218	**93.5** 69.98 : 116.49	**102.5** 75.98 : 116.59
Chrysene	TM218	**97.5** 69.86 : 114.50	**99.0** 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	**91.5** 64.54 : 115.22	**100.5** 69.17 : 115.30
Fluoranthene	TM218	**85.0** 72.56 : 111.70	**82.5** 66.06 : 114.63
Fluorene	TM218	**90.5** 79.13 : 111.49	**83.5** 76.66 : 107.56
Indeno(123cd)pyrene	TM218	**92.5** 61.22 : 113.25	**106.5** 70.26 : 117.95
Naphthalene	TM218	**89.5** 77.96 : 110.91	**90.5** 74.70 : 101.83
Phenanthrene	TM218	**89.0** 76.83 : 113.25	**82.0** 73.62 : 109.34
Pyrene	TM218	**84.0** 72.45 : 110.77	**84.5** 71.46 : 117.00

PCBs by GCMS

PCBs by GCMS

Component	Method Code	QC 2488
PCB congener 101	TM168	**77.2** 65.66 : 110.06
PCB congener 105	TM168	**75.9** 58.10 : 106.34
PCB congener 114	TM168	**74.7** 59.38 : 106.48
PCB congener 118	TM168	**77.4** 60.02 : 106.23
PCB congener 123	TM168	**74.8** 65.01 : 99.81
PCB congener 126	TM168	**73.9** 59.31 : 109.23
PCB congener 138	TM168	**77.4** 63.95 : 107.63
PCB congener 153	TM168	**79.1** 62.65 : 108.85
PCB congener 156	TM168	**74.4** 61.69 : 112.27
PCB congener 157	TM168	**72.2** 55.37 : 104.81
PCB congener 167	TM168	**74.3** 65.58 : 109.14
PCB congener 169	TM168	**75.8** 56.84 : 112.10
PCB congener 180	TM168	**78.3** 66.99 : 111.63
PCB congener 189	TM168	**73.8** 57.75 : 112.59
PCB congener 28	TM168	**80.2** 73.68 : 105.96
PCB congener 52	TM168	**77.8** 67.24 : 107.62
PCB congener 77	TM168	**78.9** 64.87 : 108.49
PCB congener 81	TM168	**79.4** 70.78 : 110.80

pH

Component	Method Code	QC 2470	QC 2444
pH	TM133	**99.85** 98.41 : 102.48	**99.41** 98.41 : 102.48

Phenols by HPLC (S)

Component	Method Code	QC 2430
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**53.9** 69.38 : 125.27
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**46.78** 69.79 : 122.84
Cresols by HPLC (S)	TM062 (S)	**51.36** 77.98 : 111.41

Phenols by HPLC (S)

		QC 2430
Phenol by HPLC (S)	TM062 (S)	**54.3** 67.94 : 117.69
Xylenols by HPLC (S)	TM062 (S)	**52.08** 88.23 : 104.42

Phenols by HPLC (W)

Component	Method Code	QC 2407
2.3.5 Trimethyl-Phenol by HPLC (W)	TM259	**95.7** 76.00 : 124.00
2-Isopropyl Phenol by HPLC (W)	TM259	**89.87** 76.00 : 124.00
Cresols by HPLC (W)	TM259	**96.71** 76.00 : 124.00
Napthol by HPLC (W)	TM259	**89.84** 76.00 : 124.00
Phenol by HPLC (W)	TM259	**92.63** 76.00 : 124.00
Xylenols by HPLC (W)	TM259	**96.2** 76.00 : 124.00

Total Dissolved Solids

Component	Method Code	QC 2499
Total Dissolved Solids	TM123	**100.0** 97.30 : 100.92

Total Organic Carbon

Component	Method Code	QC 2466	QC 2478
Total Organic Carbon	TM132	**101.95** 87.02 : 113.45	**96.48** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2403
1,1,1,2-tetrachloroethane	TM116	**93.4** 84.84 : 116.25
1,1,1-Trichloroethane	TM116	**95.2** 73.73 : 118.05
1,1,2-Trichloroethane	TM116	**91.4** 77.12 : 116.04
1,1-Dichloroethane	TM116	**101.8** 74.46 : 129.15
1,2-Dichloroethane	TM116	**110.6** 92.38 : 131.65
1,4-Dichlorobenzene	TM116	**98.0** 83.64 : 126.18

		QC 2403
2-Chlorotoluene	TM116	**85.2** 76.03 : 113.25
4-Chlorotoluene	TM116	**82.0** 66.90 : 112.46
Benzene	TM116	**100.8** 88.60 : 113.80
Carbon Disulphide	TM116	**101.6** 74.91 : 122.14
Carbontetrachloride	TM116	**103.8** 80.31 : 124.50
Chlorobenzene	TM116	**95.0** 83.81 : 114.18
Chloroform	TM116	**100.0** 87.40 : 122.49
Chloromethane	TM116	**109.8** 65.89 : 136.93
Cis-1,2-Dichloroethene	TM116	**99.6** 80.67 : 126.72
Dibromomethane	TM116	**90.8** 73.23 : 118.35
Dichloromethane	TM116	**105.6** 81.11 : 133.25
Ethylbenzene	TM116	**83.8** 75.92 : 110.41
Hexachlorobutadiene	TM116	**44.0** 12.82 : 152.73
Isopropylbenzene	TM116	**70.6** 55.79 : 97.59
Naphthalene	TM116	**94.8** 80.86 : 128.81
o-Xylene	TM116	**82.8** 69.99 : 108.74
p/m-Xylene	TM116	**79.6** 68.32 : 108.91
Sec-Butylbenzene	TM116	**58.6** 38.50 : 101.50
Tetrachloroethene	TM116	**93.2** 76.95 : 121.02
Toluene	TM116	**90.6** 74.24 : 107.42
Trichloroethene	TM116	**92.2** 85.28 : 109.36
Trichlorofluoromethane	TM116	**103.6** 83.80 : 126.37
Vinyl Chloride	TM116	**107.6** 68.02 : 143.37

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

Work Order	: **PR2138977**	Issue Date	: 07-May-2021
Customer	: **ALS Life Sciences Ltd**	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: [redacted]	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 210430-43	Page	: 1 of 2
Order number	: ----	Date Samples Received	: 03-May-2021
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 03-May-2021 - 07-May-2021
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories		*Position*
Zdeněk Jirák	[redacted]	Environmental Business Unit Manager

The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)

Analytical Results

Sub-Matrix: **SOIL**	*Client sample ID*	**24185137 BH16**		**24185344 WS23**		**----**	
	Laboratory sample ID	*PR2138977-001*		*PR2138977-002*		----	
	Client sampling date / time	30-Apr-2021		30-Apr-2021		----	
Parameter	*Method*	*LOR*	*Unit*	**Result**	**MU**	**Result**	**MU**	**Result**	**MU**
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	**87.3**	± 6.0%	**80.1**	± 6.0%	**----**	----
Pesticides									
2.4.5-T	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
2.4.5-TP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
2.4-D	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
2.4-DB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
2.4-DP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
4-CPP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Bentazone	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Dinoseb	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Fluroxypyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
MCPA	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
MCPB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
MCPP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Acifluorfen	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Bromoxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
DNOC	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Dicamba	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Diclofop	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Ioxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Propoxycarbazone-sodium	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Triclopyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Triclosan	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.
Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	*Method Descriptions*
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PESLMSA1	CZ_SOP_D06_03_182.B (CSN EN 15637, US EPA 1694) Determination of acidic herbicides and drug residues by liquid chromatography method with MS/MS detection.

A `*` symbol preceding any method indicates laboratory or subcontractor non-accredited test. In the case when a procedure belonging to an accredited method was used for non-accredited matrix, would apply that the reported results are non-accredited. Please refer to General Comment section on front page for information. If the report contains subcontracted analysis, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.
The calculation methods of summation parameters are available on request in the client service.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	17 May 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210508-4
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	598134

This report has been revised and directly supersedes 597842 in its entirety.

We received 3 samples on Thursday May 06, 2021 and 1 of these samples were scheduled for analysis which was completed on Thursday May 13, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

So

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210508-4	**Client Reference:**	784-B026948	**Report Number:**	598134
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	597842

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24231597	BH14	ES1	0.10 - 0.10	30/04/2021
24231604	BH14	ES4	0.40 - 0.40	30/04/2021
24231613	BH14	ES9	1.40 - 1.40	30/04/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	210508-4	**Client Reference:**	784-B026948	**Report Number:**	598134
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	597842

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24231604			
Customer Sample Reference			BH14			
AGS Reference			ES4			
Depth (m)			0.40 - 0.40			
Container			1kg Cardboard Container	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 1		X		
Ammonium Soil by Titration	All	NDPs: 0 Tests: 1		X		
Anions by Kone (soil)	All	NDPs: 0 Tests: 1		X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1	X			
Boron Water Soluble	All	NDPs: 0 Tests: 1		X		
Clostridia Perfringens (S)*	All	NDPs: 0 Tests: 1	X			
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 1		X		
EPH	All	NDPs: 0 Tests: 1		X		
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1		X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 1		X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1			X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1		X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 1		X		
PAH by GCMS	All	NDPs: 0 Tests: 1		X		
pH	All	NDPs: 0 Tests: 1		X		

Validated

CERTIFICATE OF ANALYSIS

SDG:	210508-4	**Client Reference:**	784-B026948	**Report Number:**	598134
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	597842

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container		
							1kg Cardboard Container	250g Amber Jar (ALE210)	60g VOC (ALE215)
			2423604	BH14	ES4	0.40 - 0.40			
							S	S	S
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1						X	
Sample description	All	NDPs: 0 Tests: 1						X	
Total Coliforms(S)*	All	NDPs: 0 Tests: 1					X		
Total Organic Carbon	All	NDPs: 0 Tests: 1						X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 1						X	
VOC MS (S)	All	NDPs: 0 Tests: 1							X

CERTIFICATE OF ANALYSIS

SDG:	210508-4	**Client Reference:**	784-B026948	**Report Number:**	598134
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	597842

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24231604	BH14	0.40 - 0.40	Dark Brown	Silty Clay Loam	Vegetation	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210508-4	**Client Reference:**	784-B026948	**Report Number:**	598134
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	597842

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH14
Depth (m)	0.40 - 0.40
Sample Type	Soil/Solid (S)
Date Sampled	30/04/2021
Sample Time	.
Date Received	06/05/2021
SDG Ref	210508-4
Lab Sample No.(s)	24231604
AGS Reference	ES4

Component	LOD/Units	Method	
Moisture Content Ratio (% of as received sample)	%	PM024	13
Clostridia Perfringens*	CFU/G	SUB	>120000
Total Coliforms (RW7)*	CFU/G	SUB	132
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12 M
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M
Soil Organic Matter (SOM)	<0.35 %	TM132	1.37 #
pH	1 pH Units	TM133	7.27 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #
Cyanide, Total	<1 mg/kg	TM153	<1 M
Arsenic	<0.6 mg/kg	TM181	15.3 M
Cadmium	<0.02 mg/kg	TM181	1.81 M
Chromium	<0.9 mg/kg	TM181	27.3 M
Copper	<1.4 mg/kg	TM181	21 M
Iron	<1000 mg/kg	TM181	31700 #
Lead	<0.7 mg/kg	TM181	64.8 M
Mercury	<0.1 mg/kg	TM181	<0.1 M
Nickel	<0.2 mg/kg	TM181	32.6 M
Selenium	<1 mg/kg	TM181	1.13 #
Vanadium	<0.2 mg/kg	TM181	42.4 #
Zinc	<1.9 mg/kg	TM181	243 M
Boron, water soluble	<1 mg/kg	TM222	1.05 M
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.038 M
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248	0.633
EPH (C5-C40)	<35 mg/kg	TM415	<35
EPH Surrogate % recovery**	%	TM415	102
EPH >C10-C40	<35 mg/kg	TM415	<35 M

Validated

CERTIFICATE OF ANALYSIS

SDG:	210508-4	**Client Reference:**	784-B026948	**Report Number:**	598134
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	597842

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref. BH14
			Depth (m) 0.40 - 0.40
			Sample Type Soil/Solid (S)
			Date Sampled 30/04/2021
			Sample Time .
			Date Received 06/05/2021
			SDG Ref 210508-4
			Lab Sample No.(s) 24231604
			AGS Reference ES4
Naphthalene-d8 % recovery**	%	TM218	89
Acenaphthene-d10 % recovery**	%	TM218	91
Phenanthrene-d10 % recovery**	%	TM218	97.6
Chrysene-d12 % recovery**	%	TM218	90.4
Perylene-d12 % recovery**	%	TM218	88.2
Naphthalene	<0.009 mg/kg	TM218	<0.009 M
Acenaphthylene	<0.012 mg/kg	TM218	<0.012 M
Acenaphthene	<0.008 mg/kg	TM218	<0.008 M
Fluorene	<0.01 mg/kg	TM218	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218	<0.015 M
Anthracene	<0.016 mg/kg	TM218	<0.016 M
Fluoranthene	<0.017 mg/kg	TM218	<0.017 M
Pyrene	<0.015 mg/kg	TM218	<0.015 M
Benz(a)anthracene	<0.014 mg/kg	TM218	<0.014 M
Chrysene	<0.01 mg/kg	TM218	<0.01 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	<0.015 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	<0.014 M
Benzo(a)pyrene	<0.015 mg/kg	TM218	<0.015 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	<0.018 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	<0.023 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	<0.024 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	<0.118

Validated

CERTIFICATE OF ANALYSIS

SDG:	210508-4	**Client Reference:**	784-B026948	**Report Number:**	598134
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	597842

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BH14	0.40 - 0.40	Soil/Solid (S)	30/04/2021	.	06/05/2021	210508-4	24231604	ES4
GRO Surrogate % recovery**	%	TM089	90.8								
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01								
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01								
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01								
Aliphatics >C10-C12	<1 mg/kg	TM414	<1								
Aliphatics >C12-C16	<1 mg/kg	TM414	<1								
Aliphatics >C16-C21	<1 mg/kg	TM414	<1								
Aliphatics >C21-C35	<1 mg/kg	TM414	2.77								
Aliphatics >C35-C44	<1 mg/kg	TM414	<1								
Total Aliphatics >C10-C44	<5 mg/kg	TM414	<5								
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414	<10								
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01								
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01								
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	<0.01								
Aromatics > EC10-EC12	<1 mg/kg	TM414	<1								
Aromatics > EC12-EC16	<1 mg/kg	TM414	<1								
Aromatics > EC16-EC21	<1 mg/kg	TM414	<1								
Aromatics > EC21-EC35	<1 mg/kg	TM414	<1								
Aromatics >EC35-EC44	<1 mg/kg	TM414	<1								
Aromatics > EC40-EC44	<1 mg/kg	TM414	<1								
Total Aromatics > EC10-EC44	<5 mg/kg	TM414	<5								
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414	<10								
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089	<0.05								
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089	<0.05								
GRO >C5-C10	<0.02 mg/kg	TM089	<0.02								

Validated

CERTIFICATE OF ANALYSIS

SDG:	210508-4	**Client Reference:**	784-B026948	**Report Number:**	598134
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	597842

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH14
Depth (m)	0.40 - 0.40
Sample Type	Soil/Solid (S)
Date Sampled	30/04/2021
Sample Time	.
Date Received	06/05/2021
SDG Ref	210508-4
Lab Sample No.(s)	24231604
AGS Reference	ES4

Component	LOD/Units	Method	
Dibromofluoromethane**	%	TM116	110
Toluene-d8**	%	TM116	96.2
4-Bromofluorobenzene**	%	TM116	98.9
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.2 M
Benzene	<0.009 mg/kg	TM116	<0.18 M
Toluene	<0.007 mg/kg	TM116	<0.14 M
Ethylbenzene	<0.004 mg/kg	TM116	<0.08 M
p/m-Xylene	<0.01 mg/kg	TM116	<0.2 #
o-Xylene	<0.01 mg/kg	TM116	<0.2 M
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4
Sum of BTEX	<0.04 mg/kg	TM116	<0.8

CERTIFICATE OF ANALYSIS

SDG:	210508-4	**Client Reference:**	784-B026948	**Report Number:**	598134
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	597842

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref.	BH14ES4	10/05/2021	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	0.40 - 0.40										
Sample Type	SOLID										
Date Sampled	30/04/2021 00:00:00										
Date Receieved	06/05/2021 05:00:00										
SDG	210508-4										
Original Sample	24231604										
Method Number	TM048										

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
SUB		Subcontracted Test
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210508-4	**Client Reference:**	784-B026948	**Report Number:**	598134
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	597842

Test Completion Dates

Lab Sample No(s)	24231604
Customer Sample Ref.	BH14
AGS Ref.	ES4
Depth	0.40 - 0.40
Type	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	10-May-2021
Ammonium Soil by Titration	10-May-2021
Anions by Kone (soil)	12-May-2021
Asbestos ID in Solid Samples	10-May-2021
Boron Water Soluble	12-May-2021
Clostridia Perfringens (S)*	12-May-2021
Cyanide Comp/Free/Total/Thiocyanate	11-May-2021
EPH	11-May-2021
EPH by GCxGC-FID	11-May-2021
EPH CWG GC (S)	12-May-2021
GRO by GC-FID (S)	11-May-2021
Hexavalent Chromium (s)	13-May-2021
Metals in solid samples by OES	11-May-2021
PAH by GCMS	13-May-2021
pH	12-May-2021
Phenols by HPLC (S)	11-May-2021
Sample description	08-May-2021
Total Coliforms(S)*	12-May-2021
Total Organic Carbon	13-May-2021
TPH CWG GC (S)	12-May-2021
VOC MS (S)	11-May-2021

ASSOCIATED AQC DATA

Ammonium Soil by Titration

Component	Method Code	QC 2487
Exchangeable Ammonium as NH4	TM024	**97.51** 76.20 : 110.13

Boron Water Soluble

Component	Method Code	QC 2494
Water Soluble Boron	TM222	**97.0** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2438
Free Cyanide	TM153	**97.92** 86.90 : 108.50
Thiocyanate	TM153	**98.08** 94.53 : 113.33
Total Cyanide	TM153	**100.0** 86.13 : 102.13

GRO by GC-FID (S)

Component	Method Code	QC 2418
QC	TM089	**87.27** 70.75 : 114.19

Hexavalent Chromium (s)

Component	Method Code	QC 2437
Hexavalent Chromium	TM151	**104.0** 91.40 : 115.40

Metals in solid samples by OES

Component	Method Code	QC 2495
Aluminium	TM181	**96.46** 77.46 : 123.98
Antimony	TM181	**106.5** 87.04 : 111.16
Arsenic	TM181	**102.33** 87.34 : 110.87

CERTIFICATE OF ANALYSIS

SDG:	210508-4	**Client Reference:**	784-B026948	**Report Number:**	598134
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	597842

Metals in solid samples by OES

		QC 2495
Barium	TM181	**95.41** 80.73 : 115.16
Beryllium	TM181	**98.51** 89.47 : 112.97
Boron	TM181	**91.98** 76.57 : 104.15
Cadmium	TM181	**95.06** 81.71 : 107.91
Chromium	TM181	**89.66** 77.55 : 104.47
Cobalt	TM181	**90.57** 82.95 : 107.41
Copper	TM181	**100.0** 84.36 : 106.14
Iron	TM181	**97.62** 81.43 : 115.79
Lead	TM181	**93.24** 81.95 : 107.63
Manganese	TM181	**109.72** 94.29 : 119.51
Mercury	TM181	**96.86** 82.73 : 106.36
Molybdenum	TM181	**100.82** 86.61 : 111.07
Nickel	TM181	**89.73** 79.72 : 103.80
Phosphorus	TM181	**113.94** 92.65 : 125.47
Selenium	TM181	**103.92** 88.36 : 111.25
Strontium	TM181	**93.1** 77.99 : 108.06
Thallium	TM181	**103.1** 88.60 : 116.73
Tin	TM181	**100.76** 89.77 : 112.62
Titanium	TM181	**84.73** 66.29 : 105.96
Vanadium	TM181	**93.04** 75.51 : 108.87
Zinc	TM181	**101.64** 84.02 : 111.24

PAH by GCMS

Component	Method Code	QC 2491
Acenaphthene	TM218	**87.5** 76.79 : 103.90
Acenaphthylene	TM218	**87.5** 74.19 : 106.17
Anthracene	TM218	**91.5** 70.90 : 109.22
Benz(a)anthracene	TM218	**94.0** 73.77 : 119.26

PAH by GCMS

		QC 2491
Benzo(a)pyrene	TM218	**98.0** 73.20 : 114.18
Benzo(b)fluoranthene	TM218	**86.5** 75.36 : 117.58
Benzo(ghi)perylene	TM218	**92.5** 70.73 : 116.12
Benzo(k)fluoranthene	TM218	**91.0** 75.98 : 116.59
Chrysene	TM218	**87.0** 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	**89.5** 69.17 : 115.30
Fluoranthene	TM218	**87.0** 66.06 : 114.63
Fluorene	TM218	**88.0** 76.66 : 107.56
Indeno(123cd)pyrene	TM218	**85.0** 70.26 : 117.95
Naphthalene	TM218	**85.5** 74.70 : 101.83
Phenanthrene	TM218	**92.0** 73.62 : 109.34
Pyrene	TM218	**86.0** 71.46 : 117.00

pH

Component	Method Code	QC 2464
pH	TM133	**99.56** 98.41 : 102.48

Phenols by HPLC (S)

Component	Method Code	QC 2467
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**53.25** 70.71 : 116.42
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**45.03** 64.54 : 117.79
Cresols by HPLC (S)	TM062 (S)	**49.48** 74.40 : 108.98
Phenol by HPLC (S)	TM062 (S)	**52.32** 69.44 : 122.18
Xylenols by HPLC (S)	TM062 (S)	**50.62** 76.56 : 106.38

Total Organic Carbon

Total Organic Carbon

Component	Method Code	QC 2475
Total Organic Carbon	TM132	**101.95** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2420
1,1,1,2-tetrachloroethane	TM116	**99.4** 79.10 : 119.66
1,1,1-Trichloroethane	TM116	**98.6** 88.34 : 114.50
1,1,2-Trichloroethane	TM116	**94.6** 81.29 : 113.79
1,1-Dichloroethane	TM116	**102.4** 86.77 : 122.11
1,2-Dichloroethane	TM116	**107.6** 90.04 : 132.28
1,4-Dichlorobenzene	TM116	**105.0** 80.81 : 125.07
2-Chlorotoluene	TM116	**94.2** 73.13 : 114.13
4-Chlorotoluene	TM116	**90.4** 68.66 : 109.13
Benzene	TM116	**97.4** 84.29 : 112.22
Carbon Disulphide	TM116	**98.8** 75.11 : 124.81
Carbontetrachloride	TM116	**106.6** 82.35 : 126.46
Chlorobenzene	TM116	**101.0** 82.88 : 122.42
Chloroform	TM116	**102.2** 90.35 : 120.38
Chloromethane	TM116	**108.4** 67.89 : 143.51
Cis-1,2-Dichloroethene	TM116	**99.6** 78.27 : 128.90
Dibromomethane	TM116	**97.2** 76.00 : 120.73
Dichloromethane	TM116	**103.6** 92.27 : 134.36
Ethylbenzene	TM116	**91.0** 70.95 : 113.07
Hexachlorobutadiene	TM116	**73.2** 14.55 : 147.92
Isopropylbenzene	TM116	**84.4** 52.00 : 108.19
Naphthalene	TM116	**103.8** 80.29 : 135.77
o-Xylene	TM116	**88.2** 68.34 : 101.99

VOC MS (S)

		QC 2420
p/m-Xylene	TM116	**85.0** 69.47 : 97.31
Sec-Butylbenzene	TM116	**83.8** 27.03 : 135.73
Tetrachloroethene	TM116	**103.0** 81.43 : 126.65
Toluene	TM116	**88.8** 82.44 : 103.50
Trichloroethene	TM116	**95.2** 79.80 : 112.33
Trichlorofluoromethane	TM116	**101.4** 83.13 : 123.97
Vinyl Chloride	TM116	**107.0** 69.66 : 136.55

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

ALS Environmental Ltd
Torrington Avenue
Coventry
CV4 9GU

[redacted]

Subcon Results
ALS Life Sciences Limited
Torrington Avenue
Tile Hill CV4 9GU

11 May 2021

Test Report: COV/2128156/2021

Dear Subcon Results

Analysis of your sample(s) received on 01 May 2021 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using ALS Environmental Ltd and we look forward to receiving your next samples.

Yours Sincerely,

Signed: [redacted]

Name: H. Nolan

Title: Microbiology Senior Analyst

Report Summary

ANALYSED BY

Hawarden Subcon Results
ALS Life Sciences Limited
Torrington Avenue
Tile Hill
CV4 9GU

Date of Issue: **11 May 2021**

Report Number: **COV/2128156/2021** Issue **1** This issue replaces all previous issues

Job Description: 2020 Analysis

Number of Samples included in this report **9**

Number of Test Results included in this report **35**

Job Received: **01 May 2021**

Analysis Commenced: **01 May 2021**

Signed: [redacted]

Name: **H. Nolan** Date: **11 May 2021**

Title: **Microbiology Senior Analyst**

ALS Environmental Ltd was not responsible for sampling unless otherwise stated.

Information on the methods of analysis and performance characteristics are available on request.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. The results relate only to the items tested and where relevant sampled.
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.
This test report is not a statement of conformity to any specification or standard.

Certificate of Analysis

ANALYSED BY

Report Number: **COV/2128156/2021** Issue **1**

Laboratory Number: **20392775** Sample **1** of **9**

Sample Source: **ALS Life Sciences Limited**
Sample Point Description:
Sample Description: **BH14 - 0.1 mbgl**
Sample Matrix: **Not Specified**
Sample Date/Time: **30 April 2021** **09:55**
Sample Received: **01 May 2021**
Analysis Complete: **11 May 2021**

Test Description	Result	Units	Analysis Date	Accreditation		Method
Total Coliforms	11218	cfu/g	11/05/2021	N	Cov	W32
Enterococcus species	<10	cfu/g	08/05/2021	N	Cov	W32
Clostridia perfringens	13711	cfu/g	11/05/2021	N	Cov	W32
Solids, Total at 105c, sludge.	78.4	%	06/05/2021	N	Cov	CON10

Analyst Comments for 20392775: No Analyst Comment

This issue replaces all previous issues
Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: [redacted]

Name: **H. Nolan** Date: **11 May 2021**

Title: **Microbiology Senior Analyst**

Certificate of Analysis

ANALYSED BY

Report Number: **COV/2128156/2021** Issue **1**

Laboratory Number: **20392776** Sample **2** of **9**

Sample Source: **ALS Life Sciences Limited**
Sample Point Description:
Sample Description: **BH14 - 0.4 mbgl**
Sample Matrix: **Not Specified**
Sample Date/Time: **30 April 2021** **10:00**
Sample Received: **01 May 2021**
Analysis Complete: **11 May 2021**

Test Description	Result	Units	Analysis Date	Accreditation		Method
Total Coliforms	132	cfu/g	11/05/2021	N	Cov	W32
Enterococcus species	<10	cfu/g	08/05/2021	N	Cov	W32
Clostridia perfringens	>120413	cfu/g	11/05/2021	N	Cov	W32
Solids, Total at 105c, sludge.	80.8	%	06/05/2021	N	Cov	CON10

Analyst Comments for 20392776: No Analyst Comment

This issue replaces all previous issues
Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: [redacted]

Name: **H. Nolan** Date: **11 May 2021**

Title: **Microbiology Senior Analyst**

Certificate of Analysis

ANALYSED BY

Report Number: **COV/2128156/2021** Issue **1**

Laboratory Number: **20392777** Sample **3** of **9**

Sample Source: **ALS Life Sciences Limited**
Sample Point Description:
Sample Description: **BH14 - 1.0 mbgl**
Sample Matrix: **Not Specified**
Sample Date/Time: **30 April 2021** **10:05**
Sample Received: **01 May 2021**
Analysis Complete: **11 May 2021**

Test Description	Result	Units	Analysis Date	Accreditation		Method
Total Coliforms	246	cfu/g	11/05/2021	N	Cov	W32
Enterococcus species	<10	cfu/g	08/05/2021	N	Cov	W32
Clostridia perfringens	>122931	cfu/g	11/05/2021	N	Cov	W32
Solids, Total at 105c, sludge.	81.2	%	06/05/2021	N	Cov	CON10

Analyst Comments for 20392777: No Analyst Comment

This issue replaces all previous issues
Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: [redacted]

Name: **H. Nolan** Date: **11 May 2021**

Title: **Microbiology Senior Analyst**

Certificate of Analysis

ANALYSED BY

Report Number: **COV/2128156/2021** Issue **1**

Laboratory Number: **20392778** Sample **4** of **9**

Sample Source: **ALS Life Sciences Limited**
Sample Point Description:
Sample Description: **BH14 - 1.5 mbgl**
Sample Matrix: **Not Specified**
Sample Date/Time: **30 April 2021** **12:05**
Sample Received: **01 May 2021**
Analysis Complete: **11 May 2021**

Test Description	Result	Units	Analysis Date	Accreditation		Method
Total Coliforms	<10	cfu/g	08/05/2021	N	Cov	W32
Enterococcus species	<10	cfu/g	08/05/2021	N	Cov	W32
Clostridia perfringens	1746	cfu/g	11/05/2021	N	Cov	W32
Solids, Total at 105c, sludge.	85.2	%	06/05/2021	N	Cov	CON10

Analyst Comments for 20392778: No Analyst Comment

This issue replaces all previous issues
Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: [redacted]

Name: **H. Nolan** Date: **11 May 2021**

Title: **Microbiology Senior Analyst**

Certificate of Analysis

ANALYSED BY

Report Number: **COV/2128156/2021** Issue **1**

Laboratory Number: **20392779** Sample **5** of **9**

Sample Source: **ALS Life Sciences Limited**
Sample Point Description:
Sample Description: **BH14 - 2.0 mbgl**
Sample Matrix: **Not Specified**
Sample Date/Time: **30 April 2021** **12:10**
Sample Received: **01 May 2021**
Analysis Complete: **11 May 2021**

Test Description	Result	Units	Analysis Date	Accreditation		Method
Total Coliforms	<10	cfu/g	08/05/2021	N	Cov	W32
Enterococcus species	<10	cfu/g	08/05/2021	N	Cov	W32
Clostridia perfringens	521	cfu/g	11/05/2021	N	Cov	W32
Solids, Total at 105c, sludge.	95.2	%	06/05/2021	N	Cov	CON10

Analyst Comments for 20392779: No Analyst Comment

This issue replaces all previous issues
Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: [redacted]

Name: **H. Nolan** Date: **11 May 2021**

Title: **Microbiology Senior Analyst**

Certificate of Analysis

ANALYSED BY

Report Number: **COV/2128156/2021** Issue **1**

Laboratory Number: **20392780** Sample **6** of **9**

Sample Source: **ALS Life Sciences Limited**
Sample Point Description:
Sample Description: **BH14 - 2.5 mbgl**
Sample Matrix: **Not Specified**
Sample Date/Time: **30 April 2021** **13:05**
Sample Received: **01 May 2021**
Analysis Complete: **11 May 2021**

Test Description	Result	Units	Analysis Date	Accreditation		Method
Total Coliforms	40	cfu/g	11/05/2021	N	Cov	W32
Enterococcus species	<10	cfu/g	08/05/2021	N	Cov	W32
Clostridia perfringens	<10	cfu/g	08/05/2021	N	Cov	W32
Solids, Total at 105c, sludge.	96.2	%	06/05/2021	N	Cov	CON10

Analyst Comments for 20392780: No Analyst Comment

This issue replaces all previous issues
Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: [redacted]

Name: **H. Nolan** Date: **11 May 2021**

Title: **Microbiology Senior Analyst**

Certificate of Analysis

ANALYSED BY

Report Number: **COV/2128156/2021** Issue **1**

Laboratory Number: **20392781** Sample **7** of **9**

Sample Source: **ALS Life Sciences Limited**
Sample Point Description:
Sample Description: **BH14 - 3.0 mbgl**
Sample Matrix: **Not Specified**
Sample Date/Time: **30 April 2021** **13:10**
Sample Received: **01 May 2021**
Analysis Complete: **11 May 2021**

Test Description	Result	Units	Analysis Date	Accreditation		Method
Total Coliforms	769	cfu/g	11/05/2021	N	Cov	W32
Enterococcus species	<10	cfu/g	08/05/2021	N	Cov	W32
Clostridia perfringens	<10	cfu/g	08/05/2021	N	Cov	W32
Solids, Total at 105c, sludge.	91.0	%	06/05/2021	N	Cov	CON10

Analyst Comments for 20392781: No Analyst Comment

This issue replaces all previous issues
Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: [redacted]

Name: **H. Nolan** Date: **11 May 2021**

Title: **Microbiology Senior Analyst**

Certificate of Analysis

ANALYSED BY

Report Number:	**COV/2128156/2021**	Issue	**1**
Laboratory Number:	**20392782**	Sample	**8** of **9**
Sample Source:	**ALS Life Sciences Limited**		
Sample Point Description:			
Sample Description:	**BH14 - 3.5 mbgl**		
Sample Matrix:	**Not Specified**		
Sample Date/Time:	**30 April 2021** **13:20**		
Sample Received:	**01 May 2021**		
Analysis Complete:	**11 May 2021**		

Test Description	Result	Units	Analysis Date	Accreditation		Method
Total Coliforms	1158	cfu/g	11/05/2021	N	Cov	W32
Enterococcus species	<10	cfu/g	08/05/2021	N	Cov	W32
Clostridia perfringens	<10	cfu/g	08/05/2021	N	Cov	W32
Solids, Total at 105c, sludge.	86.2	%	06/05/2021	N	Cov	CON10

Analyst Comments for 20392782: No Analyst Comment

This issue replaces all previous issues
Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: [redacted]

Name: **H. Nolan** Date: **11 May 2021**

Title: **Microbiology Senior Analyst**

Certificate of Analysis

ANALYSED BY

Report Number:	**COV/2128156/2021**	Issue	**1**
Laboratory Number:	**20392783**	Sample	**9** of **9**
Sample Source:	**ALS Life Sciences Limited**		
Sample Point Description:			
Sample Description:	**BH14 - 4.0 mbgl**		
Sample Matrix:	**Not Specified**		
Sample Date/Time:	**30 April 2021** **13:25**		
Sample Received:	**01 May 2021**		
Analysis Complete:	**11 May 2021**		

Test Description	Result	Units	Analysis Date	Accreditation		Method
Total Coliforms	<10	cfu/g	08/05/2021	N	Cov	W32
Enterococcus species	<10	cfu/g	08/05/2021	N	Cov	W32
Clostridia perfringens	<10	cfu/g	08/05/2021	N	Cov	W32

Analyst Comments for 20392783: No Analyst Comment

This issue replaces all previous issues
Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: [redacted]

Name: **H. Nolan** Date: **11 May 2021**

Title: **Microbiology Senior Analyst**

ANALYST COMMENTS FOR REPORT COV/2128156/2021 Issue 1

This issue replaces all previous issues

Date of Issue: **11 May 2021**

Sample No	Analysis Comments
20392775	
20392776	
20392777	
20392778	
20392779	
20392780	
20392781	
20392782	
20392783	

Signed: [redacted]

Name: **H. Nolan** Date: **11 May 2021**

Title: **Microbiology Senior Analyst**

DETERMINAND COMMENTS FOR REPORT COV/2128156/2021

ISSUE 1

This issue replaces all previous issues

Date of Issue: 11 May 2021

Sample No	Description	Determinand	Comments

Signed: [redacted]

Name: **H. Nolan** Date: **11 May 2021**

Title: **Microbiology Senior Analyst**

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Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	13 May 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210508-5
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	597855

We received 7 samples on Friday April 30, 2021 and 2 of these samples were scheduled for analysis which was completed on Thursday May 13, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Son

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210508-5	**Client Reference:**	784-B026948	**Report Number:**	597855
Location:	A46 Newark Northern Bypas	**Order Number:**		**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24231654	BH02	ES1	0.20 - 0.20	28/04/2021
24231662	BH02	ES4	0.60 - 0.60	28/04/2021
24231638	TP25	ES1	0.10 - 0.10	28/04/2021
24231645	TP25	ES4	1.00 - 1.00	28/04/2021
24231672	WS26	ES1	0.10 - 0.10	28/04/2021
24231680	WS26	ES4	0.80 - 0.80	28/04/2021
24231687	WS26	ES7	1.80 - 1.80	28/04/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210508-5	**Client Reference:**	784-B026948	**Report Number:**	597855
Location:	A46 Newark Northern Bypas	**Order Number:**		**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)					24231662			24231672				
Customer Sample Reference					BH02			WS26				
AGS Reference					ES4			ES1				
Depth (m)					0.60 - 0.60			0.10 - 0.10				
Container					1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)		
Sample Type					S	S	S	S	S	S		
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 2				X			X			
Ammonium Soil by Titration	All	NDPs: 0 Tests: 2				X			X			
Anions by Kone (soil)	All	NDPs: 0 Tests: 2				X			X			
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2			X			X				
Boron Water Soluble	All	NDPs: 0 Tests: 2				X			X			
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2				X			X			
EPH	All	NDPs: 0 Tests: 2				X			X			
EPH by GCxGC-FID	All	NDPs: 0 Tests: 2				X			X			
EPH CWG GC (S)	All	NDPs: 0 Tests: 2				X			X			
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2					X			X		
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2				X			X			
Metals in solid samples by OES	All	NDPs: 0 Tests: 2				X			X			
PAH by GCMS	All	NDPs: 0 Tests: 2				X			X			
pH	All	NDPs: 0 Tests: 2				X			X			
Phenols by HPLC (S)	All	NDPs: 0 Tests: 2				X			X			

CERTIFICATE OF ANALYSIS

SDG:	210508-5	**Client Reference:**	784-B026948	**Report Number:**	597855
Location:	A46 Newark Northern Bypas	**Order Number:**		**Superseded Report:**	

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)										24231662		24231672
Customer Sample Reference										BH02		WS26
AGS Reference										ES4		ES1
Depth (m)										0.60 - 0.60		0.10 - 0.10
Container										1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type										S	S	S	S	S	S
Sample description	All		NDPs: 0 Tests: 2								X			X	
Total Organic Carbon	All		NDPs: 0 Tests: 2								X			X	
TPH CWG GC (S)	All		NDPs: 0 Tests: 2								X			X	
VOC MS (S)	All		NDPs: 0 Tests: 2									X			X

CERTIFICATE OF ANALYSIS

SDG:	210508-5	**Client Reference:**	784-B026948	**Report Number:**	597855
Location:	A46 Newark Northern Bypas	**Order Number:**		**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24231662	BH02	0.60 - 0.60	Dark Brown	Silt Loam	Vegetation	None
24231672	WS26	0.10 - 0.10	Dark Brown	Silty Clay Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 210508-5 **Client Reference:** 784-B026948 **Report Number:** 597855
Location: A46 Newark Northern Bypas **Order Number:** **Superseded Report:**

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH02	WS26				
			Depth (m)	0.60 - 0.60	0.10 - 0.10				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	28/04/2021	28/04/2021				
			Sample Time	.	.				
			Date Received	30/04/2021	30/04/2021				
			SDG Ref	210508-5	210508-5				
			Lab Sample No.(s)	24231662	24231672				
			AGS Reference	ES4	ES1				
Moisture Content Ratio (% of as received sample)	%	PM024		20	21				
Exchangeable Ammonia as N	<12 mg/kg	TM024		<12 M	<12 M				
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 M	<0.01 M				
Cresols	<0.01 mg/kg	TM062 (S)		<0.01 M	0.0127 M				
Xylenols	<0.015 mg/kg	TM062 (S)		<0.015 M	<0.015 M				
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 M	<0.035 M				
Soil Organic Matter (SOM)	<0.35 %	TM132		1.78 #	2.74 #				
pH	1 pH Units	TM133		7.87 M	6.44 M				
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #				
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M				
Arsenic	<0.6 mg/kg	TM181		12.4 M	14.9 M				
Cadmium	<0.02 mg/kg	TM181		2.2 M	2.32 M				
Chromium	<0.9 mg/kg	TM181		26.4 M	29.2 M				
Copper	<1.4 mg/kg	TM181		39.6 M	28.1 M				
Iron	<1000 mg/kg	TM181		27600 #	32800 #				
Lead	<0.7 mg/kg	TM181		251 M	142 M				
Mercury	<0.1 mg/kg	TM181		<0.1 M	<0.1 M				
Nickel	<0.2 mg/kg	TM181		31.7 M	33.9 M				
Selenium	<1 mg/kg	TM181		<1 #	1.1 #				
Vanadium	<0.2 mg/kg	TM181		34.6 #	49.4 #				
Zinc	<1.9 mg/kg	TM181		270 M	250 M				
Boron, water soluble	<1 mg/kg	TM222		1.2 M	1.36 M				
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.0406 M	0.017 M				
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248		2.21	1.71				
EPH (C5-C40)	<35 mg/kg	TM415		<35	<35				
EPH Surrogate % recovery**	%	TM415		102	105				
EPH >C10-C40	<35 mg/kg	TM415		<35 M	<35 M				

Validated

CERTIFICATE OF ANALYSIS

SDG: 210508-5 **Client Reference:** 784-B026948 **Report Number:** 597855
Location: A46 Newark Northern Bypas **Order Number:** **Superseded Report:**

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH02	WS26				
			Depth (m)	0.60 - 0.60	0.10 - 0.10				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	28/04/2021	28/04/2021				
			Sample Time	.	.				
			Date Received	30/04/2021	30/04/2021				
			SDG Ref	210508-5	210508-5				
			Lab Sample No.(s)	24231662	24231672				
			AGS Reference	ES4	ES1				
Naphthalene-d8 % recovery**	%	TM218		81.3	82.5				
Acenaphthene-d10 % recovery**	%	TM218		74.3	79.1				
Phenanthrene-d10 % recovery**	%	TM218		80	87.6				
Chrysene-d12 % recovery**	%	TM218		74.6	79				
Perylene-d12 % recovery**	%	TM218		70.6	75.7				
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	<0.009 M				
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 M	<0.012 M				
Acenaphthene	<0.008 mg/kg	TM218		<0.008 M	<0.008 M				
Fluorene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M				
Phenanthrene	<0.015 mg/kg	TM218		0.0379 M	0.0424 M				
Anthracene	<0.016 mg/kg	TM218		<0.016 M	<0.016 M				
Fluoranthene	<0.017 mg/kg	TM218		0.096 M	0.119 M				
Pyrene	<0.015 mg/kg	TM218		0.0852 M	0.102 M				
Benz(a)anthracene	<0.014 mg/kg	TM218		0.0494 M	0.059 M				
Chrysene	<0.01 mg/kg	TM218		0.0502 M	0.0649 M				
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		0.0827 M	0.111 M				
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.0308 M	0.0356 M				
Benzo(a)pyrene	<0.015 mg/kg	TM218		0.0514 M	0.064 M				
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.0394 M	0.051 M				
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	<0.023 M				
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.044 M	0.0565 M				
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		0.567	0.706				

Validated

CERTIFICATE OF ANALYSIS

SDG: 210508-5 **Client Reference:** 784-B026948 **Report Number:** 597855
Location: A46 Newark Northern Bypas **Order Number:** **Superseded Report:**

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH02	WS26				
			Depth (m)	0.60 - 0.60	0.10 - 0.10				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	28/04/2021	28/04/2021				
			Sample Time	.	.				
			Date Received	30/04/2021	30/04/2021				
			SDG Ref	210508-5	210508-5				
			Lab Sample No.(s)	24231662	24231672				
			AGS Reference	ES4	ES1				
GRO Surrogate % recovery**	%	TM089		110	84				
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C10-C12	<1 mg/kg	TM414		<1	<1				
Aliphatics >C12-C16	<1 mg/kg	TM414		<1	<1				
Aliphatics >C16-C21	<1 mg/kg	TM414		<1	<1				
Aliphatics >C21-C35	<1 mg/kg	TM414		5.86	8.74				
Aliphatics >C35-C44	<1 mg/kg	TM414		<1	<1				
Total Aliphatics >C10-C44	<5 mg/kg	TM414		6.17	9.18				
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		<10	15.7				
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics > EC10-EC12	<1 mg/kg	TM414		<1	<1				
Aromatics > EC12-EC16	<1 mg/kg	TM414		<1	<1				
Aromatics > EC16-EC21	<1 mg/kg	TM414		<1	<1				
Aromatics > EC21-EC35	<1 mg/kg	TM414		1.6	4.75				
Aromatics >EC35-EC44	<1 mg/kg	TM414		<1	1.41				
Aromatics > EC40-EC44	<1 mg/kg	TM414		<1	<1				
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		<5	6.51				
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		<10	15.7				
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		<0.05	<0.05				
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		<0.05	<0.05				
GRO >C5-C10	<0.02 mg/kg	TM089		<0.02	<0.02				

Validated

CERTIFICATE OF ANALYSIS

SDG: 210508-5 **Client Reference:** 784-B026948 **Report Number:** 597855
Location: A46 Newark Northern Bypas **Order Number:** **Superseded Report:**

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH02	WS26				
			Depth (m)	0.60 - 0.60	0.10 - 0.10				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	28/04/2021	28/04/2021				
			Sample Time	.	.				
			Date Received	30/04/2021	30/04/2021				
			SDG Ref	210508-5	210508-5				
			Lab Sample No.(s)	24231662	24231672				
			AGS Reference	ES4	ES1				
Dibromofluoromethane**	%	TM116		110	105				
Toluene-d8**	%	TM116		96.3	95.8				
4-Bromofluorobenzene**	%	TM116		98.5	96.7				
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Benzene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M				
Toluene	<0.007 mg/kg	TM116		<0.14 M	<0.14 M				
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 M	<0.08 M				
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #				
o-Xylene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4	<0.4				
Sum of BTEX	<0.04 mg/kg	TM116		<0.8	<0.8				

CERTIFICATE OF ANALYSIS

SDG:	210508-5	**Client Reference:**	784-B026948	**Report Number:**	597855
Location:	A46 Newark Northern Bypas	**Order Number:**		**Superseded Report:**	

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	BH02ES4 0.60 - 0.60 SOLID 28/04/2021 00:00:00 30/04/2021 05:00:00 210508-5 24231662 TM048	10/05/2021	Agnieszka Chelmowska	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	WS26ES1 0.10 - 0.10 SOLID 28/04/2021 00:00:00 30/04/2021 05:00:00 210508-5 24231672 TM048	11/05/2021	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	210508-5	**Client Reference:**	784-B026948	**Report Number:**	597855
Location:	A46 Newark Northern Bypas	**Order Number:**		**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210508-5	**Client Reference:**	784-B026948	**Report Number:**	597855
Location:	A46 Newark Northern Bypas	**Order Number:**		**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24231662	24231672
Customer Sample Ref.	BH02	WS26
AGS Ref.	ES4	ES1
Depth	0.60 - 0.60	0.10 - 0.10
Type	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	10-May-2021	10-May-2021
Ammonium Soil by Titration	10-May-2021	10-May-2021
Anions by Kone (soil)	11-May-2021	11-May-2021
Asbestos ID in Solid Samples	10-May-2021	11-May-2021
Boron Water Soluble	12-May-2021	12-May-2021
Cyanide Comp/Free/Total/Thiocyanate	11-May-2021	11-May-2021
EPH	11-May-2021	11-May-2021
EPH by GCxGC-FID	11-May-2021	11-May-2021
EPH CWG GC (S)	12-May-2021	12-May-2021
GRO by GC-FID (S)	11-May-2021	11-May-2021
Hexavalent Chromium (s)	13-May-2021	13-May-2021
Metals in solid samples by OES	13-May-2021	12-May-2021
PAH by GCMS	11-May-2021	11-May-2021
pH	12-May-2021	12-May-2021
Phenols by HPLC (S)	11-May-2021	11-May-2021
Sample description	08-May-2021	08-May-2021
Total Organic Carbon	13-May-2021	13-May-2021
TPH CWG GC (S)	12-May-2021	12-May-2021
VOC MS (S)	11-May-2021	11-May-2021

ASSOCIATED AQC DATA

Ammonium Soil by Titration

Component	Method Code	QC 2487
Exchangeable Ammonium as NH4	TM024	**97.51** 76.20 : 110.13

Boron Water Soluble

Component	Method Code	QC 2466
Water Soluble Boron	TM222	**97.5** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2402	QC 2438
Free Cyanide	TM153	**95.54** 86.90 : 108.50	**97.92** 86.90 : 108.50
Thiocyanate	TM153	**97.44** 94.53 : 113.33	**98.08** 94.53 : 113.33
Total Cyanide	TM153	**97.2** 86.13 : 102.13	**100.0** 86.13 : 102.13

GRO by GC-FID (S)

Component	Method Code	QC 2418
QC	TM089	**87.27** 70.75 : 114.19

Hexavalent Chromium (s)

Component	Method Code	QC 2437
Hexavalent Chromium	TM151	**104.0** 91.40 : 115.40

Metals in solid samples by OES

Component	Method Code	QC 2419	QC 2486
Aluminium	TM181	**96.46** 77.46 : 123.98	**100.0** 77.46 : 123.98
Antimony	TM181	**103.66** 87.04 : 111.16	**110.98** 87.04 : 111.16
Arsenic	TM181	**102.03** 87.34 : 110.87	**106.98** 87.34 : 110.87

CERTIFICATE OF ANALYSIS

SDG:	210508-5	**Client Reference:**	784-B026948	**Report Number:**	597855
Location:	A46 Newark Northern Bypas	**Order Number:**		**Superseded Report:**	

Metals in solid samples by OES

		QC 2419	QC 2486
Barium	TM181	**98.17** 80.73 : 115.16	**96.33** 80.73 : 115.16
Beryllium	TM181	**101.12** 89.47 : 112.97	**109.33** 89.47 : 112.97
Boron	TM181	**89.97** 76.57 : 104.15	**93.12** 76.57 : 104.15
Cadmium	TM181	**93.42** 81.71 : 107.91	**94.65** 81.71 : 107.91
Chromium	TM181	**86.41** 77.55 : 104.47	**92.29** 77.55 : 104.47
Cobalt	TM181	**88.68** 82.95 : 107.41	**93.08** 82.95 : 107.41
Copper	TM181	**101.58** 84.36 : 106.14	**102.46** 84.36 : 106.14
Iron	TM181	**99.21** 81.43 : 115.79	**100.0** 81.43 : 115.79
Lead	TM181	**94.82** 81.95 : 107.63	**96.17** 81.95 : 107.63
Manganese	TM181	**104.72** 94.29 : 119.51	**110.83** 94.29 : 119.51
Mercury	TM181	**95.89** 82.73 : 106.36	**105.31** 82.73 : 106.36
Molybdenum	TM181	**100.82** 86.61 : 111.07	**102.47** 86.61 : 111.07
Nickel	TM181	**87.78** 79.72 : 103.80	**91.93** 79.72 : 103.80
Phosphorus	TM181	**125.45** 92.65 : 125.47	**116.97** 92.65 : 125.47
Selenium	TM181	**103.14** 88.36 : 111.25	**109.41** 88.36 : 111.25
Strontium	TM181	**93.76** 77.99 : 108.06	**98.66** 77.99 : 108.06
Thallium	TM181	**100.88** 88.60 : 116.73	**110.18** 88.60 : 116.73
Tin	TM181	**100.38** 89.77 : 112.62	**105.7** 89.77 : 112.62
Titanium	TM181	**85.5** 66.29 : 105.96	**87.02** 66.29 : 105.96
Vanadium	TM181	**95.6** 75.51 : 108.87	**103.66** 75.51 : 108.87
Zinc	TM181	**102.46** 84.02 : 111.24	**106.16** 84.02 : 111.24

PAH by GCMS

Component	Method Code	QC 2455
Acenaphthene	TM218	**95.0** 78.59 : 112.16
Acenaphthylene	TM218	**94.5** 75.11 : 109.01
Anthracene	TM218	**97.5** 73.99 : 113.85
Benz(a)anthracene	TM218	**102.0** 69.31 : 119.18

PAH by GCMS

		QC 2455
Benzo(a)pyrene	TM218	**98.5** 66.97 : 114.92
Benzo(b)fluoranthene	TM218	**102.0** 67.41 : 114.46
Benzo(ghi)perylene	TM218	**96.0** 62.92 : 114.36
Benzo(k)fluoranthene	TM218	**98.0** 69.98 : 116.49
Chrysene	TM218	**99.5** 69.86 : 114.50
Dibenzo(ah)anthracene	TM218	**91.5** 64.54 : 115.22
Fluoranthene	TM218	**104.0** 72.56 : 111.70
Fluorene	TM218	**96.0** 79.13 : 111.49
Indeno(123cd)pyrene	TM218	**99.5** 61.22 : 113.25
Naphthalene	TM218	**88.0** 77.96 : 110.91
Phenanthrene	TM218	**99.0** 76.83 : 113.25
Pyrene	TM218	**102.5** 72.45 : 110.77

pH

Component	Method Code	QC 2464
pH	TM133	**99.56** 98.41 : 102.48

Phenols by HPLC (S)

Component	Method Code	QC 2467	QC 2460
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**53.25** 70.71 : 116.42	**52.6** 70.71 : 116.42
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**45.03** 64.54 : 117.79	**45.61** 64.54 : 117.79
Cresols by HPLC (S)	TM062 (S)	**49.48** 74.40 : 108.98	**50.31** 74.40 : 108.98
Phenol by HPLC (S)	TM062 (S)	**52.32** 69.44 : 122.18	**52.32** 69.44 : 122.18
Xylenols by HPLC (S)	TM062 (S)	**50.62** 76.56 : 106.38	**51.15** 76.56 : 106.38

Total Organic Carbon

Total Organic Carbon

Component	Method Code	QC 2475	QC 2492
Total Organic Carbon	TM132	**101.95** 87.02 : 113.45	**108.2** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2420
1,1,1,2-tetrachloroethane	TM116	**99.4** 79.10 : 119.66
1,1,1-Trichloroethane	TM116	**98.6** 88.34 : 114.50
1,1,2-Trichloroethane	TM116	**94.6** 81.29 : 113.79
1,1-Dichloroethane	TM116	**102.4** 86.77 : 122.11
1,2-Dichloroethane	TM116	**107.6** 90.04 : 132.28
1,4-Dichlorobenzene	TM116	**105.0** 80.81 : 125.07
2-Chlorotoluene	TM116	**94.2** 73.13 : 114.13
4-Chlorotoluene	TM116	**90.4** 68.66 : 109.13
Benzene	TM116	**97.4** 84.29 : 112.22
Carbon Disulphide	TM116	**98.8** 75.11 : 124.81
Carbontetrachloride	TM116	**106.6** 82.35 : 126.46
Chlorobenzene	TM116	**101.0** 82.88 : 122.42
Chloroform	TM116	**102.2** 90.35 : 120.38
Chloromethane	TM116	**108.4** 67.89 : 143.51
Cis-1,2-Dichloroethene	TM116	**99.6** 78.27 : 128.90
Dibromomethane	TM116	**97.2** 76.00 : 120.73
Dichloromethane	TM116	**103.6** 92.27 : 134.36
Ethylbenzene	TM116	**91.0** 70.95 : 113.07
Hexachlorobutadiene	TM116	**73.2** 14.55 : 147.92
Isopropylbenzene	TM116	**84.4** 52.00 : 108.19
Naphthalene	TM116	**103.8** 80.29 : 135.77
o-Xylene	TM116	**88.2** 68.34 : 101.99

VOC MS (S)

		QC 2420
p/m-Xylene	TM116	**85.0** 69.47 : 97.31
Sec-Butylbenzene	TM116	**83.8** 27.03 : 135.73
Tetrachloroethene	TM116	**103.0** 81.43 : 126.65
Toluene	TM116	**88.8** 82.44 : 103.50
Trichloroethene	TM116	**95.2** 79.80 : 112.33
Trichlorofluoromethane	TM116	**101.4** 83.13 : 123.97
Vinyl Chloride	TM116	**107.0** 69.66 : 136.55

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	27 May 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210517-19
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	599757

This report has been revised and directly supersedes 599537 in its entirety.

We received 8 samples on Thursday May 13, 2021 and 3 of these samples were scheduled for analysis which was completed on Thursday May 27, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

So

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210517-19	**Client Reference:**	784-B026948	**Report Number:**	599757
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	599537

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24280777	BH51	ES1	0.10 - 0.10	10/05/2021
24280787	BH51	ES4	0.50 - 0.50	10/05/2021
24280797	BH51	ES7	1.20 - 1.20	10/05/2021
24280818	BH03A	ES1	0.10 - 0.10	11/05/2021
24280826	BH03A	ES4	0.60 - 0.60	11/05/2021
24280837	BH03A	ES7	1.20 - 1.20	11/05/2021
24280767	NO ID			
24280769	NO ID			

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210517-19	**Client Reference:**	784-B026948	**Report Number:**	599757
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	599537

Results Legend

- X **Test**
- N **No Determination Possible**

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24280777	24280818			24280826		
Customer Sample Reference			BH51	BH03A			BH03A		
AGS Reference			ES1	ES1			ES4		
Depth (m)			0.10 - 0.10	0.10 - 0.10			0.60 - 0.60		
Container			250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S
Acid herbicides*	All	NDPs: 0 Tests: 2	X		X				
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 2			X			X	
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1					X		
Ammonium Soil by Titration	All	NDPs: 0 Tests: 2			X			X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 2			X			X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2		X			X		
Boron Water Soluble	All	NDPs: 0 Tests: 2			X			X	
CEN Readings	All	NDPs: 0 Tests: 1					X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 3			X		X	X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1					X		
EPH	All	NDPs: 0 Tests: 2			X			X	
EPH by GCxGC-FID	All	NDPs: 0 Tests: 2			X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 2			X			X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2				X			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2			X			X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 210517-19 **Client Reference:** 784-B026948 **Report Number:** 599757
Location: A46 Newark Northern Bypas **Order Number:** 7001649 **Superseded Report:** 599537

Results Legend

- X **Test**
- N **No Determination Possible**

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24280777	24280818			24280826		
Customer Sample Reference			BH51	BH03A			BH03A		
AGS Reference			ES1	ES1			ES4		
Depth (m)			0.10 - 0.10	0.10 - 0.10			0.60 - 0.60		
Container			250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1					X		
Mercury Dissolved	All	NDPs: 0 Tests: 1					X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 2			X			X	
OC OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 2	X		X				
PAH by GCMS	All	NDPs: 0 Tests: 2			X			X	
pH	All	NDPs: 0 Tests: 2			X			X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 1					X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 2			X			X	
Sample description	All	NDPs: 0 Tests: 3	X		X			X	
Sulphide	All	NDPs: 0 Tests: 1					X		
Total Organic Carbon	All	NDPs: 0 Tests: 2			X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 2			X			X	
VOC MS (S)	All	NDPs: 0 Tests: 2				X			X

CERTIFICATE OF ANALYSIS

SDG:	210517-19	**Client Reference:**	784-B026948	**Report Number:**	599757
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	599537

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24280777	BH51	0.10 - 0.10	Dark Brown	Sandy Loam	Vegetation	None
24280818	BH03A	0.10 - 0.10	Dark Brown	Loamy Sand	Vegetation	None
24280826	BH03A	0.60 - 0.60	Dark Brown	Loamy Sand	Vegetation	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210517-19	**Client Reference:**	784-B026948	**Report Number:**	599757
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	599537

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH51	BH03A	BH03A			
			Depth (m)	0.10 - 0.10	0.10 - 0.10	0.60 - 0.60			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	10/05/2021	11/05/2021	11/05/2021			
			Sample Time	.	.	.			
			Date Received	13/05/2021	13/05/2021	13/05/2021			
			SDG Ref	210517-19	210517-19	210517-19			
			Lab Sample No.(s)	24280777	24280818	24280826			
			AGS Reference	ES1	ES1	ES4			
Moisture Content Ratio (% of as received sample)	%	PM024		23	17	16			
2,4,5-T*	<0.01 mg/kg	SUB		<0.01	<0.01				
2,4,5-TP (Fenoprop)*	<0.01 mg/kg	SUB		<0.01	<0.01				
2,4-D*	<0.01 mg/kg	SUB		<0.01	<0.01				
2,4-DB*	<0.01 mg/kg	SUB		<0.01	<0.01				
2,4-Dichloroprop (2,4 DP)*	<0.01 mg/kg	SUB		<0.01	<0.01				
4-Chlorophenoxyacetic acid (4-CPA)*	<0.01 mg/kg	SUB		<0.01	<0.01				
Acifluorfen*	<0.01 mg/kg	SUB		<0.01	<0.01				
Bentazone*	<0.01 mg/kg	SUB		<0.01	<0.01				
Bromoxynil*	<0.01 mg/kg	SUB		<0.01	<0.01				
Dicamba*	<0.01 mg/kg	SUB		<0.01	<0.01				
Diclofop*	<0.01 mg/kg	SUB		<0.01	<0.01				
Dinoseb*	<0.01 mg/kg	SUB		<0.01	<0.01				
DNOC*	<0.01 mg/kg	SUB		<0.01	<0.01				
Fluroxypyr*	<0.01 mg/kg	SUB		<0.01	<0.01				
Ioxynil*	<0.01 mg/kg	SUB		<0.01	<0.01				
2-methyl-4-Chlorophenoxyacetic acid (MCPA)*	<0.01 mg/kg	SUB		<0.01	<0.01				
4-(4-Chloro-o-tolyloxy) butyric acid (MCPB)*	<0.01 mg/kg	SUB		<0.01	<0.01				
Mecoprop (MCPP)*	<0.01 mg/kg	SUB		<0.01	<0.01				
Propoxycarbazone-sodium*	<0.01 mg/kg	SUB		<0.01	<0.01				
Triclopyr*	<0.01 mg/kg	SUB		<0.01	<0.01				
Triclosan*	<0.01 mg/kg	SUB		<0.01	<0.01				
Exchangeable Ammonia as N	<12 mg/kg	TM024			<12 M	<12 M			
Phenol	<0.01 mg/kg	TM062 (S)			<0.01 M	<0.01 M			
Cresols	<0.01 mg/kg	TM062 (S)			<0.01 M	<0.01 M			
Xylenols	<0.015 mg/kg	TM062 (S)			<0.015 M	<0.015 M			
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)			<0.035 M	<0.035 M			
Soil Organic Matter (SOM)	<0.35 %	TM132			1.33 #	1.08 #			
pH	1 pH Units	TM133			7.54 M	7.66 M			
Chromium, Hexavalent	<0.6 mg/kg	TM151			<0.6 #	<0.6 #			
Cyanide, Total	<1 mg/kg	TM153			<1 M	<1 M			
Arsenic	<0.6 mg/kg	TM181			11.4 M	11.3 M			
Cadmium	<0.02 mg/kg	TM181			1.72 M	1.78 M			

CERTIFICATE OF ANALYSIS

SDG:	210517-19	**Client Reference:**	784-B026948	**Report Number:**	599757
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	599537

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH51	BH03A	BH03A			
			Depth (m)	0.10 - 0.10	0.10 - 0.10	0.60 - 0.60			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	10/05/2021	11/05/2021	11/05/2021			
			Sample Time	.	.	.			
			Date Received	13/05/2021	13/05/2021	13/05/2021			
			SDG Ref	210517-19	210517-19	210517-19			
			Lab Sample No.(s)	24280777	24280818	24280826			
			AGS Reference	ES1	ES1	ES4			
Chromium	<0.9 mg/kg	TM181			25.9 M	23.3 M			
Copper	<1.4 mg/kg	TM181			24.5 M	20 M			
Iron	<1000 mg/kg	TM181			31000 #	31300 #			
Lead	<0.7 mg/kg	TM181			155 M	149 M			
Mercury	<0.1 mg/kg	TM181			0.137 M	<0.1 M			
Nickel	<0.2 mg/kg	TM181			32.1 M	32.3 M			
Selenium	<1 mg/kg	TM181			<1 #	<1 #			
Vanadium	<0.2 mg/kg	TM181			36.1 #	33.9 #			
Zinc	<1.9 mg/kg	TM181			213 M	208 M			
Boron, water soluble	<1 mg/kg	TM222			<1 M	<1 M			
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243			0.022 M	0.0255 M			
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248			1.77	2.02			
EPH (C5-C40)	<35 mg/kg	TM415			<35	<35			
EPH Surrogate % recovery**	%	TM415			93.7	101			
EPH >C10-C40	<35 mg/kg	TM415			<35 M	<35 M			

CERTIFICATE OF ANALYSIS

SDG:	210517-19	**Client Reference:**	784-B026948	**Report Number:**	599757
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	599537

OC OP Pesticides and Triazine Herb

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH51	BH03A				
			Depth (m)	0.10 - 0.10	0.10 - 0.10				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	10/05/2021	11/05/2021				
			Sample Time	.	.				
			Date Received	13/05/2021	13/05/2021				
			SDG Ref	210517-19	210517-19				
			Lab Sample No.(s)	24280777	24280818				
			AGS Reference	ES1	ES1				
Dichlorvos	<0.05 mg/kg	TM073		<0.05	<0.05				
Mevinphos	<0.05 mg/kg	TM073		<0.05	<0.05				
Phorate	<0.05 mg/kg	TM073		<0.05	<0.05				
alpha-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073		<0.05	<0.05				
Diazinon	<0.05 mg/kg	TM073		<0.05	<0.05				
gamma-Hexachlorocyclohexane (HCH / Lindane)	<0.05 mg/kg	TM073		<0.05	<0.05				
Disulfoton	<0.05 mg/kg	TM073		<0.05	<0.05				
Heptachlor	<0.05 mg/kg	TM073		<0.05	<0.05				
Aldrin	<0.05 mg/kg	TM073		<0.05	<0.05				
beta-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073		<0.05	<0.05				
Methyl parathion	<0.05 mg/kg	TM073		<0.05	<0.05				
Malathion	<0.05 mg/kg	TM073		<0.05	<0.05				
Fenitrothion	<0.05 mg/kg	TM073		<0.05	<0.05				
Heptachlor epoxide	<0.05 mg/kg	TM073		<0.05	<0.05				
Parathion	<0.05 mg/kg	TM073		<0.05	<0.05				
Endosulphan I	<0.05 mg/kg	TM073		<0.05	<0.05				
p,p-DDE	<0.05 mg/kg	TM073		<0.05	<0.05				
Dieldrin	<0.05 mg/kg	TM073		<0.05	<0.05				
Endrin	<0.05 mg/kg	TM073		<0.05	<0.05				
p,p-TDE (DDD)	<0.05 mg/kg	TM073		<0.05	<0.05				
Ethion	<0.05 mg/kg	TM073		<0.05	<0.05				
Endosulphan II	<0.05 mg/kg	TM073		<0.05	<0.05				
p,p-DDT	<0.05 mg/kg	TM073		<0.05	<0.05				
p,p-Methoxychlor	<0.05 mg/kg	TM073		<0.05	<0.05				
Endosulphan sulphate	<0.05 mg/kg	TM073		<0.05	<0.05				
Azinphos-methyl	<0.05 mg/kg	TM073		<0.05	<0.05				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210517-19	**Client Reference:**	784-B026948	**Report Number:**	599757
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	599537

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH03A	BH03A
			Depth (m)	0.10 - 0.10	0.60 - 0.60
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	11/05/2021	11/05/2021
			Sample Time	.	.
			Date Received	13/05/2021	13/05/2021
			SDG Ref	210517-19	210517-19
			Lab Sample No.(s)	24280818	24280826
			AGS Reference	ES1	ES4
Naphthalene-d8 % recovery**	%	TM218		78.4	75.8
Acenaphthene-d10 % recovery**	%	TM218		77.2	77.2
Phenanthrene-d10 % recovery**	%	TM218		74.5	79.7
Chrysene-d12 % recovery**	%	TM218		68	72
Perylene-d12 % recovery**	%	TM218		65.2	71.1
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	<0.009 M
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 M	<0.012 M
Acenaphthene	<0.008 mg/kg	TM218		<0.008 M	<0.008 M
Fluorene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M
Anthracene	<0.016 mg/kg	TM218		<0.016 M	<0.016 M
Fluoranthene	<0.017 mg/kg	TM218		<0.017 M	<0.017 M
Pyrene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M
Benz(a)anthracene	<0.014 mg/kg	TM218		<0.014 M	<0.014 M
Chrysene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		<0.014 M	<0.014 M
Benzo(a)pyrene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		<0.018 M	<0.018 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	<0.023 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		<0.024 M	<0.024 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		<0.118	<0.118

CERTIFICATE OF ANALYSIS

SDG:	210517-19	**Client Reference:**	784-B026948	**Report Number:**	599757
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	599537

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH03A	BH03A				
			Depth (m)	0.10 - 0.10	0.60 - 0.60				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	11/05/2021	11/05/2021				
			Sample Time	.	.				
			Date Received	13/05/2021	13/05/2021				
			SDG Ref	210517-19	210517-19				
			Lab Sample No.(s)	24280818	24280826				
			AGS Reference	ES1	ES4				
GRO Surrogate % recovery**	%	TM089		94	101				
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C10-C12	<1 mg/kg	TM414		<1	<1				
Aliphatics >C12-C16	<1 mg/kg	TM414		<1	<1				
Aliphatics >C16-C21	<1 mg/kg	TM414		<1	<1				
Aliphatics >C21-C35	<1 mg/kg	TM414		3.37	2.05				
Aliphatics >C35-C44	<1 mg/kg	TM414		<1	<1				
Total Aliphatics >C10-C44	<5 mg/kg	TM414		<5	<5				
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		<10	<10				
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics > EC10-EC12	<1 mg/kg	TM414		<1	<1				
Aromatics > EC12-EC16	<1 mg/kg	TM414		<1	<1				
Aromatics > EC16-EC21	<1 mg/kg	TM414		<1	<1				
Aromatics > EC21-EC35	<1 mg/kg	TM414		1.46	<1				
Aromatics >EC35-EC44	<1 mg/kg	TM414		<1	<1				
Aromatics > EC40-EC44	<1 mg/kg	TM414		<1	<1				
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		<5	<5				
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		<10	<10				
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		<0.05	<0.05				
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		<0.05	<0.05				
GRO >C5-C10	<0.02 mg/kg	TM089		<0.02	<0.02				

CERTIFICATE OF ANALYSIS

SDG:	210517-19	**Client Reference:**	784-B026948	**Report Number:**	599757
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	599537

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH03A	BH03A
			Depth (m)	0.10 - 0.10	0.60 - 0.60
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	11/05/2021	11/05/2021
			Sample Time	.	.
			Date Received	13/05/2021	13/05/2021
			SDG Ref	210517-19	210517-19
			Lab Sample No.(s)	24280818	24280826
			AGS Reference	ES1	ES4
Dibromofluoromethane**	%	TM116		105	107
Toluene-d8**	%	TM116		98.7	98.7
4-Bromofluorobenzene**	%	TM116		97.1	98
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.01 M	<0.01 M
Benzene	<0.009 mg/kg	TM116		<0.009 M	<0.009 M
Toluene	<0.007 mg/kg	TM116		<0.007 M	<0.007 M
Ethylbenzene	<0.004 mg/kg	TM116		<0.004 M	<0.004 M
p/m-Xylene	<0.01 mg/kg	TM116		<0.01 #	<0.01 #
o-Xylene	<0.01 mg/kg	TM116		<0.01 M	<0.01 M
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.02	<0.02
Sum of BTEX	<0.04 mg/kg	TM116		<0.04	<0.04

CERTIFICATE OF ANALYSIS

SDG:	210517-19	**Client Reference:**	784-B026948	**Report Number:**	599757
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	599537

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&+$@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	BH03AES1 0.10 - 0.10 SOLID 11/05/2021 00:00:00 13/05/2021 05:00:00 210517-19 24280818 TM048	20/05/2021	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	BH03AES4 0.60 - 0.60 SOLID 11/05/2021 00:00:00 13/05/2021 05:00:00 210517-19 24280826 TM048	20.05.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	210517-19	**Client Reference:**	784-B026948	**Report Number:**	599757
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	599537

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.112	**Natural Moisture Content (%)**	25
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	80
Particle Size <4mm	>95%		

Case	
SDG	210517-19
Lab Sample Number(s)	24280826
Sampled Date	11-May-2021
Customer Sample Ref.	BH03A ES4
Depth (m)	0.60 - 0.60

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Boron	0.111	<0.01	1.11	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.285	<0.019	2.85	<0.19	-	-	-
Lead	0.000765	<0.0002	0.00765	<0.002	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0109	<0.001	0.109	<0.01	-	-	-
Sulphide	0.0419	<0.01	0.419	<0.1	-	-	-

Leach Test Information

Date Prepared	18-May-2021
pH (pH Units)	7.84
Conductivity (µS/cm)	62.40
Temperature (°C)	22.00
Volume Leachant (Litres)	0.878

CERTIFICATE OF ANALYSIS

SDG:	210517-19	**Client Reference:**	784-B026948	**Report Number:**	599757
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	599537

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210517-19	**Client Reference:**	784-B026948	**Report Number:**	599757
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	599537

Test Completion Dates

Lab Sample No(s)	24280777	24280818	24280826
Customer Sample Ref.	BH51	BH03A	BH03A
AGS Ref.	ES1	ES1	ES4
Depth	0.10 - 0.10	0.10 - 0.10	0.60 - 0.60
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Acid herbicides*	27-May-2021	27-May-2021	
Ammoniacal N as NH4 in 2:1 extract		19-May-2021	19-May-2021
Ammoniacal Nitrogen			24-May-2021
Ammonium Soil by Titration		24-May-2021	24-May-2021
Anions by Kone (soil)		20-May-2021	20-May-2021
Asbestos ID in Solid Samples		20-May-2021	20-May-2021
Boron Water Soluble		19-May-2021	19-May-2021
CEN 10:1 Leachate (1 Stage)			19-May-2021
CEN Readings			22-May-2021
Cyanide Comp/Free/Total/Thiocyanate		19-May-2021	26-May-2021
Dissolved Metals by ICP-MS			21-May-2021
EPH		20-May-2021	20-May-2021
EPH by GCxGC-FID		20-May-2021	20-May-2021
EPH CWG GC (S)		20-May-2021	20-May-2021
GRO by GC-FID (S)		20-May-2021	20-May-2021
Hexavalent Chromium (s)		19-May-2021	19-May-2021
Hexavalent Chromium (w)			24-May-2021
Mercury Dissolved			21-May-2021
Metals in solid samples by OES		24-May-2021	24-May-2021
Moisture at 105C			18-May-2021
OC OP Pesticides and Triazine Herb	21-May-2021	21-May-2021	
PAH by GCMS		21-May-2021	19-May-2021
pH		19-May-2021	19-May-2021
pH Value of Filtered Water			21-May-2021
Phenols by HPLC (S)		19-May-2021	19-May-2021
Sample description	18-May-2021	17-May-2021	17-May-2021
Sulphide			21-May-2021
Total Organic Carbon		24-May-2021	24-May-2021
TPH CWG GC (S)		20-May-2021	20-May-2021
VOC MS (S)		20-May-2021	20-May-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2420
Ammoniacal Nitrogen as N	TM099	**94.4** 91.28 : 106.64

Ammonium Soil by Titration

Component	Method Code	QC 2420
Exchangeable Ammonium as NH4	TM024	**95.02** 76.20 : 110.13

Anions by Kone (soil)

Component	Method Code	QC 2418	QC 2427
Chloride (soluble)	TM243		**150.26** 83.05 : 116.28
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**162.15** 70.00 : 130.00	**160.75** 70.00 : 130.00

Boron Water Soluble

Component	Method Code	QC 2432
Water Soluble Boron	TM222	**100.5** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2443	QC 2416
Free Cyanide	TM153	**93.66** 78.00 : 114.00	
Free Cyanide (W)	TM227		**81.5** 90.67 : 122.67
Thiocyanate	TM153	**96.15** 94.53 : 113.33	
Thiocyanate (W)	TM227		**108.5** 92.25 : 117.75
Total Cyanide	TM153	**96.5** 77.13 : 111.53	
Total Cyanide (W)	TM227		**103.0** 88.75 : 111.25

Dissolved Metals by ICP-MS

Dissolved Metals by ICP-MS

Component	Method Code	QC 2433
Aluminium	TM152	**99.0** 94.21 : 111.52
Antimony	TM152	**103.0** 88.37 : 130.57
Arsenic	TM152	**100.0** 92.62 : 113.52
Barium	TM152	**100.33** 88.62 : 113.14
Beryllium	TM152	**102.0** 87.08 : 111.38
Bismuth	TM152	**103.83** 92.62 : 115.02
Boron	TM152	**104.33** 86.31 : 120.88
Cadmium	TM152	**99.17** 93.85 : 111.65
Calcium	TM152	**97.33** 89.20 : 126.91
Chromium	TM152	**97.0** 92.50 : 113.03
Cobalt	TM152	**100.5** 85.01 : 114.87
Copper	TM152	**99.17** 89.87 : 119.73
Iron	TM152	**100.0** 93.02 : 113.86
Lead	TM152	**100.67** 91.11 : 116.98
Lithium	TM152	**99.33** 87.70 : 115.90
Magnesium	TM152	**96.67** 89.60 : 116.61
Manganese	TM152	**99.83** 93.97 : 112.46
Molybdenum	TM152	**96.83** 89.07 : 110.96
Nickel	TM152	**99.67** 93.70 : 112.15
Phosphorus	TM152	**96.0** 89.24 : 114.18
Potassium	TM152	**97.33** 93.20 : 115.55
Selenium	TM152	**102.0** 91.69 : 117.12
Silver	TM152	**102.67** 90.93 : 121.73
Sodium	TM152	**96.67** 92.42 : 113.24
Strontium	TM152	**99.0** 92.14 : 116.24
Tellurium	TM152	**100.17** 89.88 : 111.78
Thallium	TM152	**95.33** 82.43 : 113.83

Dissolved Metals by ICP-MS

		QC 2433
Tin	TM152	**102.67** 94.62 : 107.79
Titanium	TM152	**101.5** 90.29 : 115.23
Tungsten	TM152	**97.0** 77.61 : 132.31
Uranium	TM152	**98.5** 86.97 : 115.76
Vanadium	TM152	**105.33** 89.61 : 115.48
Zinc	TM152	**99.0** 87.51 : 116.26

GRO by GC-FID (S)

Component	Method Code	QC 2438
QC	TM089	**94.51** 70.34 : 111.95

Hexavalent Chromium (s)

Component	Method Code	QC 2464
Hexavalent Chromium	TM151	**100.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2488
Hexavalent Chromium	TM241	**101.8** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2448
Mercury Dissolved (CVAF)	TM183	**104.0** 69.30 : 128.70

Metals in solid samples by OES

CERTIFICATE OF ANALYSIS

SDG:	210517-19	**Client Reference:**	784-B026948	**Report Number:**	599757
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	599537

Metals in solid samples by OES

Component	Method Code	QC 2436	QC 2454
Aluminium	TM181	**94.69** 77.46 : 123.98	**102.65** 77.46 : 123.98
Antimony	TM181	**100.0** 87.04 : 111.16	**101.63** 87.04 : 111.16
Arsenic	TM181	**98.26** 87.34 : 110.87	**102.33** 87.34 : 110.87
Barium	TM181	**95.41** 80.73 : 115.16	**100.0** 80.73 : 115.16
Beryllium	TM181	**102.24** 89.47 : 112.97	**102.24** 89.47 : 112.97
Boron	TM181	**95.13** 76.57 : 104.15	**93.41** 76.57 : 104.15
Cadmium	TM181	**93.0** 81.71 : 107.91	**94.24** 81.71 : 107.91
Chromium	TM181	**94.52** 77.55 : 104.47	**89.05** 77.55 : 104.47
Cobalt	TM181	**91.19** 82.95 : 107.41	**90.57** 82.95 : 107.41
Copper	TM181	**96.3** 84.36 : 106.14	**97.36** 84.36 : 106.14
Iron	TM181	**93.65** 81.43 : 115.79	**101.59** 81.43 : 115.79
Lead	TM181	**90.32** 81.95 : 107.63	**92.12** 81.95 : 107.63
Manganese	TM181	**110.56** 94.29 : 119.51	**112.5** 94.29 : 119.51
Mercury	TM181	**92.03** 82.73 : 106.36	**97.34** 82.73 : 106.36
Molybdenum	TM181	**103.7** 86.61 : 111.07	**100.0** 86.61 : 111.07
Nickel	TM181	**89.73** 79.72 : 103.80	**90.22** 79.72 : 103.80
Phosphorus	TM181	**106.06** 92.65 : 125.47	**114.14** 92.65 : 125.47
Selenium	TM181	**101.57** 88.36 : 111.25	**101.96** 88.36 : 111.25
Strontium	TM181	**100.22** 77.99 : 108.06	**94.21** 77.99 : 108.06
Thallium	TM181	**77.88** 88.60 : 116.73	**105.75** 88.60 : 116.73
Tin	TM181	**98.86** 89.77 : 112.62	**102.28** 89.77 : 112.62
Titanium	TM181	**86.26** 66.29 : 105.96	**88.55** 66.29 : 105.96
Vanadium	TM181	**99.63** 75.51 : 108.87	**95.97** 75.51 : 108.87
Zinc	TM181	**101.64** 84.02 : 111.24	**101.64** 84.02 : 111.24

PAH by GCMS

CERTIFICATE OF ANALYSIS

SDG:	210517-19	**Client Reference:**	784-B026948	**Report Number:**	599757
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	599537

PAH by GCMS

Component	Method Code	QC 2447	QC 2492
Acenaphthene	TM218	**95.0** 76.79 : 103.90	**90.5** 76.79 : 103.90
Acenaphthylene	TM218	**93.5** 74.19 : 106.17	**88.0** 74.19 : 106.17
Anthracene	TM218	**94.5** 70.90 : 109.22	**88.0** 70.90 : 109.22
Benz(a)anthracene	TM218	**98.5** 73.77 : 119.26	**95.5** 73.77 : 119.26
Benzo(a)pyrene	TM218	**98.5** 73.20 : 114.18	**94.5** 73.20 : 114.18
Benzo(b)fluoranthene	TM218	**93.5** 75.36 : 117.58	**101.0** 75.36 : 117.58
Benzo(ghi)perylene	TM218	**95.5** 70.73 : 116.12	**90.5** 70.73 : 116.12
Benzo(k)fluoranthene	TM218	**97.0** 75.98 : 116.59	**88.0** 75.98 : 116.59
Chrysene	TM218	**99.0** 74.82 : 114.18	**92.0** 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	**98.5** 69.17 : 115.30	**88.0** 69.17 : 115.30
Fluoranthene	TM218	**96.0** 66.06 : 114.63	**89.0** 66.06 : 114.63
Fluorene	TM218	**94.0** 76.66 : 107.56	**89.5** 76.66 : 107.56
Indeno(123cd)pyrene	TM218	**87.5** 70.26 : 117.95	**83.5** 70.26 : 117.95
Naphthalene	TM218	**90.5** 74.70 : 101.83	**87.0** 74.70 : 101.83
Phenanthrene	TM218	**94.5** 73.62 : 109.34	**89.0** 73.62 : 109.34
Pyrene	TM218	**95.5** 71.46 : 117.00	**87.5** 71.46 : 117.00

pH

Component	Method Code	QC 2488
pH	TM133	**100.0** 98.41 : 102.48

pH Value of Filtered Water

Component	Method Code	QC 2436
pH	TM256	**100.4** 99.33 : 102.54

Phenols by HPLC (S)

Phenols by HPLC (S)

Component	Method Code	QC 2497	QC 2499
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**51.95** 70.71 : 116.42	**50.0** 70.71 : 116.42
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**45.03** 64.54 : 117.79	**43.27** 64.54 : 117.79
Cresols by HPLC (S)	TM062 (S)	**48.43** 74.40 : 108.98	**46.97** 74.40 : 108.98
Phenol by HPLC (S)	TM062 (S)	**50.99** 69.44 : 122.18	**49.01** 69.44 : 122.18
Xylenols by HPLC (S)	TM062 (S)	**49.48** 76.56 : 106.38	**48.23** 76.56 : 106.38

Sulphide

Component	Method Code	QC 2476
Sulphide	TM101	**99.33** 88.90 : 112.50

Total Organic Carbon

Component	Method Code	QC 2470
Total Organic Carbon	TM132	**106.25** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2464
1,1,1,2-tetrachloroethane	TM116	**99.2** 79.10 : 119.66
1,1,1-Trichloroethane	TM116	**99.4** 88.34 : 114.50
1,1,2-Trichloroethane	TM116	**90.6** 81.29 : 113.79
1,1-Dichloroethane	TM116	**107.2** 86.77 : 122.11
1,2-Dichloroethane	TM116	**106.4** 90.04 : 132.28
1,4-Dichlorobenzene	TM116	**98.8** 80.81 : 125.07
2-Chlorotoluene	TM116	**86.6** 73.13 : 114.13
4-Chlorotoluene	TM116	**80.2** 68.66 : 109.13
Benzene	TM116	**97.6** 84.29 : 112.22
Carbon Disulphide	TM116	**94.2** 75.11 : 124.81
Carbontetrachloride	TM116	**97.0** 82.35 : 126.46

		QC 2464
Chlorobenzene	TM116	**96.0** 82.88 : 122.42
Chloroform	TM116	**105.4** 90.35 : 120.38
Chloromethane	TM116	**92.0** 67.89 : 143.51
Cis-1,2-Dichloroethene	TM116	**103.0** 78.27 : 128.90
Dibromomethane	TM116	**91.2** 76.00 : 120.73
Dichloromethane	TM116	**109.2** 92.27 : 134.36
Ethylbenzene	TM116	**84.0** 70.95 : 113.07
Hexachlorobutadiene	TM116	**55.8** 14.55 : 147.92
Isopropylbenzene	TM116	**75.4** 52.00 : 108.19
Naphthalene	TM116	**101.2** 80.29 : 135.77
o-Xylene	TM116	**78.6** 68.34 : 101.99
p/m-Xylene	TM116	**78.9** 69.47 : 97.31
Sec-Butylbenzene	TM116	**68.4** 27.03 : 135.73
Tetrachloroethene	TM116	**96.0** 81.43 : 126.65
Toluene	TM116	**86.0** 82.44 : 103.50
Trichloroethene	TM116	**90.6** 79.80 : 112.33
Trichlorofluoromethane	TM116	**101.8** 83.13 : 123.97
Vinyl Chloride	TM116	**99.6** 69.66 : 136.55

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

Work Order	: **PR2146219**	Issue Date	: 27-May-2021
Customer	: **ALS Life Sciences Ltd**	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: [redacted]	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 210517-19	Page	: 1 of 2
Order number	: ----	Date Samples Received	: 20-May-2021
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 20-May-2021 - 27-May-2021
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories		*Position*
Zdeněk Jirák	[redacted]	Environmental Business Unit Manager

The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)

Analytical Results

Sub-Matrix: **SOLID**			Client sample ID	**24284648 BH03A**		**----**		**----**	
			Laboratory sample ID	*PR2146219-001*		----		----	
			Client sampling date / time	17-May-2021 19:52		----		----	
Parameter	*Method*	*LOR*	*Unit*	**Result**	**MU**	**Result**	**MU**	**Result**	**MU**
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	**82.5**	± 6.0%	**----**	----	**----**	----
Pesticides									
2.4.5-T	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4.5-TP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-D	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
4-CPP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bentazone	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dinoseb	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Fluroxypyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPA	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Acifluorfen	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bromoxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
DNOC	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dicamba	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Diclofop	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Ioxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Propoxycarbazone-sodium	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclopyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclosan	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.
Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	*Method Descriptions*
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PESLMSA1	CZ_SOP_D06_03_182.B (CSN EN 15637, US EPA 1694) Determination of acidic herbicides and drug residues by liquid chromatography method with MS/MS detection.

A "*" symbol preceding any method indicates laboratory or subcontractor non-accredited test. If the UNICO-SUB code is stated in the method table, this only informs that the tests have been performed by a subcontractor and the results are given in an annex to the test report, including information on test accreditation. In the case when a procedure specified in an accredited method was used for non-accredited matrix, the reported results are non-accredited; please refer to information in General Comment section on the front page. If the report contains subcontracted analyses, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.
The calculation methods of summation parameters are available on request in the client service.

CERTIFICATE OF ANALYSIS

Work Order	: **PR2146190**	Issue Date	: 27-May-2021
Customer	: **ALS Life Sciences Ltd**	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: [redacted]	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 210517-19	Page	: 1 of 2
Order number	: ----	Date Samples Received	: 20-May-2021
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 20-May-2021 - 27-May-2021
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

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The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories		*Position*
Zdeněk Jirák	[redacted]	Environmental Business Unit Manager

The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)

Analytical Results

Sub-Matrix: **SOIL**			Client sample ID	**24285752 BH51**		**----**		**----**	
			Laboratory sample ID	*PR2146190-001*		----		----	
			Client sampling date / time	10-May-2021		----		----	
Parameter	*Method*	*LOR*	*Unit*	**Result**	**MU**	**Result**	**MU**	**Result**	**MU**
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	**74.7**	± 6.0%	**----**	----	**----**	----
Pesticides									
2.4.5-T	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4.5-TP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-D	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
4-CPP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bentazone	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dinoseb	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Fluroxypyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPA	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Acifluorfen	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bromoxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
DNOC	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dicamba	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Diclofop	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Ioxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Propoxycarbazone-sodium	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclopyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclosan	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----

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Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	*Method Descriptions*
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PESLMSA1	CZ_SOP_D06_03_182.B (CSN EN 15637, US EPA 1694) Determination of acidic herbicides and drug residues by liquid chromatography method with MS/MS detection.

A "*" symbol preceding any method indicates laboratory or subcontractor non-accredited test. If the UNICO-SUB code is stated in the method table, this only informs that the tests have been performed by a subcontractor and the results are given in an annex to the test report, including information on test accreditation. In the case when a procedure specified in an accredited method was used for non-accredited matrix, the reported results are non-accredited; please refer to information in General Comment section on the front page. If the report contains subcontracted analyses, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.
The calculation methods of summation parameters are available on request in the client service.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	02 June 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210524-21
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	600227

We received 2 samples on Saturday May 22, 2021 and 1 of these samples were scheduled for analysis which was completed on Wednesday June 02, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Son

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210524-21	**Client Reference:**	784-B026948	**Report Number:**	600227
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24331395	BH36	ES1	0.40 - 0.40	20/05/2021
24331404	BH36	ES2	1.00 - 1.00	20/05/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	210524-21	**Client Reference:**	784-B026948	**Report Number:**	600227
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24331404			
Customer Sample Reference			BH36			
AGS Reference			ES2			
Depth (m)			1.00 - 1.00			
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 1		X		
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1	X			
Ammonium Soil by Titration	All	NDPs: 0 Tests: 1		X		
Anions by Kone (soil)	All	NDPs: 0 Tests: 1		X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1	X			
Boron Water Soluble	All	NDPs: 0 Tests: 1		X		
CEN Readings	All	NDPs: 0 Tests: 1	X			
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2	X	X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1	X			
EPH	All	NDPs: 0 Tests: 1		X		
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1		X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 1		X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1			X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1		X		
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1	X			

Validated

CERTIFICATE OF ANALYSIS

SDG:	210524-21	**Client Reference:**	784-B026948	**Report Number:**	600227
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24331404			
Customer Sample Reference			BH36			
AGS Reference			ES2			
Depth (m)			1.00 - 1.00			
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	
Mercury Dissolved	All	NDPs: 0 Tests: 1	X			
Metals in solid samples by OES	All	NDPs: 0 Tests: 1		X		
PAH by GCMS	All	NDPs: 0 Tests: 1		X		
PCBs by GCMS	All	NDPs: 0 Tests: 1		X		
pH	All	NDPs: 0 Tests: 1		X		
pH Value of Filtered Water	All	NDPs: 0 Tests: 1	X			
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1		X		
Sample description	All	NDPs: 0 Tests: 1		X		
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1		X		
Sulphide	All	NDPs: 0 Tests: 1	X			
Total Organic Carbon	All	NDPs: 0 Tests: 1		X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 1		X		
VOC MS (S)	All	NDPs: 0 Tests: 1			X	

CERTIFICATE OF ANALYSIS

SDG:	210524-21	**Client Reference:**	784-B026948	**Report Number:**	600227
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24331404	BH36	1.00 - 1.00	Light Brown	Sand	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210524-21	**Client Reference:**	784-B026948	**Report Number:**	600227
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BH36	1.00 - 1.00	Soil/Solid (S)	20/05/2021	.	22/05/2021	210524-21	24331404	ES2
Moisture Content Ratio (% of as received sample)	%	PM024	3.2								
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12 M								
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M								
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M								
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M								
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M								
Soil Organic Matter (SOM)	<0.35 %	TM132	<0.35 #								
pH	1 pH Units	TM133	8.98 M								
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #								
Cyanide, Total	<1 mg/kg	TM153	<1 M								
PCB congener 118	<0.003 mg/kg	TM168	<0.003 M								
PCB congener 81	<0.003 mg/kg	TM168	<0.003 M								
PCB congener 77	<0.003 mg/kg	TM168	<0.003 M								
PCB congener 123	<0.003 mg/kg	TM168	<0.003 M								
PCB congener 114	<0.003 mg/kg	TM168	<0.003 M								
PCB congener 105	<0.003 mg/kg	TM168	<0.003 M								
PCB congener 126	<0.003 mg/kg	TM168	<0.003 M								
PCB congener 167	<0.003 mg/kg	TM168	<0.003 M								
PCB congener 156	<0.003 mg/kg	TM168	<0.003 M								
PCB congener 157	<0.003 mg/kg	TM168	<0.003 M								
PCB congener 169	<0.003 mg/kg	TM168	<0.003 M								
PCB congener 189	<0.003 mg/kg	TM168	<0.003 M								
Sum of detected WHO 12 PCBs	<0.036 mg/kg	TM168	<0.036								
Arsenic	<0.6 mg/kg	TM181	7.71 M								
Cadmium	<0.02 mg/kg	TM181	0.423 M								
Chromium	<0.9 mg/kg	TM181	4.27 M								
Copper	<1.4 mg/kg	TM181	8.98 M								
Iron	<1000 mg/kg	TM181	18500 #								
Lead	<0.7 mg/kg	TM181	18.4 M								
Mercury	<0.1 mg/kg	TM181	<0.1 M								
Nickel	<0.2 mg/kg	TM181	8.92 M								
Selenium	<1 mg/kg	TM181	<1 #								
Vanadium	<0.2 mg/kg	TM181	13.9 #								

Validated

CERTIFICATE OF ANALYSIS

SDG:	210524-21	**Client Reference:**	784-B026948	**Report Number:**	600227
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.	BH36
Depth (m)	1.00 - 1.00
Sample Type	Soil/Solid (S)
Date Sampled	20/05/2021
Sample Time	.
Date Received	22/05/2021
SDG Ref	210524-21
Lab Sample No.(s)	24331404
AGS Reference	ES2

Component	LOD/Units	Method	
Zinc	<1.9 mg/kg	TM181	68.8 M
Boron, water soluble	<1 mg/kg	TM222	<1 M
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0367 M
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248	5.06
EPH (C5-C40)	<35 mg/kg	TM415	<35
EPH Surrogate % recovery**	%	TM415	111
EPH >C10-C40	<35 mg/kg	TM415	<35 M

Validated

CERTIFICATE OF ANALYSIS

SDG:	210524-21	**Client Reference:**	784-B026948	**Report Number:**	600227
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH36
Depth (m)	1.00 - 1.00
Sample Type	Soil/Solid (S)
Date Sampled	20/05/2021
Sample Time	.
Date Received	22/05/2021
SDG Ref	210524-21
Lab Sample No.(s)	24331404
AGS Reference	ES2

Component	LOD/Units	Method	
Naphthalene-d8 % recovery**	%	TM218	80.8
Acenaphthene-d10 % recovery**	%	TM218	78.1
Phenanthrene-d10 % recovery**	%	TM218	75.9
Chrysene-d12 % recovery**	%	TM218	76.1
Perylene-d12 % recovery**	%	TM218	84.4
Naphthalene	<0.009 mg/kg	TM218	<0.009 M
Acenaphthylene	<0.012 mg/kg	TM218	<0.012 M
Acenaphthene	<0.008 mg/kg	TM218	<0.008 M
Fluorene	<0.01 mg/kg	TM218	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218	<0.015 M
Anthracene	<0.016 mg/kg	TM218	<0.016 M
Fluoranthene	<0.017 mg/kg	TM218	<0.017 M
Pyrene	<0.015 mg/kg	TM218	<0.015 M
Benz(a)anthracene	<0.014 mg/kg	TM218	<0.014 M
Chrysene	<0.01 mg/kg	TM218	<0.01 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	<0.015 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	<0.014 M
Benzo(a)pyrene	<0.015 mg/kg	TM218	<0.015 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	<0.018 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	<0.023 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	<0.024 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	<0.118

CERTIFICATE OF ANALYSIS

SDG:	210524-21	**Client Reference:**	784-B026948	**Report Number:**	600227
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BH36	1.00 - 1.00	Soil/Solid (S)	20/05/2021	.	22/05/2021	210524-21	24331404	ES2
Phenol	<0.1 mg/kg	TM157	<0.1								
Pentachlorophenol	<0.1 mg/kg	TM157	<0.1								
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157	<0.1								
Nitrobenzene	<0.1 mg/kg	TM157	<0.1								
Isophorone	<0.1 mg/kg	TM157	<0.1								
Hexachloroethane	<0.1 mg/kg	TM157	<0.1								
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157	<0.1								
Hexachlorobutadiene	<0.1 mg/kg	TM157	<0.1								
Hexachlorobenzene	<0.1 mg/kg	TM157	<0.1								
n-Dioctyl phthalate	<0.1 mg/kg	TM157	<0.1								
Dimethyl phthalate	<0.1 mg/kg	TM157	<0.1								
Diethyl phthalate	<0.1 mg/kg	TM157	<0.1								
n-Dibutyl phthalate	<0.1 mg/kg	TM157	<0.1								
Dibenzofuran	<0.1 mg/kg	TM157	<0.1								
Carbazole	<0.1 mg/kg	TM157	<0.1								
Butylbenzyl phthalate	<0.1 mg/kg	TM157	<0.1								
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157	<0.1								
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157	<0.1								
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157	<0.1								
Azobenzene	<0.1 mg/kg	TM157	<0.1								
4-Nitrophenol	<0.1 mg/kg	TM157	<0.1								
4-Nitroaniline	<0.1 mg/kg	TM157	<0.1								
4-Methylphenol	<0.1 mg/kg	TM157	<0.1								
4-Chlorophenylphenylether	<0.1 mg/kg	TM157	<0.1								
4-Chloroaniline	<0.1 mg/kg	TM157	<0.1								
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157	<0.1								
4-Bromophenylphenylether	<0.1 mg/kg	TM157	<0.1								
3-Nitroaniline	<0.1 mg/kg	TM157	<0.1								
2-Nitrophenol	<0.1 mg/kg	TM157	<0.1								
2-Nitroaniline	<0.1 mg/kg	TM157	<0.1								
2-Methylphenol	<0.1 mg/kg	TM157	<0.1								
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157	<0.1								
2-Chlorophenol	<0.1 mg/kg	TM157	<0.1								

CERTIFICATE OF ANALYSIS

SDG:	210524-21	**Client Reference:**	784-B026948	**Report Number:**	600227
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BH36	1.00 - 1.00	Soil/Solid (S)	20/05/2021	.	22/05/2021	210524-21	24331404	ES2
2,6-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1								
2,4-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1								
2,4-Dimethylphenol	<0.1 mg/kg	TM157	<0.1								
2,4-Dichlorophenol	<0.1 mg/kg	TM157	<0.1								
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157	<0.1								
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157	<0.1								
1,4-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1								
1,3-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1								
1,2-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1								
2-Chloronaphthalene	<0.1 mg/kg	TM157	<0.1								
2-Methylnaphthalene	<0.1 mg/kg	TM157	<0.1								
Acenaphthylene	<0.1 mg/kg	TM157	<0.1								
Acenaphthene	<0.1 mg/kg	TM157	<0.1								
Anthracene	<0.1 mg/kg	TM157	<0.1								
Benzo(a)anthracene	<0.1 mg/kg	TM157	<0.1								
Benzo(b)fluoranthene	<0.1 mg/kg	TM157	<0.1								
Benzo(k)fluoranthene	<0.1 mg/kg	TM157	<0.1								
Benzo(a)pyrene	<0.1 mg/kg	TM157	<0.1								
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157	<0.1								
Chrysene	<0.1 mg/kg	TM157	<0.1								
Fluoranthene	<0.1 mg/kg	TM157	<0.1								
Fluorene	<0.1 mg/kg	TM157	<0.1								
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157	<0.1								
Phenanthrene	<0.1 mg/kg	TM157	<0.1								
Pyrene	<0.1 mg/kg	TM157	<0.1								
Naphthalene	<0.1 mg/kg	TM157	<0.1								
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157	<0.1								
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157	<0.1								

Validated

CERTIFICATE OF ANALYSIS

SDG:	210524-21	**Client Reference:**	784-B026948	**Report Number:**	600227
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH36
Depth (m)	1.00 - 1.00
Sample Type	Soil/Solid (S)
Date Sampled	20/05/2021
Sample Time	.
Date Received	22/05/2021
SDG Ref	210524-21
Lab Sample No.(s)	24331404
AGS Reference	ES2

Component	LOD/Units	Method	
GRO Surrogate % recovery**	%	TM089	112
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01
Aliphatics >C10-C12	<1 mg/kg	TM414	<1
Aliphatics >C12-C16	<1 mg/kg	TM414	<1
Aliphatics >C16-C21	<1 mg/kg	TM414	<1
Aliphatics >C21-C35	<1 mg/kg	TM414	<1
Aliphatics >C35-C44	<1 mg/kg	TM414	<1
Total Aliphatics >C10-C44	<5 mg/kg	TM414	<5
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414	<10
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	<0.01
Aromatics > EC10-EC12	<1 mg/kg	TM414	<1
Aromatics > EC12-EC16	<1 mg/kg	TM414	<1
Aromatics > EC16-EC21	<1 mg/kg	TM414	<1
Aromatics > EC21-EC35	<1 mg/kg	TM414	<1
Aromatics >EC35-EC44	<1 mg/kg	TM414	<1
Aromatics > EC40-EC44	<1 mg/kg	TM414	<1
Total Aromatics > EC10-EC44	<5 mg/kg	TM414	<5
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414	<10
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089	<0.05
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089	<0.05
GRO >C5-C10	<0.02 mg/kg	TM089	<0.02

CERTIFICATE OF ANALYSIS

SDG:	210524-21	**Client Reference:**	784-B026948	**Report Number:**	600227
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH36
Depth (m)	1.00 - 1.00
Sample Type	Soil/Solid (S)
Date Sampled	20/05/2021
Sample Time	.
Date Received	22/05/2021
SDG Ref	210524-21
Lab Sample No.(s)	24331404
AGS Reference	ES2

Component	LOD/Units	Method	
Dibromofluoromethane**	%	TM116	110
Toluene-d8**	%	TM116	99.3
4-Bromofluorobenzene**	%	TM116	101
Dichlorodifluoromethane	<0.006 mg/kg	TM116	<0.12 M
Chloromethane	<0.007 mg/kg	TM116	<0.14 #
Vinyl Chloride	<0.006 mg/kg	TM116	<0.12 @ M
Bromomethane	<0.01 mg/kg	TM116	<0.2 M
Chloroethane	<0.01 mg/kg	TM116	<0.2 M
Trichlorofluorormethane	<0.006 mg/kg	TM116	<0.12 M
1,1-Dichloroethene	<0.01 mg/kg	TM116	<0.2 #
Carbon Disulphide	<0.007 mg/kg	TM116	<0.14 M
Dichloromethane	<0.01 mg/kg	TM116	<0.2 #
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.2 M
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116	<0.2 M
1,1-Dichloroethane	<0.008 mg/kg	TM116	<0.16 M
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116	<0.12 M
2,2-Dichloropropane	<0.01 mg/kg	TM116	<0.2
Bromochloromethane	<0.01 mg/kg	TM116	<0.2 M
Chloroform	<0.008 mg/kg	TM116	<0.16 M
1,1,1-Trichloroethane	<0.007 mg/kg	TM116	<0.14 M
1,1-Dichloropropene	<0.01 mg/kg	TM116	<0.2 M
Carbontetrachloride	<0.01 mg/kg	TM116	<0.2 M
1,2-Dichloroethane	<0.005 mg/kg	TM116	<0.1 M
Benzene	<0.009 mg/kg	TM116	<0.18 M
Trichloroethene	<0.009 mg/kg	TM116	<0.18 #
1,2-Dichloropropane	<0.01 mg/kg	TM116	<0.2 M
Dibromomethane	<0.009 mg/kg	TM116	<0.18 M
Bromodichloromethane	<0.007 mg/kg	TM116	<0.14 M
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.2 M
Toluene	<0.007 mg/kg	TM116	<0.14 M
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.2
1,1,2-Trichloroethane	<0.01 mg/kg	TM116	<0.2 M
1,3-Dichloropropane	<0.007 mg/kg	TM116	<0.14 M

CERTIFICATE OF ANALYSIS

SDG:	210524-21	**Client Reference:**	784-B026948	**Report Number:**	600227
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH36
			Depth (m)	1.00 - 1.00
			Sample Type	Soil/Solid (S)
			Date Sampled	20/05/2021
			Sample Time	.
			Date Received	22/05/2021
			SDG Ref	210524-21
			Lab Sample No.(s)	24331404
			AGS Reference	ES2
Tetrachloroethene	<0.005 mg/kg	TM116		<0.1 M
Dibromochloromethane	<0.01 mg/kg	TM116		<0.2 M
1,2-Dibromoethane	<0.01 mg/kg	TM116		<0.2 M
Chlorobenzene	<0.005 mg/kg	TM116		<0.1 M
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 M
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 M
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #
o-Xylene	<0.01 mg/kg	TM116		<0.2 M
Styrene	<0.01 mg/kg	TM116		<0.2 @ #
Bromoform	<0.01 mg/kg	TM116		<0.2 M
Isopropylbenzene	<0.005 mg/kg	TM116		<0.1 #
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 #
1,2,3-Trichloropropane	<0.016 mg/kg	TM116		<0.32 M
Bromobenzene	<0.01 mg/kg	TM116		<0.2 M
Propylbenzene	<0.01 mg/kg	TM116		<0.2 M
2-Chlorotoluene	<0.009 mg/kg	TM116		<0.18 M
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116		<0.16 M
4-Chlorotoluene	<0.01 mg/kg	TM116		<0.2 M
tert-Butylbenzene	<0.014 mg/kg	TM116		<0.28 M
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116		<0.18 #
sec-Butylbenzene	<0.01 mg/kg	TM116		<0.2
4-Isopropyltoluene	<0.01 mg/kg	TM116		<0.2 M
1,3-Dichlorobenzene	<0.008 mg/kg	TM116		<0.16 M
1,4-Dichlorobenzene	<0.005 mg/kg	TM116		<0.1 M
n-Butylbenzene	<0.011 mg/kg	TM116		<0.22
1,2-Dichlorobenzene	<0.01 mg/kg	TM116		<0.2 M
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116		<0.28 M
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.2 #
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4
Hexachlorobutadiene	<0.02 mg/kg	TM116		<0.4 3
Naphthalene	<0.013 mg/kg	TM116		<0.26 M
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4 #
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4

CERTIFICATE OF ANALYSIS

SDG:	210524-21	**Client Reference:**	784-B026948	**Report Number:**	600227
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BH36	1.00 - 1.00	Soil/Solid (S)	20/05/2021	.	22/05/2021	210524-21	24331404	ES2
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4								
Sum of BTEX	<0.04 mg/kg	TM116	<0.8								

CERTIFICATE OF ANALYSIS

SDG:	210524-21	**Client Reference:**	784-B026948	**Report Number:**	600227
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref.	BH36ES2	28/05/2021	Paul Poynton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	1.00 - 1.00										
Sample Type	SOLID										
Date Sampled	20/05/2021 00:00:00										
Date Receieved	22/05/2021 05:00:00										
SDG	210524-21										
Original Sample	24331404										
Method Number	TM048										

CERTIFICATE OF ANALYSIS

SDG:	210524-21	**Client Reference:**	784-B026948	**Report Number:**	600227
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.093	**Natural Moisture Content (%)**	2.92
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	97.2
Particle Size <4mm	>95%		

Case	
SDG	210524-21
Lab Sample Number(s)	24331404
Sampled Date	20-May-2021
Customer Sample Ref.	BH36 ES2
Depth (m)	1.00 - 1.00

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.00202	<0.0005	0.0202	<0.005	-	-	-
Boron	0.0114	<0.01	0.114	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.000756	<0.0003	0.00756	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.813	<0.019	8.13	<0.19	-	-	-
Lead	0.000674	<0.0002	0.00674	<0.002	-	-	-
Nickel	0.00107	<0.0004	0.0107	<0.004	-	-	-
Selenium	0.00211	<0.001	0.0211	<0.01	-	-	-
Vanadium	0.00157	<0.001	0.0157	<0.01	-	-	-
Zinc	0.00492	<0.001	0.0492	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	25-May-2021
pH (pH Units)	8.86
Conductivity (µS/cm)	100.00
Temperature (°C)	19.60
Volume Leachant (Litres)	0.897

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210524-21	**Client Reference:**	784-B026948	**Report Number:**	600227
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24331404
Customer Sample Ref.	BH36
AGS Ref.	ES2
Depth	1.00 - 1.00
Type	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	27-May-2021
Ammoniacal Nitrogen	01-Jun-2021
Ammonium Soil by Titration	01-Jun-2021
Anions by Kone (soil)	27-May-2021
Asbestos ID in Solid Samples	28-May-2021
Boron Water Soluble	01-Jun-2021
CEN 10:1 Leachate (1 Stage)	26-May-2021
CEN Readings	27-May-2021
Cyanide Comp/Free/Total/Thiocyanate	02-Jun-2021
Dissolved Metals by ICP-MS	28-May-2021
EPH	01-Jun-2021
EPH by GCxGC-FID	28-May-2021
EPH CWG GC (S)	28-May-2021
GRO by GC-FID (S)	01-Jun-2021
Hexavalent Chromium (s)	28-May-2021
Hexavalent Chromium (w)	28-May-2021
Mercury Dissolved	28-May-2021
Metals in solid samples by OES	01-Jun-2021
Moisture at 105C	25-May-2021
PAH by GCMS	26-May-2021
PCBs by GCMS	26-May-2021
pH	26-May-2021
pH Value of Filtered Water	01-Jun-2021
Phenols by HPLC (S)	28-May-2021
Sample description	25-May-2021
Semi Volatile Organic Compounds	28-May-2021
Sulphide	28-May-2021
Total Organic Carbon	01-Jun-2021
TPH CWG GC (S)	01-Jun-2021
VOC MS (S)	28-May-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2415
Ammoniacal Nitrogen as N	TM099	**100.0** 91.28 : 106.64

Ammonium Soil by Titration

Component	Method Code	QC 2425
Exchangeable Ammonium as NH4	TM024	**93.03** 76.20 : 110.13

Boron Water Soluble

Component	Method Code	QC 2429
Water Soluble Boron	TM222	**89.5** 77.30 : 106.22

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2479	QC 2484
Free Cyanide	TM153	**96.34** 78.00 : 114.00	
Free Cyanide (W)	TM227		**80.25** 90.67 : 122.67
Thiocyanate	TM153	**98.08** 94.53 : 113.33	
Thiocyanate (W)	TM227		**106.0** 92.25 : 117.75
Total Cyanide	TM153	**99.3** 77.13 : 111.53	
Total Cyanide (W)	TM227		**103.0** 88.75 : 111.25

Dissolved Metals by ICP-MS

Component	Method Code	QC 2489
Aluminium	TM152	**102.33** 94.21 : 111.52
Antimony	TM152	**104.5** 88.37 : 130.57
Arsenic	TM152	**100.67** 92.62 : 113.52
Barium	TM152	**98.17** 88.62 : 113.14

Dissolved Metals by ICP-MS

		QC 2489
Beryllium	TM152	**104.0** 87.08 : 111.38
Bismuth	TM152	**103.17** 92.62 : 115.02
Boron	TM152	**106.0** 86.31 : 120.88
Cadmium	TM152	**101.5** 93.85 : 111.65
Calcium	TM152	**102.0** 89.20 : 126.91
Chromium	TM152	**99.5** 92.50 : 113.03
Cobalt	TM152	**102.83** 85.01 : 114.87
Copper	TM152	**102.83** 89.87 : 119.73
Iron	TM152	**102.0** 93.02 : 113.86
Lead	TM152	**97.33** 91.11 : 116.98
Lithium	TM152	**101.17** 87.70 : 115.90
Magnesium	TM152	**99.33** 89.60 : 116.61
Manganese	TM152	**105.83** 93.97 : 112.46
Molybdenum	TM152	**97.17** 89.07 : 110.96
Nickel	TM152	**102.33** 93.70 : 112.15
Phosphorus	TM152	**97.0** 89.24 : 114.18
Potassium	TM152	**100.0** 93.20 : 115.55
Selenium	TM152	**100.67** 91.69 : 117.12
Silver	TM152	**102.5** 90.93 : 121.73
Sodium	TM152	**100.67** 92.42 : 113.24
Strontium	TM152	**101.67** 92.14 : 116.24
Tellurium	TM152	**99.67** 89.88 : 111.78
Thallium	TM152	**91.67** 82.43 : 113.83
Tin	TM152	**103.17** 94.62 : 107.79
Titanium	TM152	**105.33** 90.29 : 115.23
Tungsten	TM152	**99.83** 77.61 : 132.31
Uranium	TM152	**99.67** 86.97 : 115.76

CERTIFICATE OF ANALYSIS

SDG:	210524-21	**Client Reference:**	784-B026948	**Report Number:**	600227
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Dissolved Metals by ICP-MS

		QC 2489
Vanadium	TM152	**107.17** 89.61 : 115.48
Zinc	TM152	**101.33** 87.51 : 116.26

EPH by GCxGC-FID

Component	Method Code	QC 2478
EPH >C10-C40 Raw	TM415	**91.77** 59.15 : 115.05

GRO by GC-FID (S)

Component	Method Code	QC 2453
QC	TM089	**88.36** 70.75 : 114.19

Hexavalent Chromium (s)

Component	Method Code	QC 2426
Hexavalent Chromium	TM151	**100.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2468
Hexavalent Chromium	TM241	**98.6** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2478
Mercury Dissolved (CVAF)	TM183	**99.5** 69.30 : 128.70

Metals in solid samples by OES

Metals in solid samples by OES

Component	Method Code	QC 2424
Aluminium	TM181	**96.46** 77.46 : 123.98
Antimony	TM181	**103.25** 87.04 : 111.16
Arsenic	TM181	**99.71** 87.34 : 110.87
Barium	TM181	**92.66** 80.73 : 115.16
Beryllium	TM181	**103.73** 89.47 : 112.97
Boron	TM181	**89.11** 76.57 : 104.15
Cadmium	TM181	**86.42** 81.71 : 107.91
Chromium	TM181	**84.79** 77.55 : 104.47
Cobalt	TM181	**91.19** 82.95 : 107.41
Copper	TM181	**94.54** 84.36 : 106.14
Iron	TM181	**97.62** 81.43 : 115.79
Lead	TM181	**93.47** 81.95 : 107.63
Manganese	TM181	**108.33** 94.29 : 119.51
Mercury	TM181	**96.62** 82.73 : 106.36
Molybdenum	TM181	**101.65** 86.61 : 111.07
Nickel	TM181	**91.44** 79.72 : 103.80
Phosphorus	TM181	**112.93** 92.65 : 125.47
Selenium	TM181	**100.39** 88.36 : 111.25
Strontium	TM181	**92.43** 77.99 : 108.06
Thallium	TM181	**103.54** 88.60 : 116.73
Tin	TM181	**96.58** 89.77 : 112.62
Titanium	TM181	**75.42** 66.29 : 105.96
Vanadium	TM181	**99.27** 75.51 : 108.87
Zinc	TM181	**105.34** 84.02 : 111.24

PAH by GCMS

CERTIFICATE OF ANALYSIS

SDG:	210524-21	**Client Reference:**	784-B026948	**Report Number:**	600227
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

PAH by GCMS

Component	Method Code	QC 2453
Acenaphthene	TM218	**87.0** 76.79 : 103.90
Acenaphthylene	TM218	**85.0** 74.19 : 106.17
Anthracene	TM218	**83.5** 70.90 : 109.22
Benz(a)anthracene	TM218	**86.5** 73.77 : 119.26
Benzo(a)pyrene	TM218	**90.0** 73.20 : 114.18
Benzo(b)fluoranthene	TM218	**89.5** 75.36 : 117.58
Benzo(ghi)perylene	TM218	**92.0** 70.73 : 116.12
Benzo(k)fluoranthene	TM218	**89.0** 75.98 : 116.59
Chrysene	TM218	**85.0** 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	**93.0** 69.17 : 115.30
Fluoranthene	TM218	**83.0** 66.06 : 114.63
Fluorene	TM218	**86.0** 76.66 : 107.56
Indeno(123cd)pyrene	TM218	**94.5** 70.26 : 117.95
Naphthalene	TM218	**87.5** 74.70 : 101.83
Phenanthrene	TM218	**84.5** 73.62 : 109.34
Pyrene	TM218	**81.5** 71.46 : 117.00

PCBs by GCMS

Component	Method Code	QC 2460
PCB congener 101	TM168	**87.7** 65.66 : 110.06
PCB congener 105	TM168	**80.8** 58.10 : 106.34
PCB congener 114	TM168	**81.6** 59.38 : 106.48
PCB congener 118	TM168	**83.0** 60.02 : 106.23
PCB congener 123	TM168	**90.6** 65.01 : 99.81
PCB congener 126	TM168	**82.8** 59.31 : 109.23
PCB congener 138	TM168	**88.0** 63.95 : 107.63
PCB congener 153	TM168	**88.7** 62.65 : 108.85
PCB congener 156	TM168	**82.9** 61.69 : 112.27

PCBs by GCMS

		QC 2460
PCB congener 157	TM168	**78.5** 55.37 : 104.81
PCB congener 167	TM168	**84.7** 65.58 : 109.14
PCB congener 169	TM168	**82.9** 56.84 : 112.10
PCB congener 180	TM168	**87.3** 66.99 : 111.63
PCB congener 189	TM168	**82.0** 57.75 : 112.59
PCB congener 28	TM168	**87.2** 73.68 : 105.96
PCB congener 52	TM168	**87.0** 67.24 : 107.62
PCB congener 77	TM168	**85.4** 64.87 : 108.49
PCB congener 81	TM168	**85.7** 70.78 : 110.80

pH

Component	Method Code	QC 2467
pH	TM133	**99.85** 98.41 : 102.48

pH Value of Filtered Water

Component	Method Code	QC 2431
pH	TM256	**100.4** 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2460
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**53.25** 69.38 : 125.27
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**44.44** 69.79 : 122.84
Cresols by HPLC (S)	TM062 (S)	**50.1** 77.98 : 111.41
Phenol by HPLC (S)	TM062 (S)	**51.66** 67.94 : 117.69
Xylenols by HPLC (S)	TM062 (S)	**51.15** 88.23 : 104.42

Semi Volatile Organic Compounds

Semi Volatile Organic Compounds

Component	Method Code	QC 2450
4-Bromophenylphenylether (Soil)	TM157	**92.0** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**99.0** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**93.0** 68.25 : 126.75
Naphthalene (Soil)	TM157	**91.5** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**93.0** 66.50 : 123.50
Phenol (Soil)	TM157	**97.5** 69.92 : 114.02

Sulphide

Component	Method Code	QC 2467
Sulphide	TM101	**100.0** 88.90 : 112.50

Total Organic Carbon

Component	Method Code	QC 2482
Total Organic Carbon	TM132	**100.78** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2429
1,1,1,2-tetrachloroethane	TM116	**109.0** 86.59 : 118.97
1,1,1-Trichloroethane	TM116	**99.6** 86.26 : 117.53
1,1,2-Trichloroethane	TM116	**96.4** 75.16 : 112.70
1,1-Dichloroethane	TM116	**105.4** 83.27 : 122.16
1,2-Dichloroethane	TM116	**108.4** 89.30 : 133.10
1,4-Dichlorobenzene	TM116	**118.2** 82.59 : 123.23
2-Chlorotoluene	TM116	**105.0** 66.81 : 118.43
4-Chlorotoluene	TM116	**101.2** 65.88 : 114.76
Benzene	TM116	**99.2** 93.16 : 123.63
Carbon Disulphide	TM116	**96.4** 75.11 : 124.81

VOC MS (S)

		QC 2429
Carbontetrachloride	TM116	**114.2** 82.35 : 126.46
Chlorobenzene	TM116	**104.2** 85.07 : 118.13
Chloroform	TM116	**107.6** 88.13 : 122.71
Chloromethane	TM116	**92.0** 61.62 : 145.66
Cis-1,2-Dichloroethene	TM116	**107.4** 78.27 : 128.90
Dibromomethane	TM116	**110.2** 77.47 : 121.29
Dichloromethane	TM116	**109.8** 87.89 : 134.72
Ethylbenzene	TM116	**99.4** 76.29 : 106.31
Hexachlorobutadiene	TM116	**130.6** 16.78 : 153.29
Isopropylbenzene	TM116	**94.2** 59.16 : 110.07
Naphthalene	TM116	**109.6** 79.29 : 125.59
o-Xylene	TM116	**85.6** 72.86 : 102.10
p/m-Xylene	TM116	**92.0** 68.99 : 102.40
Sec-Butylbenzene	TM116	**111.0** 44.71 : 117.87
Tetrachloroethene	TM116	**107.4** 77.82 : 125.00
Toluene	TM116	**91.6** 87.82 : 116.21
Trichloroethene	TM116	**98.6** 79.80 : 112.33
Trichlorofluoromethane	TM116	**102.2** 80.52 : 132.12
Vinyl Chloride	TM116	**96.0** 74.57 : 146.88

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	04 June 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210524-23
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	600688

This report has been revised and directly supersedes 600198 in its entirety.

We received 6 samples on Saturday May 22, 2021 and 1 of these samples were scheduled for analysis which was completed on Friday June 04, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210524-23	**Client Reference:**	784-B026948	**Report Number:**	600688
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	600198

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24331509	BH11	ES5	2.20	20/05/2021
24331515	BH11	ES6	3.50	20/05/2021
24331480	BH48	ES1	0.30	20/05/2021
24331483	BH48	ES2	0.70	20/05/2021
24331487	BH48	ES3	1.50 - 1.60	20/05/2021
24331502	BH48	ES4	2.00 - 2.50	20/05/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210524-23	**Client Reference:**	784-B026948	**Report Number:**	600688
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	600198

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
			24331515	BH11	ES6	3.50	1kg TUB with Handle (ALE260)	S
							250g Amber Jar (ALE210)	S
							60g VOC (ALE215)	S
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 1		X				
Ammonium Soil by Titration	All	NDPs: 0 Tests: 1		X				
Anions by Kone (soil)	All	NDPs: 0 Tests: 1		X				
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1	X					
Asbestos Quantification - Full	All	NDPs: 0 Tests: 1	X					
Boron Water Soluble	All	NDPs: 0 Tests: 1		X				
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 1		X				
EPH	All	NDPs: 0 Tests: 1		X				
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1		X				
EPH CWG GC (S)	All	NDPs: 0 Tests: 1		X				
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1					X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1		X				
Metals in solid samples by OES	All	NDPs: 0 Tests: 1		X				
PAH by GCMS	All	NDPs: 0 Tests: 1		X				
pH	All	NDPs: 0 Tests: 1		X				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210524-23	**Client Reference:**	784-B026948	**Report Number:**	600688
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	600198

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			2433515			
Customer Sample Reference			BH11			
AGS Reference			ES6			
Depth (m)			3.50			
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1		X		
Sample description	All	NDPs: 0 Tests: 1		X		
Total Organic Carbon	All	NDPs: 0 Tests: 1		X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 1		X		
VOC MS (S)	All	NDPs: 0 Tests: 1			X	

CERTIFICATE OF ANALYSIS

SDG:	210524-23	**Client Reference:**	784-B026948	**Report Number:**	600688
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	600198

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24331515	BH11	3.50	Light Brown	Stone/Soil	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210524-23	**Client Reference:**	784-B026948	**Report Number:**	600688
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	600198

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH11
Depth (m)	3.50
Sample Type	Soil/Solid (S)
Date Sampled	20/05/2021
Sample Time	.
Date Received	22/05/2021
SDG Ref	210524-23
Lab Sample No.(s)	24331515
AGS Reference	ES6

Component	LOD/Units	Method	
Moisture Content Ratio (% of as received sample)	%	PM024	2.7
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12 #
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 #
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 #
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 #
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 #
Soil Organic Matter (SOM)	<0.35 %	TM132	<0.35 #
pH	1 pH Units	TM133	8.91 #
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #
Cyanide, Total	<1 mg/kg	TM153	1.08 #
Arsenic	<0.6 mg/kg	TM181	3.47 #
Cadmium	<0.02 mg/kg	TM181	0.136 #
Chromium	<0.9 mg/kg	TM181	4.34 #
Copper	<1.4 mg/kg	TM181	3.57 #
Iron	<1000 mg/kg	TM181	5040 #
Lead	<0.7 mg/kg	TM181	11.5 #
Mercury	<0.1 mg/kg	TM181	<0.1 #
Nickel	<0.2 mg/kg	TM181	3.75 #
Selenium	<1 mg/kg	TM181	<1 #
Vanadium	<0.2 mg/kg	TM181	6.41 #
Zinc	<1.9 mg/kg	TM181	20.6 #
Boron, water soluble	<1 mg/kg	TM222	<1 #
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0219 #
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248	5.92
Asbestos Quantification - Gravimetric - %	<0.001 %	TM304	<0.001 #
Asbestos Quantification - PCOM Evaluation - %	<0.001 %	TM304	<0.001 #
Additional Asbestos Components (Using TM048)		TM304	None #
Analysts Comments		TM304	N/A
Asbestos Quantification - Total - %	<0.001 %	TM304	<0.001 #
EPH (C5-C40)	<35 mg/kg	TM415	<35
EPH Surrogate % recovery**	%	TM415	77.7
EPH >C10-C40	<35 mg/kg	TM415	<35 #

Validated

CERTIFICATE OF ANALYSIS

SDG:	210524-23	**Client Reference:**	784-B026948	**Report Number:**	600688
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	600198

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH11
Depth (m)	3.50
Sample Type	Soil/Solid (S)
Date Sampled	20/05/2021
Sample Time	.
Date Received	22/05/2021
SDG Ref	210524-23
Lab Sample No.(s)	24331515
AGS Reference	ES6

Component	LOD/Units	Method	
Naphthalene-d8 % recovery**	%	TM218	85.3
Acenaphthene-d10 % recovery**	%	TM218	85.1
Phenanthrene-d10 % recovery**	%	TM218	86.5
Chrysene-d12 % recovery**	%	TM218	84.6
Perylene-d12 % recovery**	%	TM218	91.3
Naphthalene	<0.009 mg/kg	TM218	<0.009 #
Acenaphthylene	<0.012 mg/kg	TM218	<0.012 #
Acenaphthene	<0.008 mg/kg	TM218	0.0115 #
Fluorene	<0.01 mg/kg	TM218	0.0144 #
Phenanthrene	<0.015 mg/kg	TM218	0.0948 #
Anthracene	<0.016 mg/kg	TM218	0.0246 #
Fluoranthene	<0.017 mg/kg	TM218	0.107 #
Pyrene	<0.015 mg/kg	TM218	0.0887 #
Benz(a)anthracene	<0.014 mg/kg	TM218	0.0453 #
Chrysene	<0.01 mg/kg	TM218	0.0385 #
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	0.0531 #
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	0.0192 #
Benzo(a)pyrene	<0.015 mg/kg	TM218	0.0364 #
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	0.0283 #
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	<0.023 #
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	0.0252 #
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	0.587

Validated

CERTIFICATE OF ANALYSIS

SDG:	210524-23	**Client Reference:**	784-B026948	**Report Number:**	600688
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	600198

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH11
Depth (m)	3.50
Sample Type	Soil/Solid (S)
Date Sampled	20/05/2021
Sample Time	.
Date Received	22/05/2021
SDG Ref	210524-23
Lab Sample No.(s)	24331515
AGS Reference	ES6

Component	LOD/Units	Method	
GRO Surrogate % recovery**	%	TM089	119
Aliphatics >C5-C6	<0.01 mg/kg	TM089	0.0298
Aliphatics >C6-C8	<0.01 mg/kg	TM089	0.0442
Aliphatics >C8-C10	<0.01 mg/kg	TM089	0.0873
Aliphatics >C10-C12	<1 mg/kg	TM414	<1
Aliphatics >C12-C16	<1 mg/kg	TM414	<1
Aliphatics >C16-C21	<1 mg/kg	TM414	<1
Aliphatics >C21-C35	<1 mg/kg	TM414	<1
Aliphatics >C35-C44	<1 mg/kg	TM414	<1
Total Aliphatics >C10-C44	<5 mg/kg	TM414	<5
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414	<10
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	0.0575
Aromatics > EC10-EC12	<1 mg/kg	TM414	<1
Aromatics > EC12-EC16	<1 mg/kg	TM414	<1
Aromatics > EC16-EC21	<1 mg/kg	TM414	<1
Aromatics > EC21-EC35	<1 mg/kg	TM414	<1
Aromatics >EC35-EC44	<1 mg/kg	TM414	<1
Aromatics > EC40-EC44	<1 mg/kg	TM414	<1
Total Aromatics > EC10-EC44	<5 mg/kg	TM414	<5
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414	<10
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089	0.161
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089	0.0575
GRO >C5-C10	<0.02 mg/kg	TM089	0.219

CERTIFICATE OF ANALYSIS

SDG:	210524-23	**Client Reference:**	784-B026948	**Report Number:**	600688
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	600198

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH11
Depth (m)	3.50
Sample Type	Soil/Solid (S)
Date Sampled	20/05/2021
Sample Time	.
Date Received	22/05/2021
SDG Ref	210524-23
Lab Sample No.(s)	24331515
AGS Reference	ES6

Component	LOD/Units	Method	
Dibromofluoromethane**	%	TM116	109
Toluene-d8**	%	TM116	102
4-Bromofluorobenzene**	%	TM116	105
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.2 #
Benzene	<0.009 mg/kg	TM116	<0.18 #
Toluene	<0.007 mg/kg	TM116	<0.14 #
Ethylbenzene	<0.004 mg/kg	TM116	<0.08 #
p/m-Xylene	<0.01 mg/kg	TM116	<0.2 #
o-Xylene	<0.01 mg/kg	TM116	<0.2 #
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4
Sum of BTEX	<0.04 mg/kg	TM116	<0.8

CERTIFICATE OF ANALYSIS

SDG:	210524-23	**Client Reference:**	784-B026948	**Report Number:**	600688
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	600198

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&+$@	Sample deviation (see appendix)

Cust. Sample Ref.	Depth (m)	Sample Type	Date Sampled	Date Received	SDG	Original Sample	Method Number	Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
BH11ES6	3.50	SOLID	20/05/2021 00:00:00	22/05/2021 05:00:00	210524-23	24331515	TM048	28/05/2021	James Richards	Loose fibres in soil	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	210524-23	**Client Reference:**	784-B026948	**Report Number:**	600688
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	600198

Asbestos Quantification - Full

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Additional Asbestos Components	Analysts Comments	Asbestos Quantification - Gravimetric - %	Asbestos Quantification - PCOM	Asbestos Quantification - Total - %
Cust. Sample Ref.	BH11ES6	None (#)	N/A	<0.001 (#)	<0.001 (#)	<0.001 (#)
Depth (m)	3.50					
Sample Type	SOLID					
Date Sampled	20/05/2021 00:00:00					
Date Received	22/05/2021 05:00:00					
SDG	210524-23					
Original Sample	24331515					
Method Number	TM304					

CERTIFICATE OF ANALYSIS

SDG:	210524-23	**Client Reference:**	784-B026948	**Report Number:**	600688
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	600198

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM304	HSE Contract research Report no 83/1996	Asbestos Quantification in Soil: Fibres identified by morphology only
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210524-23	**Client Reference:**	784-B026948	**Report Number:**	600688
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	600198

Test Completion Dates

Lab Sample No(s)	24331515
Customer Sample Ref.	BH11
AGS Ref.	ES6
Depth	3.50
Type	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	27-May-2021
Ammonium Soil by Titration	01-Jun-2021
Anions by Kone (soil)	27-May-2021
Asbestos ID in Solid Samples	28-May-2021
Asbestos Quantification - Full	04-Jun-2021
Boron Water Soluble	01-Jun-2021
Cyanide Comp/Free/Total/Thiocyanate	01-Jun-2021
EPH	01-Jun-2021
EPH by GCxGC-FID	27-May-2021
EPH CWG GC (S)	28-May-2021
GRO by GC-FID (S)	01-Jun-2021
Hexavalent Chromium (s)	28-May-2021
Metals in solid samples by OES	01-Jun-2021
PAH by GCMS	26-May-2021
pH	26-May-2021
Phenols by HPLC (S)	01-Jun-2021
Sample description	25-May-2021
Total Organic Carbon	01-Jun-2021
TPH CWG GC (S)	01-Jun-2021
VOC MS (S)	28-May-2021

ASSOCIATED AQC DATA

Ammonium Soil by Titration

Component	Method Code	QC 2425
Exchangeable Ammonium as NH4	TM024	**93.03** 76.20 : 110.13

Boron Water Soluble

Component	Method Code	QC 2429
Water Soluble Boron	TM222	**89.5** 77.30 : 106.22

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2479
Free Cyanide	TM153	**96.34** 78.00 : 114.00
Thiocyanate	TM153	**98.08** 94.53 : 113.33
Total Cyanide	TM153	**99.3** 77.13 : 111.53

EPH by GCxGC-FID

Component	Method Code	QC 2427
EPH >C10-C40 Raw	TM415	**81.76** 63.71 : 122.01

GRO by GC-FID (S)

Component	Method Code	QC 2453
QC	TM089	**88.36** 70.75 : 114.19

Hexavalent Chromium (s)

Component	Method Code	QC 2426
Hexavalent Chromium	TM151	**100.0** 91.40 : 115.40

CERTIFICATE OF ANALYSIS

SDG:	210524-23	**Client Reference:**	784-B026948	**Report Number:**	600688
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	600198

Metals in solid samples by OES

Component	Method Code	QC 2424
Aluminium	TM181	**96.46** 77.46 : 123.98
Antimony	TM181	**103.25** 87.04 : 111.16
Arsenic	TM181	**99.71** 87.34 : 110.87
Barium	TM181	**92.66** 80.73 : 115.16
Beryllium	TM181	**103.73** 89.47 : 112.97
Boron	TM181	**89.11** 76.57 : 104.15
Cadmium	TM181	**86.42** 81.71 : 107.91
Chromium	TM181	**84.79** 77.55 : 104.47
Cobalt	TM181	**91.19** 82.95 : 107.41
Copper	TM181	**94.54** 84.36 : 106.14
Iron	TM181	**97.62** 81.43 : 115.79
Lead	TM181	**93.47** 81.95 : 107.63
Manganese	TM181	**108.33** 94.29 : 119.51
Mercury	TM181	**96.62** 82.73 : 106.36
Molybdenum	TM181	**101.65** 86.61 : 111.07
Nickel	TM181	**91.44** 79.72 : 103.80
Phosphorus	TM181	**112.93** 92.65 : 125.47
Selenium	TM181	**100.39** 88.36 : 111.25
Strontium	TM181	**92.43** 77.99 : 108.06
Thallium	TM181	**103.54** 88.60 : 116.73
Tin	TM181	**96.58** 89.77 : 112.62
Titanium	TM181	**75.42** 66.29 : 105.96
Vanadium	TM181	**99.27** 75.51 : 108.87
Zinc	TM181	**105.34** 84.02 : 111.24

PAH by GCMS

PAH by GCMS

Component	Method Code	QC 2461
Acenaphthene	TM218	**93.5** 76.79 : 103.90
Acenaphthylene	TM218	**92.0** 74.19 : 106.17
Anthracene	TM218	**94.0** 70.90 : 109.22
Benz(a)anthracene	TM218	**101.0** 73.77 : 119.26
Benzo(a)pyrene	TM218	**100.5** 73.20 : 114.18
Benzo(b)fluoranthene	TM218	**100.0** 75.36 : 117.58
Benzo(ghi)perylene	TM218	**99.0** 70.73 : 116.12
Benzo(k)fluoranthene	TM218	**101.5** 75.98 : 116.59
Chrysene	TM218	**100.0** 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	**99.0** 69.17 : 115.30
Fluoranthene	TM218	**100.0** 66.06 : 114.63
Fluorene	TM218	**92.5** 76.66 : 107.56
Indeno(123cd)pyrene	TM218	**96.5** 70.26 : 117.95
Naphthalene	TM218	**92.5** 74.70 : 101.83
Phenanthrene	TM218	**96.0** 73.62 : 109.34
Pyrene	TM218	**99.0** 71.46 : 117.00

pH

Component	Method Code	QC 2467
pH	TM133	**99.85** 98.41 : 102.48

Phenols by HPLC (S)

Component	Method Code	QC 2476
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**48.05** 70.71 : 116.42
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**40.35** 64.54 : 117.79
Cresols by HPLC (S)	TM062 (S)	**43.84** 74.40 : 108.98
Phenol by HPLC (S)	TM062 (S)	**45.7** 69.44 : 122.18
Xylenols by HPLC (S)	TM062 (S)	**46.87** 76.56 : 106.38

Phenols by HPLC (S)

Total Organic Carbon

Component	Method Code	QC 2482
Total Organic Carbon	TM132	**100.78** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2429
1,1,1,2-tetrachloroethane	TM116	**109.0** 86.59 : 118.97
1,1,1-Trichloroethane	TM116	**99.6** 86.26 : 117.53
1,1,2-Trichloroethane	TM116	**96.4** 75.16 : 112.70
1,1-Dichloroethane	TM116	**105.4** 83.27 : 122.16
1,2-Dichloroethane	TM116	**108.4** 89.30 : 133.10
1,4-Dichlorobenzene	TM116	**118.2** 82.59 : 123.23
2-Chlorotoluene	TM116	**105.0** 66.81 : 118.43
4-Chlorotoluene	TM116	**101.2** 65.88 : 114.76
Benzene	TM116	**99.2** 93.16 : 123.63
Carbon Disulphide	TM116	**96.4** 75.11 : 124.81
Carbontetrachloride	TM116	**114.2** 82.35 : 126.46
Chlorobenzene	TM116	**104.2** 85.07 : 118.13
Chloroform	TM116	**107.6** 88.13 : 122.71
Chloromethane	TM116	**92.0** 61.62 : 145.66
Cis-1,2-Dichloroethene	TM116	**107.4** 78.27 : 128.90
Dibromomethane	TM116	**110.2** 77.47 : 121.29
Dichloromethane	TM116	**109.8** 87.89 : 134.72
Ethylbenzene	TM116	**99.4** 76.29 : 106.31
Hexachlorobutadiene	TM116	**130.6** 16.78 : 153.29
Isopropylbenzene	TM116	**94.2** 59.16 : 110.07
Naphthalene	TM116	**109.6** 79.29 : 125.59

VOC MS (S)

		QC 2429
o-Xylene	TM116	**85.6** 72.86 : 102.10
p/m-Xylene	TM116	**92.0** 68.99 : 102.40
Sec-Butylbenzene	TM116	**111.0** 44.71 : 117.87
Tetrachloroethene	TM116	**107.4** 77.82 : 125.00
Toluene	TM116	**91.6** 87.82 : 116.21
Trichloroethene	TM116	**98.6** 79.80 : 112.33
Trichlorofluoromethane	TM116	**102.2** 80.52 : 132.12
Vinyl Chloride	TM116	**96.0** 74.57 : 146.88

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	08 June 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210524-24
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	601113

This report has been revised and directly supersedes 600228 in its entirety.

We received 8 samples on Saturday May 22, 2021 and 2 of these samples were scheduled for analysis which was completed on Tuesday June 08, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210524-24	**Client Reference:**	784-B026948	**Report Number:**	601113
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	600228

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24331540	BH11	ES1	0.10	19/05/2021
24331548	BH11	ES2	0.50	19/05/2021
24331555	BH11	ES3	1.20	19/05/2021
24331561	BH52	ES1	0.10	20/05/2021
24331567	BH52	ES2	0.30	20/05/2021
24331574	BH52	ES3	0.50	20/05/2021
24331581	BH52	ES4	1.30	20/05/2021
24331592	BH52	ES5	2.30	20/05/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210524-24	**Client Reference:**	784-B026948	**Report Number:**	601113
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	600228

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	24331540	24331561
			Customer Sample Reference	BH11	BH52
			AGS Reference	ES1	ES1
			Depth (m)	0.10	0.10
			Container	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)
			Sample Type	S	S	S	S
Acid herbicides*	All	NDPs: 0 Tests: 1				X
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 1		X		
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1	X			
Ammonium Soil by Titration	All	NDPs: 0 Tests: 1		X		
Anions by Kone (soil)	All	NDPs: 0 Tests: 1		X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1	X			
Boron Water Soluble	All	NDPs: 0 Tests: 1		X		
CEN Readings	All	NDPs: 0 Tests: 1	X			
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2	X	X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1	X			
EPH	All	NDPs: 0 Tests: 1		X		
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1		X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 1		X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1			X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1		X		

CERTIFICATE OF ANALYSIS

SDG:	210524-24	**Client Reference:**	784-B026948	**Report Number:**	601113
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	600228

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24331540			24331561
Customer Sample Reference			BH11			BH52
AGS Reference			ES1			ES1
Depth (m)			0.10			0.10
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1	X			
Mercury Dissolved	All	NDPs: 0 Tests: 1	X			
Metals in solid samples by OES	All	NDPs: 0 Tests: 1		X		
OC OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 1				X
PAH by GCMS	All	NDPs: 0 Tests: 1		X		
PCBs by GCMS	All	NDPs: 0 Tests: 1		X		
pH	All	NDPs: 0 Tests: 1		X		
pH Value of Filtered Water	All	NDPs: 0 Tests: 1	X			
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1		X		
Sample description	All	NDPs: 0 Tests: 1				X
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1		X		
Sulphide	All	NDPs: 0 Tests: 1	X			
Total Organic Carbon	All	NDPs: 0 Tests: 1		X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 1		X		
VOC MS (S)	All	NDPs: 0 Tests: 1			X	

CERTIFICATE OF ANALYSIS

SDG:	210524-24	**Client Reference:**	784-B026948	**Report Number:**	601113
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	600228

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24331540	BH11	0.10	Dark Brown	Loamy Sand	Stones	Brick
24331561	BH52	0.10	Dark Brown	Sandy Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210524-24	**Client Reference:**	784-B026948	**Report Number:**	601113
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	600228

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH11	BH52				
			Depth (m)	0.10	0.10				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	19/05/2021	20/05/2021				
			Sample Time	.	.				
			Date Received	22/05/2021	22/05/2021				
			SDG Ref	210524-24	210524-24				
			Lab Sample No.(s)	24331540	24331561				
			AGS Reference	ES1	ES1				
Moisture Content Ratio (% of as received sample)	%	PM024		6.5	26				
2,4,5-T*	<0.01 mg/kg	SUB			<0.01				
2,4,5-TP (Fenoprop)*	<0.01 mg/kg	SUB			<0.01				
2,4-D*	<0.01 mg/kg	SUB			<0.01				
2,4-DB*	<0.01 mg/kg	SUB			<0.01				
2,4-Dichloroprop (2,4 DP)*	<0.01 mg/kg	SUB			<0.01				
4-Chlorophenoxyacetic acid (4-CPA)*	<0.01 mg/kg	SUB			<0.01				
Acifluorfen*	<0.01 mg/kg	SUB			<0.01				
Bentazone*	<0.01 mg/kg	SUB			<0.01				
Bromoxynil*	<0.01 mg/kg	SUB			<0.01				
Dicamba*	<0.01 mg/kg	SUB			<0.01				
Diclofop*	<0.01 mg/kg	SUB			<0.01				
Dinoseb*	<0.01 mg/kg	SUB			<0.01				
DNOC*	<0.01 mg/kg	SUB			<0.01				
Fluroxypyr*	<0.01 mg/kg	SUB			<0.01				
Ioxynil*	<0.01 mg/kg	SUB			<0.01				
2-methyl-4-Chlorophenoxyacetic acid (MCPA)*	<0.01 mg/kg	SUB			<0.01				
4-(4-Chloro-o-tolyloxy) butyric acid (MCPB)*	<0.01 mg/kg	SUB			<0.01				
Mecoprop (MCPP)*	<0.01 mg/kg	SUB			<0.01				
Propoxycarbazone-sodium*	<0.01 mg/kg	SUB			<0.01				
Triclopyr*	<0.01 mg/kg	SUB			<0.01				
Triclosan*	<0.01 mg/kg	SUB			<0.01				
Exchangeable Ammonia as N	<12 mg/kg	TM024		<12 M					
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 M					
Cresols	<0.01 mg/kg	TM062 (S)		0.0107 M					
Xylenols	<0.015 mg/kg	TM062 (S)		<0.015 M					
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 M					
Soil Organic Matter (SOM)	<0.35 %	TM132		6.03 #					
pH	1 pH Units	TM133		8.61 M					
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #					
Cyanide, Total	<1 mg/kg	TM153		<1 M					
PCB congener 118	<0.003 mg/kg	TM168		<0.06 M					
PCB congener 81	<0.003 mg/kg	TM168		<0.06 M					

CERTIFICATE OF ANALYSIS

SDG:	210524-24	**Client Reference:**	784-B026948	**Report Number:**	601113
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	600228

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH11	BH52				
			Depth (m)	0.10	0.10				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	19/05/2021	20/05/2021				
			Sample Time	.	.				
			Date Received	22/05/2021	22/05/2021				
			SDG Ref	210524-24	210524-24				
			Lab Sample No.(s)	24331540	24331561				
			AGS Reference	ES1	ES1				
PCB congener 77	<0.003 mg/kg	TM168		<0.06 M					
PCB congener 123	<0.003 mg/kg	TM168		<0.06 M					
PCB congener 114	<0.003 mg/kg	TM168		<0.06 M					
PCB congener 105	<0.003 mg/kg	TM168		<0.06 M					
PCB congener 126	<0.003 mg/kg	TM168		<0.06 M					
PCB congener 167	<0.003 mg/kg	TM168		<0.06 M					
PCB congener 156	<0.003 mg/kg	TM168		<0.06 M					
PCB congener 157	<0.003 mg/kg	TM168		<0.06 M					
PCB congener 169	<0.003 mg/kg	TM168		<0.06 M					
PCB congener 189	<0.003 mg/kg	TM168		<0.06 M					
Sum of detected WHO 12 PCBs	<0.036 mg/kg	TM168		<0.72					
Arsenic	<0.6 mg/kg	TM181		5.95 M					
Cadmium	<0.02 mg/kg	TM181		0.61 M					
Chromium	<0.9 mg/kg	TM181		13 M					
Copper	<1.4 mg/kg	TM181		21.4 M					
Iron	<1000 mg/kg	TM181		11900 #					
Lead	<0.7 mg/kg	TM181		43.9 M					
Mercury	<0.1 mg/kg	TM181		<0.1 M					
Nickel	<0.2 mg/kg	TM181		11 M					
Selenium	<1 mg/kg	TM181		<1 #					
Vanadium	<0.2 mg/kg	TM181		16.3 #					
Zinc	<1.9 mg/kg	TM181		141 M					
Boron, water soluble	<1 mg/kg	TM222		<1 M					
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.039 M					
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248		2.91					
EPH (C5-C40)	<35 mg/kg	TM415		1760					
EPH Surrogate % recovery**	%	TM415		125					
EPH >C10-C40	<35 mg/kg	TM415		1760 M					

CERTIFICATE OF ANALYSIS

SDG:	210524-24	**Client Reference:**	784-B026948	**Report Number:**	601113
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	600228

OC OP Pesticides and Triazine Herb

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH52
Depth (m)	0.10
Sample Type	Soil/Solid (S)
Date Sampled	20/05/2021
Sample Time	.
Date Received	22/05/2021
SDG Ref	210524-24
Lab Sample No.(s)	24331561
AGS Reference	ES1

Component	LOD/Units	Method	
Dichlorvos	<0.05 mg/kg	TM073	<0.05
Mevinphos	<0.05 mg/kg	TM073	<0.05
Phorate	<0.05 mg/kg	TM073	<0.05
alpha-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073	<0.05
Diazinon	<0.05 mg/kg	TM073	<0.05
gamma-Hexachlorocyclohexane (HCH / Lindane)	<0.05 mg/kg	TM073	<0.05
Disulfoton	<0.05 mg/kg	TM073	<0.05
Heptachlor	<0.05 mg/kg	TM073	<0.05
Aldrin	<0.05 mg/kg	TM073	<0.05
beta-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073	<0.05
Methyl parathion	<0.05 mg/kg	TM073	<0.05
Malathion	<0.05 mg/kg	TM073	<0.05
Fenitrothion	<0.05 mg/kg	TM073	<0.05
Heptachlor epoxide	<0.05 mg/kg	TM073	<0.05
Parathion	<0.05 mg/kg	TM073	<0.05
Endosulphan I	<0.05 mg/kg	TM073	<0.05
p,p-DDE	<0.05 mg/kg	TM073	<0.05
Dieldrin	<0.05 mg/kg	TM073	<0.05
Endrin	<0.05 mg/kg	TM073	<0.05
p,p-TDE (DDD)	<0.05 mg/kg	TM073	<0.05
Ethion	<0.05 mg/kg	TM073	<0.05
Endosulphan II	<0.05 mg/kg	TM073	<0.05
p,p-DDT	<0.05 mg/kg	TM073	<0.15
p,p-Methoxychlor	<0.05 mg/kg	TM073	<0.05
Endosulphan sulphate	<0.05 mg/kg	TM073	<0.05
Azinphos-methyl	<0.05 mg/kg	TM073	<0.05

Validated

CERTIFICATE OF ANALYSIS

SDG:	210524-24	**Client Reference:**	784-B026948	**Report Number:**	601113
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	600228

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH11
Depth (m)	0.10
Sample Type	Soil/Solid (S)
Date Sampled	19/05/2021
Sample Time	.
Date Received	22/05/2021
SDG Ref	210524-24
Lab Sample No.(s)	24331540
AGS Reference	ES1

Component	LOD/Units	Method	
Naphthalene-d8 % recovery**	%	TM218	85.7
Acenaphthene-d10 % recovery**	%	TM218	85.6
Phenanthrene-d10 % recovery**	%	TM218	90.7
Chrysene-d12 % recovery**	%	TM218	82.6
Perylene-d12 % recovery**	%	TM218	81.1
Naphthalene	<0.009 mg/kg	TM218	0.0797 M
Acenaphthylene	<0.012 mg/kg	TM218	0.177 M
Acenaphthene	<0.008 mg/kg	TM218	0.622 M
Fluorene	<0.01 mg/kg	TM218	0.695 M
Phenanthrene	<0.015 mg/kg	TM218	14.1 M
Anthracene	<0.016 mg/kg	TM218	2.58 M
Fluoranthene	<0.017 mg/kg	TM218	18.8 M
Pyrene	<0.015 mg/kg	TM218	15 M
Benz(a)anthracene	<0.014 mg/kg	TM218	6.51 M
Chrysene	<0.01 mg/kg	TM218	5.78 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	8.35 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	2.88 M
Benzo(a)pyrene	<0.015 mg/kg	TM218	5.99 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	4.14 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	0.622 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	3.95 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	90.2

CERTIFICATE OF ANALYSIS

SDG:	210524-24	**Client Reference:**	784-B026948	**Report Number:**	601113
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	600228

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH11
Depth (m)	0.10
Sample Type	Soil/Solid (S)
Date Sampled	19/05/2021
Sample Time	.
Date Received	22/05/2021
SDG Ref	210524-24
Lab Sample No.(s)	24331540
AGS Reference	ES1

Component	LOD/Units	Method	
Phenol	<0.1 mg/kg	TM157	<2
Pentachlorophenol	<0.1 mg/kg	TM157	<2
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157	<2
Nitrobenzene	<0.1 mg/kg	TM157	<2
Isophorone	<0.1 mg/kg	TM157	<2
Hexachloroethane	<0.1 mg/kg	TM157	<2
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157	<2
Hexachlorobutadiene	<0.1 mg/kg	TM157	<2
Hexachlorobenzene	<0.1 mg/kg	TM157	<2
n-Dioctyl phthalate	<0.1 mg/kg	TM157	<2
Dimethyl phthalate	<0.1 mg/kg	TM157	<2
Diethyl phthalate	<0.1 mg/kg	TM157	<2
n-Dibutyl phthalate	<0.1 mg/kg	TM157	<2
Dibenzofuran	<0.1 mg/kg	TM157	5.99
Carbazole	<0.1 mg/kg	TM157	19.5
Butylbenzyl phthalate	<0.1 mg/kg	TM157	<2
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157	<2
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157	<2
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157	<2
Azobenzene	<0.1 mg/kg	TM157	<2
4-Nitrophenol	<0.1 mg/kg	TM157	<2
4-Nitroaniline	<0.1 mg/kg	TM157	<2
4-Methylphenol	<0.1 mg/kg	TM157	<2
4-Chlorophenylphenylether	<0.1 mg/kg	TM157	<2
4-Chloroaniline	<0.1 mg/kg	TM157	<2
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157	<2
4-Bromophenylphenylether	<0.1 mg/kg	TM157	<2
3-Nitroaniline	<0.1 mg/kg	TM157	<2
2-Nitrophenol	<0.1 mg/kg	TM157	<2
2-Nitroaniline	<0.1 mg/kg	TM157	<2
2-Methylphenol	<0.1 mg/kg	TM157	<2
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157	<2
2-Chlorophenol	<0.1 mg/kg	TM157	<2

CERTIFICATE OF ANALYSIS

SDG:	210524-24	**Client Reference:**	784-B026948	**Report Number:**	601113
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	600228

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.	BH11
Depth (m)	0.10
Sample Type	Soil/Solid (S)
Date Sampled	19/05/2021
Sample Time	.
Date Received	22/05/2021
SDG Ref	210524-24
Lab Sample No.(s)	24331540
AGS Reference	ES1

Component	LOD/Units	Method	
2,6-Dinitrotoluene	<0.1 mg/kg	TM157	<2
2,4-Dinitrotoluene	<0.1 mg/kg	TM157	<2
2,4-Dimethylphenol	<0.1 mg/kg	TM157	<2
2,4-Dichlorophenol	<0.1 mg/kg	TM157	<2
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157	<2
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157	<2
1,4-Dichlorobenzene	<0.1 mg/kg	TM157	<2
1,3-Dichlorobenzene	<0.1 mg/kg	TM157	<2
1,2-Dichlorobenzene	<0.1 mg/kg	TM157	<2
2-Chloronaphthalene	<0.1 mg/kg	TM157	<2
2-Methylnaphthalene	<0.1 mg/kg	TM157	<2
Acenaphthylene	<0.1 mg/kg	TM157	<2
Acenaphthene	<0.1 mg/kg	TM157	7.71
Anthracene	<0.1 mg/kg	TM157	38.3
Benzo(a)anthracene	<0.1 mg/kg	TM157	69.6
Benzo(b)fluoranthene	<0.1 mg/kg	TM157	47.1
Benzo(k)fluoranthene	<0.1 mg/kg	TM157	51.6
Benzo(a)pyrene	<0.1 mg/kg	TM157	62.7
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157	30.9
Chrysene	<0.1 mg/kg	TM157	59.2
Fluoranthene	<0.1 mg/kg	TM157	239
Fluorene	<0.1 mg/kg	TM157	10.5
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157	40.6
Phenanthrene	<0.1 mg/kg	TM157	250
Pyrene	<0.1 mg/kg	TM157	196
Naphthalene	<0.1 mg/kg	TM157	<2
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157	4.02
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157	<2

Validated

CERTIFICATE OF ANALYSIS

SDG:	210524-24	**Client Reference:**	784-B026948	**Report Number:**	601113
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	600228

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH11
Depth (m)	0.10
Sample Type	Soil/Solid (S)
Date Sampled	19/05/2021
Sample Time	.
Date Received	22/05/2021
SDG Ref	210524-24
Lab Sample No.(s)	24331540
AGS Reference	ES1

Component	LOD/Units	Method	
GRO Surrogate % recovery**	%	TM089	137 4
Aliphatics >C5-C6	<0.01 mg/kg	TM089	0.0139 4
Aliphatics >C6-C8	<0.01 mg/kg	TM089	0.015 4
Aliphatics >C8-C10	<0.01 mg/kg	TM089	0.121 4
Aliphatics >C10-C12	<1 mg/kg	TM414	<1
Aliphatics >C12-C16	<1 mg/kg	TM414	<1
Aliphatics >C16-C21	<1 mg/kg	TM414	1.68
Aliphatics >C21-C35	<1 mg/kg	TM414	7.66
Aliphatics >C35-C44	<1 mg/kg	TM414	1.79
Total Aliphatics >C10-C44	<5 mg/kg	TM414	11.7
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414	1560
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01 4
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01 4
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	0.0803 4
Aromatics > EC10-EC12	<1 mg/kg	TM414	<1
Aromatics > EC12-EC16	<1 mg/kg	TM414	26.5
Aromatics > EC16-EC21	<1 mg/kg	TM414	600
Aromatics > EC21-EC35	<1 mg/kg	TM414	784
Aromatics >EC35-EC44	<1 mg/kg	TM414	133
Aromatics > EC40-EC44	<1 mg/kg	TM414	17.2
Total Aromatics > EC10-EC44	<5 mg/kg	TM414	1540
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414	1560
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089	0.15 4
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089	0.0803 4
GRO >C5-C10	<0.02 mg/kg	TM089	0.23 4

CERTIFICATE OF ANALYSIS

SDG:	210524-24	**Client Reference:**	784-B026948	**Report Number:**	601113
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	600228

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH11
Depth (m)	0.10
Sample Type	Soil/Solid (S)
Date Sampled	19/05/2021
Sample Time	.
Date Received	22/05/2021
SDG Ref	210524-24
Lab Sample No.(s)	24331540
AGS Reference	ES1

Component	LOD/Units	Method	
Dibromofluoromethane**	%	TM116	113
Toluene-d8**	%	TM116	97.9
4-Bromofluorobenzene**	%	TM116	92.3
Dichlorodifluoromethane	<0.006 mg/kg	TM116	<0.12 M
Chloromethane	<0.007 mg/kg	TM116	<0.14 #
Vinyl Chloride	<0.006 mg/kg	TM116	<0.12 @ M
Bromomethane	<0.01 mg/kg	TM116	<0.2 M
Chloroethane	<0.01 mg/kg	TM116	<0.2 M
Trichlorofluorormethane	<0.006 mg/kg	TM116	<0.12 M
1,1-Dichloroethene	<0.01 mg/kg	TM116	<0.2 #
Carbon Disulphide	<0.007 mg/kg	TM116	<0.14 M
Dichloromethane	<0.01 mg/kg	TM116	<0.2 #
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.2 M
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116	<0.2 M
1,1-Dichloroethane	<0.008 mg/kg	TM116	<0.16 M
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116	<0.12 M
2,2-Dichloropropane	<0.01 mg/kg	TM116	<0.2
Bromochloromethane	<0.01 mg/kg	TM116	<0.2 M
Chloroform	<0.008 mg/kg	TM116	<0.16 M
1,1,1-Trichloroethane	<0.007 mg/kg	TM116	<0.14 M
1,1-Dichloropropene	<0.01 mg/kg	TM116	<0.2 M
Carbontetrachloride	<0.01 mg/kg	TM116	<0.2 M
1,2-Dichloroethane	<0.005 mg/kg	TM116	<0.1 M
Benzene	<0.009 mg/kg	TM116	<0.18 M
Trichloroethene	<0.009 mg/kg	TM116	<0.18 #
1,2-Dichloropropane	<0.01 mg/kg	TM116	<0.2 M
Dibromomethane	<0.009 mg/kg	TM116	<0.18 M
Bromodichloromethane	<0.007 mg/kg	TM116	<0.14 M
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.2 M
Toluene	<0.007 mg/kg	TM116	<0.14 M
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.2
1,1,2-Trichloroethane	<0.01 mg/kg	TM116	<0.2 M
1,3-Dichloropropane	<0.007 mg/kg	TM116	<0.14 M

CERTIFICATE OF ANALYSIS

SDG:	210524-24	**Client Reference:**	784-B026948	**Report Number:**	601113
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	600228

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.	BH11
Depth (m)	0.10
Sample Type	Soil/Solid (S)
Date Sampled	19/05/2021
Sample Time	.
Date Received	22/05/2021
SDG Ref	210524-24
Lab Sample No.(s)	24331540
AGS Reference	ES1

Component	LOD/Units	Method	
Tetrachloroethene	<0.005 mg/kg	TM116	<0.1 M
Dibromochloromethane	<0.01 mg/kg	TM116	<0.2 M
1,2-Dibromoethane	<0.01 mg/kg	TM116	<0.2 M
Chlorobenzene	<0.005 mg/kg	TM116	<0.1 M
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.2 M
Ethylbenzene	<0.004 mg/kg	TM116	<0.08 M
p/m-Xylene	<0.01 mg/kg	TM116	<0.2 #
o-Xylene	<0.01 mg/kg	TM116	<0.2 M
Styrene	<0.01 mg/kg	TM116	<0.2 @ #
Bromoform	<0.01 mg/kg	TM116	<0.2 M
Isopropylbenzene	<0.005 mg/kg	TM116	<0.1 #
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.2 #
1,2,3-Trichloropropane	<0.016 mg/kg	TM116	<0.32 M
Bromobenzene	<0.01 mg/kg	TM116	<0.2 M
Propylbenzene	<0.01 mg/kg	TM116	<0.2 M
2-Chlorotoluene	<0.009 mg/kg	TM116	<0.18 M
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116	<0.16 M
4-Chlorotoluene	<0.01 mg/kg	TM116	<0.2 M
tert-Butylbenzene	<0.014 mg/kg	TM116	<0.28 M
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116	<0.18 #
sec-Butylbenzene	<0.01 mg/kg	TM116	<0.2
4-Isopropyltoluene	<0.01 mg/kg	TM116	<0.2 M
1,3-Dichlorobenzene	<0.008 mg/kg	TM116	<0.16 M
1,4-Dichlorobenzene	<0.005 mg/kg	TM116	<0.1 M
n-Butylbenzene	<0.011 mg/kg	TM116	<0.22
1,2-Dichlorobenzene	<0.01 mg/kg	TM116	<0.2 M
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116	<0.28 M
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.2 #
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116	<0.4
Hexachlorobutadiene	<0.02 mg/kg	TM116	<0.4 3
Naphthalene	<0.013 mg/kg	TM116	<0.26 M
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116	<0.4 #
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116	<0.4

Validated

CERTIFICATE OF ANALYSIS

SDG:	210524-24	**Client Reference:**	784-B026948	**Report Number:**	601113
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	600228

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BH11
Depth (m)			0.10
Sample Type			Soil/Solid (S)
Date Sampled			19/05/2021
Sample Time			.
Date Received			22/05/2021
SDG Ref			210524-24
Lab Sample No.(s)			24331540
AGS Reference			ES1
Component	**LOD/Units**	**Method**	
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4
Sum of BTEX	<0.04 mg/kg	TM116	<0.8

CERTIFICATE OF ANALYSIS

SDG:	210524-24	**Client Reference:**	784-B026948	**Report Number:**	601113
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	600228

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref.	BH11ES1	28.05.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	0.10										
Sample Type	SOLID										
Date Sampled	19/05/2021 00:00:00										
Date Receieved	22/05/2021 05:00:00										
SDG	210524-24										
Original Sample	24331540										
Method Number	TM048										

CERTIFICATE OF ANALYSIS

SDG:	210524-24	**Client Reference:**	784-B026948	**Report Number:**	601113
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	600228

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.097	**Natural Moisture Content (%)**	7.9
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	92.7
Particle Size <4mm	>95%		

Case	
SDG	210524-24
Lab Sample Number(s)	24331540
Sampled Date	19-May-2021
Customer Sample Ref.	BH11 ES1
Depth (m)	0.10

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	0.0000185	<0.00001	0.000185	<0.0001	-	-	-
Arsenic	0.0108	<0.0005	0.108	<0.005	-	-	-
Boron	0.077	<0.01	0.77	<0.1	-	-	-
Cadmium	0.000117	<0.00008	0.00117	<0.0008	-	-	-
Chromium	0.00954	<0.001	0.0954	<0.01	-	-	-
Copper	0.00786	<0.0003	0.0786	<0.003	-	-	-
Iron (Dis.Filt) mg/l	4.26	<0.019	42.6	<0.19	-	-	-
Lead	0.0146	<0.0002	0.146	<0.002	-	-	-
Nickel	0.00621	<0.0004	0.0621	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	0.0213	<0.001	0.213	<0.01	-	-	-
Zinc	0.108	<0.001	1.08	<0.01	-	-	-
Sulphide	0.0738	<0.01	0.738	<0.1	-	-	-

Leach Test Information

Date Prepared	25-May-2021
pH (pH Units)	8.76
Conductivity (µS/cm)	144.00
Temperature (°C)	18.70
Volume Leachant (Litres)	0.893

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210524-24	**Client Reference:**	784-B026948	**Report Number:**	601113
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	600228

Test Completion Dates

Lab Sample No(s)	24331540	24331561
Customer Sample Ref.	BH11	BH52
AGS Ref.	ES1	ES1
Depth	0.10	0.10
Type	Soil/Solid (S)	Soil/Solid (S)
Acid herbicides*		08-Jun-2021
Ammoniacal N as NH4 in 2:1 extract	27-May-2021	
Ammoniacal Nitrogen	01-Jun-2021	
Ammonium Soil by Titration	01-Jun-2021	
Anions by Kone (soil)	27-May-2021	
Asbestos ID in Solid Samples	28-May-2021	
Boron Water Soluble	01-Jun-2021	
CEN 10:1 Leachate (1 Stage)	26-May-2021	
CEN Readings	27-May-2021	
Cyanide Comp/Free/Total/Thiocyanate	02-Jun-2021	
Dissolved Metals by ICP-MS	28-May-2021	
EPH	01-Jun-2021	
EPH by GCxGC-FID	28-May-2021	
EPH CWG GC (S)	01-Jun-2021	
GRO by GC-FID (S)	01-Jun-2021	
Hexavalent Chromium (s)	28-May-2021	
Hexavalent Chromium (w)	28-May-2021	
Mercury Dissolved	28-May-2021	
Metals in solid samples by OES	01-Jun-2021	
Moisture at 105C	25-May-2021	
OC OP Pesticides and Triazine Herb		28-May-2021
PAH by GCMS	28-May-2021	
PCBs by GCMS	26-May-2021	
pH	26-May-2021	
pH Value of Filtered Water	01-Jun-2021	
Phenols by HPLC (S)	01-Jun-2021	
Sample description	25-May-2021	25-May-2021
Semi Volatile Organic Compounds	28-May-2021	
Sulphide	28-May-2021	
Total Organic Carbon	01-Jun-2021	
TPH CWG GC (S)	01-Jun-2021	
VOC MS (S)	28-May-2021	

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2415
Ammoniacal Nitrogen as N	TM099	**100.0** 91.28 : 106.64

Ammonium Soil by Titration

Component	Method Code	QC 2425
Exchangeable Ammonium as NH4	TM024	**93.03** 76.20 : 110.13

Boron Water Soluble

Component	Method Code	QC 2429
Water Soluble Boron	TM222	**89.5** 77.30 : 106.22

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2479	QC 2484
Free Cyanide	TM153	**96.34** 78.00 : 114.00	
Free Cyanide (W)	TM227		**80.25** 90.67 : 122.67
Thiocyanate	TM153	**98.08** 94.53 : 113.33	
Thiocyanate (W)	TM227		**106.0** 92.25 : 117.75
Total Cyanide	TM153	**99.3** 77.13 : 111.53	
Total Cyanide (W)	TM227		**103.0** 88.75 : 111.25

Dissolved Metals by ICP-MS

Component	Method Code	QC 2489
Aluminium	TM152	**102.33** 94.21 : 111.52
Antimony	TM152	**104.5** 88.37 : 130.57
Arsenic	TM152	**100.67** 92.62 : 113.52
Barium	TM152	**98.17** 88.62 : 113.14

Dissolved Metals by ICP-MS

		QC 2489
Beryllium	TM152	**104.0** 87.08 : 111.38
Bismuth	TM152	**103.17** 92.62 : 115.02
Boron	TM152	**106.0** 86.31 : 120.88
Cadmium	TM152	**101.5** 93.85 : 111.65
Calcium	TM152	**102.0** 89.20 : 126.91
Chromium	TM152	**99.5** 92.50 : 113.03
Cobalt	TM152	**102.83** 85.01 : 114.87
Copper	TM152	**102.83** 89.87 : 119.73
Iron	TM152	**102.0** 93.02 : 113.86
Lead	TM152	**97.33** 91.11 : 116.98
Lithium	TM152	**101.17** 87.70 : 115.90
Magnesium	TM152	**99.33** 89.60 : 116.61
Manganese	TM152	**105.83** 93.97 : 112.46
Molybdenum	TM152	**97.17** 89.07 : 110.96
Nickel	TM152	**102.33** 93.70 : 112.15
Phosphorus	TM152	**97.0** 89.24 : 114.18
Potassium	TM152	**100.0** 93.20 : 115.55
Selenium	TM152	**100.67** 91.69 : 117.12
Silver	TM152	**102.5** 90.93 : 121.73
Sodium	TM152	**100.67** 92.42 : 113.24
Strontium	TM152	**101.67** 92.14 : 116.24
Tellurium	TM152	**99.67** 89.88 : 111.78
Thallium	TM152	**91.67** 82.43 : 113.83
Tin	TM152	**103.17** 94.62 : 107.79
Titanium	TM152	**105.33** 90.29 : 115.23
Tungsten	TM152	**99.83** 77.61 : 132.31
Uranium	TM152	**99.67** 86.97 : 115.76

Dissolved Metals by ICP-MS

		QC 2489
Vanadium	TM152	**107.17** 89.61 : 115.48
Zinc	TM152	**101.33** 87.51 : 116.26

EPH by GCxGC-FID

Component	Method Code	QC 2478
EPH >C10-C40 Raw	TM415	**91.77** 59.15 : 115.05

EPH CWG GC (S)

Component	Method Code	QC 2417
EPH >C8-C40 Raw	TM414	**103.34** 67.87 : 120.05
Total Aliphatics Raw	TM414	**110.43** 66.68 : 120.89
Total Aromatics Raw	TM414	**110.52** 61.16 : 129.42

GRO by GC-FID (S)

Component	Method Code	QC 2453
QC	TM089	**88.36** 70.75 : 114.19

Hexavalent Chromium (s)

Component	Method Code	QC 2466
Hexavalent Chromium	TM151	**102.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2468
Hexavalent Chromium	TM241	**98.6** 94.17 : 106.17

Mercury Dissolved

Mercury Dissolved

Component	Method Code	QC 2462
Mercury Dissolved (CVAF)	TM183	**92.9** 69.30 : 128.70

Metals in solid samples by OES

Component	Method Code	QC 2424
Aluminium	TM181	**96.46** 77.46 : 123.98
Antimony	TM181	**103.25** 87.04 : 111.16
Arsenic	TM181	**99.71** 87.34 : 110.87
Barium	TM181	**92.66** 80.73 : 115.16
Beryllium	TM181	**103.73** 89.47 : 112.97
Boron	TM181	**89.11** 76.57 : 104.15
Cadmium	TM181	**86.42** 81.71 : 107.91
Chromium	TM181	**84.79** 77.55 : 104.47
Cobalt	TM181	**91.19** 82.95 : 107.41
Copper	TM181	**94.54** 84.36 : 106.14
Iron	TM181	**97.62** 81.43 : 115.79
Lead	TM181	**93.47** 81.95 : 107.63
Manganese	TM181	**108.33** 94.29 : 119.51
Mercury	TM181	**96.62** 82.73 : 106.36
Molybdenum	TM181	**101.65** 86.61 : 111.07
Nickel	TM181	**91.44** 79.72 : 103.80
Phosphorus	TM181	**112.93** 92.65 : 125.47
Selenium	TM181	**100.39** 88.36 : 111.25
Strontium	TM181	**92.43** 77.99 : 108.06
Thallium	TM181	**103.54** 88.60 : 116.73
Tin	TM181	**96.58** 89.77 : 112.62
Titanium	TM181	**75.42** 66.29 : 105.96

Metals in solid samples by OES

		QC 2424
Vanadium	TM181	**99.27** 75.51 : 108.87
Zinc	TM181	**105.34** 84.02 : 111.24

PAH by GCMS

Component	Method Code	QC 2470
Acenaphthene	TM218	**86.5** 76.79 : 103.90
Acenaphthylene	TM218	**86.5** 74.19 : 106.17
Anthracene	TM218	**88.5** 70.90 : 109.22
Benz(a)anthracene	TM218	**85.0** 73.77 : 119.26
Benzo(a)pyrene	TM218	**87.5** 73.20 : 114.18
Benzo(b)fluoranthene	TM218	**85.0** 75.36 : 117.58
Benzo(ghi)perylene	TM218	**87.0** 70.73 : 116.12
Benzo(k)fluoranthene	TM218	**87.0** 75.98 : 116.59
Chrysene	TM218	**84.5** 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	**85.5** 69.17 : 115.30
Fluoranthene	TM218	**94.0** 66.06 : 114.63
Fluorene	TM218	**87.0** 76.66 : 107.56
Indeno(123cd)pyrene	TM218	**78.5** 70.26 : 117.95
Naphthalene	TM218	**87.5** 74.70 : 101.83
Phenanthrene	TM218	**90.0** 73.62 : 109.34
Pyrene	TM218	**90.5** 71.46 : 117.00

PCBs by GCMS

Component	Method Code	QC 2460
PCB congener 101	TM168	**87.7** 65.66 : 110.06
PCB congener 105	TM168	**80.8** 58.10 : 106.34
PCB congener 114	TM168	**81.6** 59.38 : 106.48
PCB congener 118	TM168	**83.0** 60.02 : 106.23
PCB congener 123	TM168	**90.6** 65.01 : 99.81

PCBs by GCMS

		QC 2460
PCB congener 126	TM168	**82.8** 59.31 : 109.23
PCB congener 138	TM168	**88.0** 63.95 : 107.63
PCB congener 153	TM168	**88.7** 62.65 : 108.85
PCB congener 156	TM168	**82.9** 61.69 : 112.27
PCB congener 157	TM168	**78.5** 55.37 : 104.81
PCB congener 167	TM168	**84.7** 65.58 : 109.14
PCB congener 169	TM168	**82.9** 56.84 : 112.10
PCB congener 180	TM168	**87.3** 66.99 : 111.63
PCB congener 189	TM168	**82.0** 57.75 : 112.59
PCB congener 28	TM168	**87.2** 73.68 : 105.96
PCB congener 52	TM168	**87.0** 67.24 : 107.62
PCB congener 77	TM168	**85.4** 64.87 : 108.49
PCB congener 81	TM168	**85.7** 70.78 : 110.80

pH

Component	Method Code	QC 2467
pH	TM133	**99.85** 98.41 : 102.48

pH Value of Filtered Water

Component	Method Code	QC 2431
pH	TM256	**100.4** 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2476
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**48.05** 70.71 : 116.42
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**40.35** 64.54 : 117.79
Cresols by HPLC (S)	TM062 (S)	**43.84** 74.40 : 108.98

Phenols by HPLC (S)

		QC 2476
Phenol by HPLC (S)	TM062 (S)	**45.7** 69.44 : 122.18
Xylenols by HPLC (S)	TM062 (S)	**46.87** 76.56 : 106.38

Semi Volatile Organic Compounds

Component	Method Code	QC 2450
4-Bromophenylphenylether (Soil)	TM157	**92.0** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**99.0** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**93.0** 68.25 : 126.75
Naphthalene (Soil)	TM157	**91.5** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**93.0** 66.50 : 123.50
Phenol (Soil)	TM157	**97.5** 69.92 : 114.02

Sulphide

Component	Method Code	QC 2499
Sulphide	TM101	**100.0** 88.90 : 112.50

Total Organic Carbon

Component	Method Code	QC 2482
Total Organic Carbon	TM132	**100.78** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2429
1,1,1,2-tetrachloroethane	TM116	**109.0** 86.59 : 118.97
1,1,1-Trichloroethane	TM116	**99.6** 86.26 : 117.53
1,1,2-Trichloroethane	TM116	**96.4** 75.16 : 112.70
1,1-Dichloroethane	TM116	**105.4** 83.27 : 122.16
1,2-Dichloroethane	TM116	**108.4** 89.30 : 133.10
1,4-Dichlorobenzene	TM116	**118.2** 82.59 : 123.23

		QC 2429
2-Chlorotoluene	TM116	**105.0** 66.81 : 118.43
4-Chlorotoluene	TM116	**101.2** 65.88 : 114.76
Benzene	TM116	**99.2** 93.16 : 123.63
Carbon Disulphide	TM116	**96.4** 75.11 : 124.81
Carbontetrachloride	TM116	**114.2** 82.35 : 126.46
Chlorobenzene	TM116	**104.2** 85.07 : 118.13
Chloroform	TM116	**107.6** 88.13 : 122.71
Chloromethane	TM116	**92.0** 61.62 : 145.66
Cis-1,2-Dichloroethene	TM116	**107.4** 78.27 : 128.90
Dibromomethane	TM116	**110.2** 77.47 : 121.29
Dichloromethane	TM116	**109.8** 87.89 : 134.72
Ethylbenzene	TM116	**99.4** 76.29 : 106.31
Hexachlorobutadiene	TM116	**130.6** 16.78 : 153.29
Isopropylbenzene	TM116	**94.2** 59.16 : 110.07
Naphthalene	TM116	**109.6** 79.29 : 125.59
o-Xylene	TM116	**85.6** 72.86 : 102.10
p/m-Xylene	TM116	**92.0** 68.99 : 102.40
Sec-Butylbenzene	TM116	**111.0** 44.71 : 117.87
Tetrachloroethene	TM116	**107.4** 77.82 : 125.00
Toluene	TM116	**91.6** 87.82 : 116.21
Trichloroethene	TM116	**98.6** 79.80 : 112.33
Trichlorofluoromethane	TM116	**102.2** 80.52 : 132.12
Vinyl Chloride	TM116	**96.0** 74.57 : 146.88

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

Work Order	: **PR2149316**	Issue Date	: 08-Jun-2021
Customer	: **ALS Life Sciences Ltd**	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: [redacted]	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 210524-24	Page	: 1 of 2
Order number	: 210524-24	Date Samples Received	: 27-May-2021
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 28-May-2021 - 08-Jun-2021
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories		*Position*
Zdeněk Jirák	[redacted]	Environmental Business Unit Manager

The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)

Analytical Results

Sub-Matrix: **SOIL**			Client sample ID	**24335426 BH52**		**----**		**----**	
			Laboratory sample ID	*PR2149316-001*		----		----	
			Client sampling date / time	25-May-2021		----		----	
Parameter	*Method*	*LOR*	*Unit*	**Result**	**MU**	**Result**	**MU**	**Result**	**MU**
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	**72.8**	± 6.0%	**----**	----	**----**	----
Pesticides									
2.4.5-T	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4.5-TP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-D	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
4-CPP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bentazone	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dinoseb	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Fluroxypyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPA	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Acifluorfen	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bromoxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
DNOC	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dicamba	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Diclofop	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Ioxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Propoxycarbazone-sodium	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclopyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclosan	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.
Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	*Method Descriptions*
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PESLMSA1	CZ_SOP_D06_03_182.B (CSN EN 15637, US EPA 1694) Determination of acidic herbicides and drug residues by liquid chromatography method with MS/MS detection.

A "*" symbol preceding any method indicates laboratory or subcontractor non-accredited test. If the UNICO-SUB code is stated in the method table, this only informs that the tests have been performed by a subcontractor and the results are given in an annex to the test report, including information on test accreditation. In the case when a procedure specified in an accredited method was used for non-accredited matrix, the reported results are non-accredited; please refer to information in General Comment section on the front page. If the report contains subcontracted analyses, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.
The calculation methods of summation parameters are available on request in the client service.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	16 June 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210602-77
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	602213

This report has been revised and directly supersedes 601308 in its entirety.

We received 25 samples on Wednesday May 26, 2021 and 6 of these samples were scheduled for analysis which was completed on Wednesday June 16, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

So

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210602-77	**Client Reference:**	784-B026948	**Report Number:**	602213
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601308

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24377846	BH19		0.30	24/05/2021
24377947	BH35	ES5	1.30 - 1.40	25/05/2021
24377942	BH35	ES4	1.70 - 1.80	25/05/2021
24377895	BH35	ES1	2.70 - 2.90	25/05/2021
24377899	BH35	ES2	3.70 - 3.80	25/05/2021
24377904	BH35	ES3	4.40 - 4.50	25/05/2021
24377890	BH36	ES7	1.40 - 1.50	25/05/2021
24377879	BH36	ES6	2.40 - 2.50	25/05/2021
24377873	BH36	ES5	3.40 - 3.50	25/05/2021
24377865	BH36	ES4	4.20 - 4.30	25/05/2021
24377861	BH36	ES3	4.70 - 4.80	25/05/2021
24377993	BH36	ES2	6.10 - 6.20	25/05/2021
24377989	BH36	ES1	7.30 - 7.40	25/05/2021
24377959	BH37	ES1	0.40	24/05/2021
24377966	BH37	ES2	0.70	24/05/2021
24377909	BH37	ES1	1.70 - 1.80	25/05/2021
24377915	BH37	ES2	3.50 - 3.60	25/05/2021
24377930	BH37	ES3	4.20 - 4.30	25/05/2021
24377853	BH49	ES1	0.10	24/05/2021
24377848	BH49		0.30	24/05/2021
24377922	BH49	ES2	0.50	24/05/2021
24377850	BH49		0.60	24/05/2021
24377951	BH49	ES3	1.00	24/05/2021
24377974	BH50	ES1	1.60 - 1.70	25/05/2021
24377979	BH50	ES2	2.70 - 2.80	25/05/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210602-77	**Client Reference:**	784-B026948	**Report Number:**	602213
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601308

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24377942			24377904			24377959			24377930			24377853			24377922	
Customer Sample Reference			BH35			BH35			BH37			BH37			BH49			BH49	
AGS Reference			ES4			ES3			ES1			ES3			ES1			ES2	
Depth (m)			1.70 - 1.80			4.40 - 4.50			0.40			4.20 - 4.30			0.10			0.50	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Acid herbicides*	All	NDPs: 0 Tests: 1													X				
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 5		X			X			X			X				X		
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1							X										
Ammonium Soil by Titration	All	NDPs: 0 Tests: 5		X			X			X			X				X		
Anions by Kone (soil)	All	NDPs: 0 Tests: 5		X			X			X			X				X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 5	X			X			X			X				X			
Boron Water Soluble	All	NDPs: 0 Tests: 5		X			X			X			X				X		
CEN Readings	All	NDPs: 0 Tests: 1							X										
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 6		X			X		X	X			X				X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1							X										
EPH	All	NDPs: 0 Tests: 5		X			X			X			X				X		
EPH by GCxGC-FID	All	NDPs: 0 Tests: 5		X			X			X			X				X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 5		X			X			X			X				X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 5			X			X			X			X					X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 5		X			X			X			X				X		

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24377942			24377904			24377959			24377930			24377853	24377922		
Customer Sample Reference			BH35			BH35			BH37			BH37			BH49	BH49		
AGS Reference			ES4			ES3			ES1			ES3			ES1	ES2		
Depth (m)			1.70 - 1.80			4.40 - 4.50			0.40			4.20 - 4.30			0.10	0.50		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1							X									
Mercury Dissolved	All	NDPs: 0 Tests: 1							X									
Metals in solid samples by OES	All	NDPs: 0 Tests: 5		X			X			X			X				X	
OC OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 1													X			
PAH by GCMS	All	NDPs: 0 Tests: 5		X			X			X			X				X	
pH	All	NDPs: 0 Tests: 5		X			X			X			X				X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 1							X									
Phenols by HPLC (S)	All	NDPs: 0 Tests: 5		X			X			X			X				X	
Sample description	All	NDPs: 0 Tests: 6		X			X			X			X		X		X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 2		X						X								
Sulphide	All	NDPs: 0 Tests: 1							X									
Total Organic Carbon	All	NDPs: 0 Tests: 5		X			X			X			X				X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 5		X			X			X			X				X	
VOC MS (S)	All	NDPs: 0 Tests: 5			X			X			X			X				X

CERTIFICATE OF ANALYSIS

SDG:	210602-77	**Client Reference:**	784-B026948	**Report Number:**	602213
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601308

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24377904	BH35	4.40 - 4.50	Dark Brown	Sandy Silt Loam	Stones	Vegetation
24377942	BH35	1.70 - 1.80	Light Brown	Loamy Sand	Stones	Vegetation
24377930	BH37	4.20 - 4.30	Dark Brown	Silt Loam	None	None
24377959	BH37	0.40	Light Brown	Silty Sand	Stones	None
24377853	BH49	0.10	Dark Brown	Sandy Loam	Stones	Vegetation
24377922	BH49	0.50	Dark Brown	Sandy Clay Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210602-77	**Client Reference:**	784-B026948	**Report Number:**	602213
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601308

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH35	BH35	BH37	BH37	BH49	BH49
			Depth (m)	1.70 - 1.80	4.40 - 4.50	0.40	4.20 - 4.30	0.10	0.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	25/05/2021	25/05/2021	24/05/2021	25/05/2021	24/05/2021	24/05/2021
			Sample Time	.	.	.	.	.	.
			Date Received	26/05/2021	26/05/2021	26/05/2021	26/05/2021	26/05/2021	26/05/2021
			SDG Ref	210602-77	210602-77	210602-77	210602-77	210602-77	210602-77
			Lab Sample No.(s)	24377942	24377904	24377959	24377930	24377853	24377922
			AGS Reference	ES4	ES3	ES1	ES3	ES1	ES2
Moisture Content Ratio (% of as received sample)	%	PM024		3.2	14	6	24	23	10
2,4,5-T*	<0.01 mg/kg	SUB						<0.01	
2,4,5-TP (Fenoprop)*	<0.01 mg/kg	SUB						<0.01	
2,4-D*	<0.01 mg/kg	SUB						<0.01	
2,4-DB*	<0.01 mg/kg	SUB						<0.01	
2,4-Dichloroprop (2,4 DP)*	<0.01 mg/kg	SUB						<0.01	
4-Chlorophenoxyacetic acid (4-CPA)*	<0.01 mg/kg	SUB						<0.01	
Acifluorfen*	<0.01 mg/kg	SUB						<0.01	
Bentazone*	<0.01 mg/kg	SUB						<0.01	
Bromoxynil*	<0.01 mg/kg	SUB						<0.01	
Dicamba*	<0.01 mg/kg	SUB						<0.01	
Diclofop*	<0.01 mg/kg	SUB						<0.01	
Dinoseb*	<0.01 mg/kg	SUB						<0.01	
DNOC*	<0.01 mg/kg	SUB						<0.01	
Fluroxypyr*	<0.01 mg/kg	SUB						<0.01	
Ioxynil*	<0.01 mg/kg	SUB						<0.01	
2-methyl-4-Chlorophenoxyacetic acid (MCPA)*	<0.01 mg/kg	SUB						<0.01	
4-(4-Chloro-o-tolyloxy) butyric acid (MCPB)*	<0.01 mg/kg	SUB						<0.01	
Mecoprop (MCPP)*	<0.01 mg/kg	SUB						<0.01	
Propoxycarbazone-sodium*	<0.01 mg/kg	SUB						<0.01	
Triclopyr*	<0.01 mg/kg	SUB						<0.01	
Triclosan*	<0.01 mg/kg	SUB						<0.01	
Exchangeable Ammonia as N	<12 mg/kg	TM024		<12 M	66.1 M	<12 M	<12 M		<12 M
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 @ M	<0.01 @ M	<0.01 M	<0.01 @ M		<0.01 @ M
Cresols	<0.01 mg/kg	TM062 (S)		<0.01 @ M	<0.01 @ M	<0.01 M	<0.01 @ M		<0.01 @ M
Xylenols	<0.015 mg/kg	TM062 (S)		<0.015 @ M	<0.015 @ M	<0.015 M	<0.015 @ M		<0.015 @ M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 @ M	<0.035 @ M	<0.035 M	<0.035 @ M		<0.035 @ M
Soil Organic Matter (SOM)	<0.35 %	TM132		<0.35 #	0.879 #	1.78 #	0.886 #		0.56 #
pH	1 pH Units	TM133		7.97 M	7.13 M	9.81 M	7.05 M		9.01 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #		<0.6 #
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M		<1 M
Arsenic	<0.6 mg/kg	TM181		9.65 M	10.6 M	0.653 M	23.9 M		6.1 M
Cadmium	<0.02 mg/kg	TM181		0.434 M	1.93 M	0.463 M	3.32 M		0.173 M

CERTIFICATE OF ANALYSIS

SDG:	210602-77	**Client Reference:**	784-B026948	**Report Number:**	602213
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601308

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH35	BH35	BH37	BH37	BH49	BH49
			Depth (m)	1.70 - 1.80	4.40 - 4.50	0.40	4.20 - 4.30	0.10	0.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	25/05/2021	25/05/2021	24/05/2021	25/05/2021	24/05/2021	24/05/2021
			Sample Time	.	.	.	.	.	.
			Date Received	26/05/2021	26/05/2021	26/05/2021	26/05/2021	26/05/2021	26/05/2021
			SDG Ref	210602-77	210602-77	210602-77	210602-77	210602-77	210602-77
			Lab Sample No.(s)	24377942	24377904	24377959	24377930	24377853	24377922
			AGS Reference	ES4	ES3	ES1	ES3	ES1	ES2
Chromium	<0.9 mg/kg	TM181		4.18 M	14.2 M	1.68 M	12.3 M		16.2 M
Copper	<1.4 mg/kg	TM181		6.27 M	15.7 M	5.34 M	28.4 M		11 M
Iron	<1000 mg/kg	TM181		25600 #	23600 #	2930 #	58300 #		22000 #
Lead	<0.7 mg/kg	TM181		13 M	116 M	5.81 M	85 M		15.3 M
Mercury	<0.1 mg/kg	TM181		<0.1 M	<0.1 M	<0.1 M	0.205 M		<0.1 M
Nickel	<0.2 mg/kg	TM181		10.7 M	28.9 M	1.56 M	46.9 M		20.1 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #		<1 #
Vanadium	<0.2 mg/kg	TM181		13.9 #	30.2 #	2.39 #	43 #		26 #
Zinc	<1.9 mg/kg	TM181		41.1 M	166 M	44.5 M	395 M		62.1 M
Boron, water soluble	<1 mg/kg	TM222		<1 M	<1 M	<1 M	<1 M		<1 M
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.0376 M	0.0043 M	0.011 M	0.0203 M		0.0145 M
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248		5.66	10.8	6.18	2.22		3.35
EPH (C5-C40)	<35 mg/kg	TM415		<35	<35	<35	<35		<35
EPH Surrogate % recovery**	%	TM415		104	95.6	97.7	98.7		94.4
EPH >C10-C40	<35 mg/kg	TM415		<35 M	<35 M	<35 M	<35 M		<35 M

CERTIFICATE OF ANALYSIS

SDG:	210602-77	**Client Reference:**	784-B026948	**Report Number:**	602213
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601308

OC OP Pesticides and Triazine Herb

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH49
Depth (m)	0.10
Sample Type	Soil/Solid (S)
Date Sampled	24/05/2021
Sample Time	.
Date Received	26/05/2021
SDG Ref	210602-77
Lab Sample No.(s)	24377853
AGS Reference	ES1

Component	LOD/Units	Method	
Dichlorvos	<0.05 mg/kg	TM073	<0.5
Mevinphos	<0.05 mg/kg	TM073	<0.5
Phorate	<0.05 mg/kg	TM073	<0.5
alpha-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073	<0.5
Diazinon	<0.05 mg/kg	TM073	<0.5
gamma-Hexachlorocyclohexane (HCH / Lindane)	<0.05 mg/kg	TM073	<0.5
Disulfoton	<0.05 mg/kg	TM073	<0.5
Heptachlor	<0.05 mg/kg	TM073	<0.5
Aldrin	<0.05 mg/kg	TM073	<0.5
beta-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073	<0.5
Methyl parathion	<0.05 mg/kg	TM073	<0.5
Malathion	<0.05 mg/kg	TM073	<0.5
Fenitrothion	<0.05 mg/kg	TM073	<0.5
Heptachlor epoxide	<0.05 mg/kg	TM073	<0.5
Parathion	<0.05 mg/kg	TM073	<0.5
Endosulphan I	<0.05 mg/kg	TM073	<0.5
p,p-DDE	<0.05 mg/kg	TM073	<0.5
Dieldrin	<0.05 mg/kg	TM073	<0.5
Endrin	<0.05 mg/kg	TM073	<0.5
p,p-TDE (DDD)	<0.05 mg/kg	TM073	<0.5
Ethion	<0.05 mg/kg	TM073	<0.5
Endosulphan II	<0.05 mg/kg	TM073	<0.5
p,p-DDT	<0.05 mg/kg	TM073	<0.5
p,p-Methoxychlor	<0.05 mg/kg	TM073	<0.5
Endosulphan sulphate	<0.05 mg/kg	TM073	<0.5
Azinphos-methyl	<0.05 mg/kg	TM073	<0.5

Validated

CERTIFICATE OF ANALYSIS

SDG:	210602-77	**Client Reference:**	784-B026948	**Report Number:**	602213
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601308

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH35	BH35	BH37	BH37	BH49
			Depth (m)	1.70 - 1.80	4.40 - 4.50	0.40	4.20 - 4.30	0.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	25/05/2021	25/05/2021	24/05/2021	25/05/2021	24/05/2021
			Sample Time	.	.	.	.	.
			Date Received	26/05/2021	26/05/2021	26/05/2021	26/05/2021	26/05/2021
			SDG Ref	210602-77	210602-77	210602-77	210602-77	210602-77
			Lab Sample No.(s)	24377942	24377904	24377959	24377930	24377922
			AGS Reference	ES4	ES3	ES1	ES3	ES2
Naphthalene-d8 % recovery**	%	TM218		84	85.2	86.3	85.8	85.9
Acenaphthene-d10 % recovery**	%	TM218		86.2	85.3	86.4	87.1	86.8
Phenanthrene-d10 % recovery**	%	TM218		90	88.6	85.4	90.8	86.3
Chrysene-d12 % recovery**	%	TM218		91.2	87.7	80.8	88.7	81.2
Perylene-d12 % recovery**	%	TM218		101	89.7	80	95.6	77.2
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	<0.009 M	<0.009 M	<0.009 M	<0.009 M
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 M	<0.012 M	<0.012 M	<0.012 M	<0.012 M
Acenaphthene	<0.008 mg/kg	TM218		<0.008 M	<0.008 M	<0.008 M	<0.008 M	<0.008 M
Fluorene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M	<0.01 M	<0.01 M	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M	<0.015 M	<0.015 M	0.0202 M
Anthracene	<0.016 mg/kg	TM218		<0.016 M	<0.016 M	<0.016 M	<0.016 M	<0.016 M
Fluoranthene	<0.017 mg/kg	TM218		<0.017 M	<0.017 M	<0.017 M	<0.017 M	0.0601 M
Pyrene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M	<0.015 M	<0.015 M	0.0537 M
Benz(a)anthracene	<0.014 mg/kg	TM218		<0.014 M	<0.014 M	<0.014 M	<0.014 M	0.0361 M
Chrysene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M	<0.01 M	<0.01 M	0.0391 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M	<0.015 M	<0.015 M	0.0489 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		<0.014 M	<0.014 M	<0.014 M	<0.014 M	0.0175 M
Benzo(a)pyrene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M	<0.015 M	<0.015 M	0.0362 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		<0.018 M	<0.018 M	<0.018 M	<0.018 M	0.0307 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	<0.023 M	<0.023 M	<0.023 M	<0.023 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		<0.024 M	<0.024 M	<0.024 M	<0.024 M	0.0316 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		<0.118	<0.118	<0.118	<0.118	0.374

CERTIFICATE OF ANALYSIS

SDG:	210602-77	**Client Reference:**	784-B026948	**Report Number:**	602213
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601308

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH35	BH37				
			Depth (m)	1.70 - 1.80	0.40				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	25/05/2021	24/05/2021				
			Sample Time	.	.				
			Date Received	26/05/2021	26/05/2021				
			SDG Ref	210602-77	210602-77				
			Lab Sample No.(s)	24377942	24377959				
			AGS Reference	ES4	ES1				
Phenol	<0.1 mg/kg	TM157		<0.1	<0.2				
Pentachlorophenol	<0.1 mg/kg	TM157		<0.1	<0.2				
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157		<0.1	<0.2				
Nitrobenzene	<0.1 mg/kg	TM157		<0.1	<0.2				
Isophorone	<0.1 mg/kg	TM157		<0.1	<0.2				
Hexachloroethane	<0.1 mg/kg	TM157		<0.1	<0.2				
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157		<0.2	<0.4				
Hexachlorobutadiene	<0.1 mg/kg	TM157		<0.1	<0.2				
Hexachlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.2				
n-Dioctyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.2				
Dimethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.2				
Diethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.2				
n-Dibutyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.2				
Dibenzofuran	<0.1 mg/kg	TM157		<0.1	<0.2				
Carbazole	<0.1 mg/kg	TM157		<0.1	<0.2				
Butylbenzyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.2				
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157		<0.1	<0.2				
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157		<0.1	<0.2				
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157		<0.1	<0.2				
Azobenzene	<0.1 mg/kg	TM157		<0.1	<0.2				
4-Nitrophenol	<0.1 mg/kg	TM157		<0.5	<1				
4-Nitroaniline	<0.1 mg/kg	TM157		<0.5	<1				
4-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.2				
4-Chlorophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.2				
4-Chloroaniline	<0.1 mg/kg	TM157		<0.1	<0.2				
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157		<0.1	<0.2				
4-Bromophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.2				
3-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.2				
2-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.2				
2-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.2				
2-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.2				
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.2				
2-Chlorophenol	<0.1 mg/kg	TM157		<0.1	<0.2				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210602-77	**Client Reference:**	784-B026948	**Report Number:**	602213
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601308

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH35	BH37				
			Depth (m)	1.70 - 1.80	0.40				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	25/05/2021	24/05/2021				
			Sample Time	.	.				
			Date Received	26/05/2021	26/05/2021				
			SDG Ref	210602-77	210602-77				
			Lab Sample No.(s)	24377942	24377959				
			AGS Reference	ES4	ES1				
2,6-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.2				
2,4-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.2				
2,4-Dimethylphenol	<0.1 mg/kg	TM157		<0.1	<0.2				
2,4-Dichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.2				
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.2				
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.2				
1,4-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.2				
1,3-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.2				
1,2-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.2				
2-Chloronaphthalene	<0.1 mg/kg	TM157		<0.1	<0.2				
2-Methylnaphthalene	<0.1 mg/kg	TM157		<0.1	<0.2				
Acenaphthylene	<0.1 mg/kg	TM157		<0.1	<0.2				
Acenaphthene	<0.1 mg/kg	TM157		<0.1	<0.2				
Anthracene	<0.1 mg/kg	TM157		<0.1	<0.2				
Benzo(a)anthracene	<0.1 mg/kg	TM157		<0.1	<0.2				
Benzo(b)fluoranthene	<0.1 mg/kg	TM157		<0.1	<0.2				
Benzo(k)fluoranthene	<0.1 mg/kg	TM157		<0.1	<0.2				
Benzo(a)pyrene	<0.1 mg/kg	TM157		<0.1	<0.2				
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157		<0.1	<0.2				
Chrysene	<0.1 mg/kg	TM157		<0.1	<0.2				
Fluoranthene	<0.1 mg/kg	TM157		<0.1	<0.2				
Fluorene	<0.1 mg/kg	TM157		<0.1	<0.2				
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157		<0.1	<0.2				
Phenanthrene	<0.1 mg/kg	TM157		<0.1	<0.2				
Pyrene	<0.1 mg/kg	TM157		<0.1	<0.2				
Naphthalene	<0.1 mg/kg	TM157		<0.1	<0.2				
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157		<0.1	<0.2				
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157		<0.1	<0.2				

CERTIFICATE OF ANALYSIS

SDG:	210602-77	**Client Reference:**	784-B026948	**Report Number:**	602213
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601308

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	BH35	BH35	BH37	BH37	BH49
Customer Sample Ref.							
Depth (m)			1.70 - 1.80	4.40 - 4.50	0.40	4.20 - 4.30	0.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			25/05/2021	25/05/2021	24/05/2021	25/05/2021	24/05/2021
Sample Time			.	.	.	.	.
Date Received			26/05/2021	26/05/2021	26/05/2021	26/05/2021	26/05/2021
SDG Ref			210602-77	210602-77	210602-77	210602-77	210602-77
Lab Sample No.(s)			24377942	24377904	24377959	24377930	24377922
AGS Reference			ES4	ES3	ES1	ES3	ES2
GRO Surrogate % recovery**	%	TM089	110	125	104 @	102	117 @
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01 @	<0.01	<0.01 @
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01 @	<0.01	<0.01 @
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01 @	<0.01	<0.01 @
Aliphatics >C10-C12	<1 mg/kg	TM414	<1	<1	<1	<1	<1
Aliphatics >C12-C16	<1 mg/kg	TM414	<1	<1	<1	<1	<1
Aliphatics >C16-C21	<1 mg/kg	TM414	<1	<1	<1	<1	<1
Aliphatics >C21-C35	<1 mg/kg	TM414	2.18	1.96	5.25	1.19	2.31
Aliphatics >C35-C44	<1 mg/kg	TM414	<1	<1	2.28	<1	<1
Total Aliphatics >C10-C44	<5 mg/kg	TM414	<5	<5	7.53	<5	<5
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414	<10	<10	16.9	<10	<10
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01 @	<0.01	<0.01 @
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01 @	<0.01	<0.01 @
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01 @	<0.01	<0.01 @
Aromatics > EC10-EC12	<1 mg/kg	TM414	<1	<1	<1	<1	<1
Aromatics > EC12-EC16	<1 mg/kg	TM414	<1	<1	<1	<1	<1
Aromatics > EC16-EC21	<1 mg/kg	TM414	<1	<1	<1	<1	<1
Aromatics > EC21-EC35	<1 mg/kg	TM414	2.21	<1	8.17	<1	<1
Aromatics >EC35-EC44	<1 mg/kg	TM414	<1	<1	<1	<1	<1
Aromatics > EC40-EC44	<1 mg/kg	TM414	<1	<1	<1	<1	<1
Total Aromatics > EC10-EC44	<5 mg/kg	TM414	<5	<5	9.34	<5	<5
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414	<10	<10	16.9	<10	<10
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089	<0.05	<0.05	<0.05 @	<0.05	<0.05 @
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089	<0.05	<0.05	<0.05 @	<0.05	<0.05 @
GRO >C5-C10	<0.02 mg/kg	TM089	<0.02	<0.02	<0.02 @	<0.02	<0.02 @

CERTIFICATE OF ANALYSIS

SDG:	210602-77	**Client Reference:**	784-B026948	**Report Number:**	602213
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601308

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH35	BH35	BH37	BH37	BH49
			Depth (m)	1.70 - 1.80	4.40 - 4.50	0.40	4.20 - 4.30	0.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	25/05/2021	25/05/2021	24/05/2021	25/05/2021	24/05/2021
			Sample Time	.	.	.	.	.
			Date Received	26/05/2021	26/05/2021	26/05/2021	26/05/2021	26/05/2021
			SDG Ref	210602-77	210602-77	210602-77	210602-77	210602-77
			Lab Sample No.(s)	24377942	24377904	24377959	24377930	24377922
			AGS Reference	ES4	ES3	ES1	ES3	ES2
Dibromofluoromethane**	%	TM116		109	111	130	110	112 @
Toluene-d8**	%	TM116		98.9	97.8	97.8	99.2	99.6 @
4-Bromofluorobenzene**	%	TM116		102	98.9	100	102	100 @
Dichlorodifluoromethane	<0.006 mg/kg	TM116		<0.12 M		<0.12 M		
Chloromethane	<0.007 mg/kg	TM116		<0.14 #		<0.14 #		
Vinyl Chloride	<0.006 mg/kg	TM116		<0.12 @ M		<0.12 @ M		
Bromomethane	<0.01 mg/kg	TM116		<0.2 M		<0.2 M		
Chloroethane	<0.01 mg/kg	TM116		<0.2 M		<0.2 M		
Trichlorofluorormethane	<0.006 mg/kg	TM116		<0.12 M		<0.12 M		
1,1-Dichloroethene	<0.01 mg/kg	TM116		<0.2 #		<0.2 #		
Carbon Disulphide	<0.007 mg/kg	TM116		<0.14 M		<0.14 M		
Dichloromethane	<0.01 mg/kg	TM116		<0.2 #		<0.2 #		
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M	<0.2 M	<0.2 @ M
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116		<0.2 M		<0.2 M		
1,1-Dichloroethane	<0.008 mg/kg	TM116		<0.16 M		<0.16 M		
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116		<0.12 M		<0.12 M		
2,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2		<0.2		
Bromochloromethane	<0.01 mg/kg	TM116		<0.2 M		<0.2 M		
Chloroform	<0.008 mg/kg	TM116		<0.16 M		<0.16 M		
1,1,1-Trichloroethane	<0.007 mg/kg	TM116		<0.14 M		<0.14 M		
1,1-Dichloropropene	<0.01 mg/kg	TM116		<0.2 M		<0.2 M		
Carbontetrachloride	<0.01 mg/kg	TM116		<0.2 M		<0.2 M		
1,2-Dichloroethane	<0.005 mg/kg	TM116		<0.1 M		<0.1 M		
Benzene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M	<0.18 M	<0.18 M	<0.18 @ M
Trichloroethene	<0.009 mg/kg	TM116		<0.18 #		<0.18 #		
1,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2 M		<0.2 M		
Dibromomethane	<0.009 mg/kg	TM116		<0.18 M		<0.18 M		
Bromodichloromethane	<0.007 mg/kg	TM116		<0.14 M		<0.14 M		
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2 M		<0.2 M		
Toluene	<0.007 mg/kg	TM116		<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 @ M
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2		<0.2		
1,1,2-Trichloroethane	<0.01 mg/kg	TM116		<0.2 M		<0.2 M		
1,3-Dichloropropane	<0.007 mg/kg	TM116		<0.14 M		<0.14 M		

CERTIFICATE OF ANALYSIS

SDG:	210602-77	**Client Reference:**	784-B026948	**Report Number:**	602213
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601308

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH35	BH35	BH37	BH37	BH49
			Depth (m)	1.70 - 1.80	4.40 - 4.50	0.40	4.20 - 4.30	0.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	25/05/2021	25/05/2021	24/05/2021	25/05/2021	24/05/2021
			Sample Time	.	.	.	.	.
			Date Received	26/05/2021	26/05/2021	26/05/2021	26/05/2021	26/05/2021
			SDG Ref	210602-77	210602-77	210602-77	210602-77	210602-77
			Lab Sample No.(s)	24377942	24377904	24377959	24377930	24377922
			AGS Reference	ES4	ES3	ES1	ES3	ES2
Tetrachloroethene	<0.005 mg/kg	TM116		<0.1 M		<0.1 M		
Dibromochloromethane	<0.01 mg/kg	TM116		<0.2 M		<0.2 M		
1,2-Dibromoethane	<0.01 mg/kg	TM116		<0.2 M		<0.2 M		
Chlorobenzene	<0.005 mg/kg	TM116		<0.1 M		<0.1 M		
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 M		<0.2 M		
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 M	<0.08 M	<0.08 M	<0.08 M	<0.08 @ M
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #	<0.2 #	<0.2 #	<0.2 @ #
o-Xylene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M	<0.2 M	<0.2 @ M
Styrene	<0.01 mg/kg	TM116		<0.2 @ #		<0.2 @ #		
Bromoform	<0.01 mg/kg	TM116		<0.2 M		<0.2 M		
Isopropylbenzene	<0.005 mg/kg	TM116		<0.1 3 #		<0.1 3 #		
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 #		<0.2 #		
1,2,3-Trichloropropane	<0.016 mg/kg	TM116		<0.32 M		<0.32 M		
Bromobenzene	<0.01 mg/kg	TM116		<0.2 M		<0.2 M		
Propylbenzene	<0.01 mg/kg	TM116		<0.2 M		<0.2 M		
2-Chlorotoluene	<0.009 mg/kg	TM116		<0.18 M		<0.18 M		
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116		<0.16 M		<0.16 M		
4-Chlorotoluene	<0.01 mg/kg	TM116		<0.2 M		<0.2 M		
tert-Butylbenzene	<0.014 mg/kg	TM116		<0.28 M		<0.28 M		
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116		<0.18 #		<0.18 #		
sec-Butylbenzene	<0.01 mg/kg	TM116		<0.2 3		<0.2 3		
4-Isopropyltoluene	<0.01 mg/kg	TM116		<0.2 M		<0.2 M		
1,3-Dichlorobenzene	<0.008 mg/kg	TM116		<0.16 M		<0.16 M		
1,4-Dichlorobenzene	<0.005 mg/kg	TM116		<0.1 M		<0.1 M		
n-Butylbenzene	<0.011 mg/kg	TM116		<0.22		<0.22		
1,2-Dichlorobenzene	<0.01 mg/kg	TM116		<0.2 M		<0.2 M		
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116		<0.28 M		<0.28 M		
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.2 #		<0.2 #		
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4		<0.4		
Hexachlorobutadiene	<0.02 mg/kg	TM116		<0.4		<0.4		
Naphthalene	<0.013 mg/kg	TM116		<0.26 M		<0.26 M		
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4 #		<0.4 #		
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4		<0.4		

CERTIFICATE OF ANALYSIS

SDG:	210602-77	**Client Reference:**	784-B026948	**Report Number:**	602213
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601308

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH35	BH35	BH37	BH37	BH49	
			Depth (m)	1.70 - 1.80	4.40 - 4.50	0.40	4.20 - 4.30	0.50	
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	
			Date Sampled	25/05/2021	25/05/2021	24/05/2021	25/05/2021	24/05/2021	
			Sample Time	.	.	.	.	.	
			Date Received	26/05/2021	26/05/2021	26/05/2021	26/05/2021	26/05/2021	
			SDG Ref	210602-77	210602-77	210602-77	210602-77	210602-77	
			Lab Sample No.(s)	24377942	24377904	24377959	24377930	24377922	
			AGS Reference	ES4	ES3	ES1	ES3	ES2	
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4	<0.4	<0.4	<0.4	<0.4 @	
Sum of BTEX	<0.04 mg/kg	TM116		<0.8	<0.8	<0.8	<0.8	<0.8 @	

CERTIFICATE OF ANALYSIS

SDG:	210602-77	**Client Reference:**	784-B026948	**Report Number:**	602213
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601308

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&+$@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	BH35ES4 1.70 - 1.80 SOLID 25/05/2021 00:00:00 26/05/2021 08:00:00 210602-77 24377942 TM048	03.06.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	BH35ES3 4.40 - 4.50 SOLID 25/05/2021 00:00:00 26/05/2021 08:00:00 210602-77 24377904 TM048	03/06/2021	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	BH37ES1 0.40 SOLID 24/05/2021 00:00:00 26/05/2021 08:00:00 210602-77 24377959 TM048	04/06/2021	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	BH37ES3 4.20 - 4.30 SOLID 25/05/2021 00:00:00 26/05/2021 08:00:00 210602-77 24377930 TM048	08/06/2021	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	BH49ES2 0.50 SOLID 24/05/2021 00:00:00 26/05/2021 08:00:00 210602-77 24377922 TM048	03/06/2021	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	210602-77	**Client Reference:**	784-B026948	**Report Number:**	602213
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601308

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.095	**Natural Moisture Content (%)**	5.45
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	94.8
Particle Size <4mm	>95%		

Case	
SDG	210602-77
Lab Sample Number(s)	24377959
Sampled Date	24-May-2021
Customer Sample Ref.	BH37 ES1
Depth (m)	0.40

Eluate Analysis	**C_2 Conc^n in 10:1 eluate (mg/l)**		**A_2 10:1 conc^n leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.000583	<0.0005	0.00583	<0.005	-	-	-
Boron	0.0134	<0.01	0.134	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.19	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00175	<0.001	0.0175	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	03-Jun-2021
pH (pH Units)	9.79
Conductivity (µS/cm)	164.00
Temperature (°C)	17.60
Volume Leachant (Litres)	0.895

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210602-77	**Client Reference:**	784-B026948	**Report Number:**	602213
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601308

Test Completion Dates

Lab Sample No(s)	24377904	24377942	24377930	24377959	24377853	24377922
Customer Sample Ref.	BH35	BH35	BH37	BH37	BH49	BH49
AGS Ref.	ES3	ES4	ES3	ES1	ES1	ES2
Depth	4.40 - 4.50	1.70 - 1.80	4.20 - 4.30	0.40	0.10	0.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Acid herbicides*					16-Jun-2021	
Ammoniacal N as NH4 in 2:1 extract	07-Jun-2021	07-Jun-2021	07-Jun-2021	07-Jun-2021		07-Jun-2021
Ammoniacal Nitrogen				08-Jun-2021		
Ammonium Soil by Titration	04-Jun-2021	04-Jun-2021	09-Jun-2021	04-Jun-2021		04-Jun-2021
Anions by Kone (soil)	08-Jun-2021	08-Jun-2021	08-Jun-2021	04-Jun-2021		08-Jun-2021
Asbestos ID in Solid Samples	03-Jun-2021	03-Jun-2021	08-Jun-2021	04-Jun-2021		03-Jun-2021
Boron Water Soluble	08-Jun-2021	08-Jun-2021	08-Jun-2021	07-Jun-2021		07-Jun-2021
CEN 10:1 Leachate (1 Stage)				03-Jun-2021		
CEN Readings				04-Jun-2021		
Cyanide Comp/Free/Total/Thiocyanate	07-Jun-2021	07-Jun-2021	07-Jun-2021	08-Jun-2021		07-Jun-2021
Dissolved Metals by ICP-MS				05-Jun-2021		
EPH	07-Jun-2021	08-Jun-2021	08-Jun-2021	07-Jun-2021		07-Jun-2021
EPH by GCxGC-FID	04-Jun-2021	04-Jun-2021	07-Jun-2021	04-Jun-2021		04-Jun-2021
EPH CWG GC (S)	07-Jun-2021	07-Jun-2021	07-Jun-2021	04-Jun-2021		07-Jun-2021
GRO by GC-FID (S)	07-Jun-2021	08-Jun-2021	08-Jun-2021	07-Jun-2021		07-Jun-2021
Hexavalent Chromium (s)	08-Jun-2021	08-Jun-2021	08-Jun-2021	04-Jun-2021		08-Jun-2021
Hexavalent Chromium (w)				08-Jun-2021		
Mercury Dissolved				07-Jun-2021		
Metals in solid samples by OES	09-Jun-2021	08-Jun-2021	09-Jun-2021	08-Jun-2021		09-Jun-2021
Moisture at 105C				03-Jun-2021		
OC OP Pesticides and Triazine Herb					09-Jun-2021	
PAH by GCMS	07-Jun-2021	07-Jun-2021	07-Jun-2021	04-Jun-2021		04-Jun-2021
pH	04-Jun-2021	04-Jun-2021	04-Jun-2021	03-Jun-2021		04-Jun-2021
pH Value of Filtered Water				07-Jun-2021		
Phenols by HPLC (S)	09-Jun-2021	09-Jun-2021	09-Jun-2021	04-Jun-2021		09-Jun-2021
Sample description	03-Jun-2021	03-Jun-2021	03-Jun-2021	02-Jun-2021	03-Jun-2021	03-Jun-2021
Semi Volatile Organic Compounds		07-Jun-2021		04-Jun-2021		
Sulphide				08-Jun-2021		
Total Organic Carbon	08-Jun-2021	07-Jun-2021	08-Jun-2021	07-Jun-2021		08-Jun-2021
TPH CWG GC (S)	07-Jun-2021	08-Jun-2021	08-Jun-2021	07-Jun-2021		07-Jun-2021
VOC MS (S)	07-Jun-2021	07-Jun-2021	07-Jun-2021	07-Jun-2021		08-Jun-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2468
Ammoniacal Nitrogen as N	TM099	**92.0** 88.02 : 104.70

Ammonium Soil by Titration

Component	Method Code	QC 2416
Exchangeable Ammonium as NH4	TM024	**92.04** 74.04 : 103.44

Anions by Kone (soil)

Component	Method Code	QC 2490	QC 2442
Chloride (soluble)	TM243	**149.22** 80.93 : 111.66	**150.26** 83.05 : 116.28
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**161.68** 70.00 : 130.00	**158.41** 70.00 : 130.00

Boron Water Soluble

Component	Method Code	QC 2468	QC 2463	QC 2457
Water Soluble Boron	TM222	**94.5** 84.00 : 111.00	**98.5** 84.00 : 111.00	**94.0** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2495	QC 2466
Free Cyanide	TM153	**94.06** 78.00 : 114.00	
Free Cyanide (W)	TM227		**83.0** 90.67 : 122.67
Thiocyanate	TM153	**96.79** 94.53 : 113.33	
Thiocyanate (W)	TM227		**111.75** 92.25 : 117.75
Total Cyanide	TM153	**100.0** 77.13 : 111.53	
Total Cyanide (W)	TM227		**105.75** 88.75 : 111.25

Dissolved Metals by ICP-MS

Dissolved Metals by ICP-MS

Component	Method Code	QC 2483
Aluminium	TM152	**104.67** 94.21 : 111.52
Antimony	TM152	**103.83** 88.37 : 130.57
Arsenic	TM152	**103.17** 92.62 : 113.52
Barium	TM152	**103.0** 88.62 : 113.14
Beryllium	TM152	**104.33** 87.08 : 111.38
Bismuth	TM152	**102.17** 92.62 : 115.02
Boron	TM152	**102.33** 86.31 : 120.88
Cadmium	TM152	**103.17** 93.85 : 111.65
Calcium	TM152	**102.67** 89.20 : 126.91
Chromium	TM152	**104.5** 92.50 : 113.03
Cobalt	TM152	**104.0** 85.01 : 114.87
Copper	TM152	**104.33** 89.87 : 119.73
Iron	TM152	**104.67** 93.02 : 113.86
Lead	TM152	**101.0** 91.11 : 116.98
Lithium	TM152	**103.0** 87.70 : 115.90
Magnesium	TM152	**100.67** 89.60 : 116.61
Manganese	TM152	**105.33** 93.97 : 112.46
Molybdenum	TM152	**103.17** 89.07 : 110.96
Nickel	TM152	**103.5** 93.70 : 112.15
Phosphorus	TM152	**103.17** 89.24 : 114.18
Potassium	TM152	**101.33** 93.20 : 115.55
Selenium	TM152	**103.67** 91.69 : 117.12
Silver	TM152	**103.5** 90.93 : 121.73
Sodium	TM152	**102.0** 92.42 : 113.24
Strontium	TM152	**106.33** 92.14 : 116.24
Tellurium	TM152	**102.17** 89.88 : 111.78
Thallium	TM152	**104.33** 82.43 : 113.83

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Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601308

Dissolved Metals by ICP-MS

		QC 2483
Tin	TM152	**88.17** 94.62 : 107.79
Titanium	TM152	**102.67** 90.29 : 115.23
Tungsten	TM152	**100.0** 77.61 : 132.31
Uranium	TM152	**101.33** 86.97 : 115.76
Vanadium	TM152	**105.0** 89.61 : 115.48
Zinc	TM152	**104.0** 87.51 : 116.26

GRO by GC-FID (S)

Component	Method Code	QC 2478	QC 2498
QC	TM089	**74.81** 68.78 : 110.61	**85.05** 68.78 : 110.61

Hexavalent Chromium (s)

Component	Method Code	QC 2409	QC 2449
Hexavalent Chromium	TM151	**106.0** 91.40 : 115.40	**96.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2454
Hexavalent Chromium	TM241	**102.0** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2479
Mercury Dissolved (CVAF)	TM183	**109.0** 69.30 : 128.70

Metals in solid samples by OES

CERTIFICATE OF ANALYSIS

SDG:	210602-77	**Client Reference:**	784-B026948	**Report Number:**	602213
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601308

Metals in solid samples by OES

Component	Method Code	QC 2406	QC 2414	QC 2446
Aluminium	TM181	**96.46** 73.56 : 108.85	**100.88** 73.56 : 108.85	**103.54** 73.56 : 108.85
Antimony	TM181	**96.34** 76.89 : 111.24	**97.97** 76.89 : 111.24	**95.12** 76.89 : 111.24
Arsenic	TM181	**100.0** 88.53 : 111.01	**101.16** 88.53 : 111.01	**100.0** 88.53 : 111.01
Barium	TM181	**95.41** 77.67 : 105.35	**100.0** 77.67 : 105.35	**101.83** 77.67 : 105.35
Beryllium	TM181	**102.24** 85.44 : 109.61	**103.36** 85.44 : 109.61	**101.12** 85.44 : 109.61
Boron	TM181	**93.41** 73.51 : 104.66	**92.84** 73.51 : 104.66	**94.56** 73.51 : 104.66
Cadmium	TM181	**92.18** 77.67 : 104.12	**95.06** 77.67 : 104.12	**97.94** 77.67 : 104.12
Chromium	TM181	**91.08** 79.64 : 105.83	**90.67** 79.64 : 105.83	**90.26** 79.64 : 105.83
Cobalt	TM181	**92.14** 84.60 : 104.13	**93.08** 84.60 : 104.13	**91.19** 84.60 : 104.13
Copper	TM181	**99.65** 82.40 : 105.45	**100.88** 82.40 : 105.45	**99.3** 82.40 : 105.45
Iron	TM181	**95.24** 82.95 : 110.58	**100.0** 82.95 : 110.58	**97.62** 82.95 : 110.58
Lead	TM181	**94.14** 78.24 : 104.05	**96.62** 78.24 : 104.05	**97.75** 78.24 : 104.05
Manganese	TM181	**108.89** 94.29 : 119.51	**110.0** 94.29 : 119.51	**107.22** 94.29 : 119.51
Mercury	TM181	**95.65** 83.16 : 107.81	**97.58** 83.16 : 107.81	**95.17** 83.16 : 107.81
Molybdenum	TM181	**100.41** 87.11 : 106.87	**100.41** 87.11 : 106.87	**97.12** 87.11 : 106.87
Nickel	TM181	**91.93** 80.26 : 102.28	**94.62** 80.26 : 102.28	**92.67** 80.26 : 102.28
Phosphorus	TM181	**108.08** 94.56 : 124.28	**106.87** 94.56 : 124.28	**104.24** 94.56 : 124.28
Selenium	TM181	**103.14** 82.28 : 110.48	**102.75** 82.28 : 110.48	**100.78** 82.28 : 110.48
Strontium	TM181	**98.0** 79.13 : 102.79	**96.44** 79.13 : 102.79	**96.88** 79.13 : 102.79
Thallium	TM181	**92.92** 82.94 : 111.86	**96.46** 82.94 : 111.86	**95.13** 82.94 : 111.86
Tin	TM181	**101.9** 86.72 : 110.03	**102.66** 86.72 : 110.03	**100.76** 86.72 : 110.03
Titanium	TM181	**90.84** 66.23 : 102.06	**87.02** 66.23 : 102.06	**83.97** 66.23 : 102.06
Vanadium	TM181	**100.0** 86.19 : 109.45	**98.17** 86.19 : 109.45	**98.17** 86.19 : 109.45
Zinc	TM181	**100.21** 84.68 : 113.99	**101.85** 84.68 : 113.99	**100.0** 84.68 : 113.99

PAH by GCMS

PAH by GCMS

Component	Method Code	QC 2422	QC 2499
Acenaphthene	TM218	**97.0** 73.47 : 109.80	**93.0** 76.79 : 103.90
Acenaphthylene	TM218	**95.0** 70.00 : 130.00	**90.5** 74.19 : 106.17
Anthracene	TM218	**94.0** 68.68 : 111.89	**89.5** 70.90 : 109.22
Benz(a)anthracene	TM218	**91.5** 68.12 : 118.39	**89.5** 73.77 : 119.26
Benzo(a)pyrene	TM218	**87.5** 71.72 : 115.31	**91.0** 73.20 : 114.18
Benzo(b)fluoranthene	TM218	**78.0** 66.89 : 120.40	**84.0** 75.36 : 117.58
Benzo(ghi)perylene	TM218	**84.0** 67.82 : 118.49	**92.0** 70.73 : 116.12
Benzo(k)fluoranthene	TM218	**93.5** 73.10 : 117.03	**88.5** 75.98 : 116.59
Chrysene	TM218	**89.5** 69.58 : 115.47	**88.5** 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	**86.5** 67.32 : 121.35	**88.0** 69.17 : 115.30
Fluoranthene	TM218	**96.5** 75.16 : 117.28	**89.5** 66.06 : 114.63
Fluorene	TM218	**96.5** 73.81 : 108.66	**92.5** 76.66 : 107.56
Indeno(123cd)pyrene	TM218	**82.5** 68.91 : 117.62	**90.0** 70.26 : 117.95
Naphthalene	TM218	**96.0** 72.12 : 106.18	**89.5** 74.70 : 101.83
Phenanthrene	TM218	**97.5** 69.01 : 113.72	**91.5** 73.62 : 109.34
Pyrene	TM218	**97.0** 64.28 : 115.75	**89.0** 71.46 : 117.00

pH

Component	Method Code	QC 2498	QC 2497
pH	TM133	**100.15** 98.09 : 101.62	**99.56** 98.09 : 101.62

pH Value of Filtered Water

Component	Method Code	QC 2441
pH	TM256	**100.67** 99.33 : 102.54

Phenols by HPLC (S)

Phenols by HPLC (S)

Component	Method Code	QC 2495	QC 2443	QC 2455	QC 2453
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**51.95** 69.38 : 125.27	**58.44** 69.38 : 125.27	**53.25** 69.38 : 125.27	**55.19** 69.38 : 125.27
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**45.03** 69.79 : 122.84	**50.88** 69.79 : 122.84	**50.88** 69.79 : 122.84	**47.95** 69.79 : 122.84
Cresols by HPLC (S)	TM062 (S)	**50.1** 77.98 : 111.41	**56.37** 77.98 : 111.41	**52.82** 77.98 : 111.41	**51.98** 77.98 : 111.41
Phenol by HPLC (S)	TM062 (S)	**52.32** 67.94 : 117.69	**58.28** 67.94 : 117.69	**52.32** 67.94 : 117.69	**53.64** 67.94 : 117.69
Xylenols by HPLC (S)	TM062 (S)	**50.73** 88.23 : 104.42	**56.67** 88.23 : 104.42	**53.02** 88.23 : 104.42	**52.71** 88.23 : 104.42

Semi Volatile Organic Compounds

Component	Method Code	QC 2437
4-Bromophenylphenylether (Soil)	TM157	**91.0** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**107.0** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**96.5** 68.25 : 126.75
Naphthalene (Soil)	TM157	**94.0** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**98.0** 66.50 : 123.50
Phenol (Soil)	TM157	**101.0** 69.92 : 114.02

Sulphide

Component	Method Code	QC 2490
Sulphide	TM101	**100.0** 88.90 : 112.50

Total Organic Carbon

Component	Method Code	QC 2402	QC 2470	QC 2472	QC 2485
Total Organic Carbon	TM132	**103.52** 87.02 : 113.45	**98.05** 87.02 : 113.45	**109.77** 87.02 : 113.45	**104.3** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2461	QC 2406
1,1,1,2-tetrachloroethane	TM116	**105.0** 84.84 : 116.25	**102.0** 86.59 : 118.97
1,1,1-Trichloroethane	TM116	**96.8** 73.73 : 118.05	**99.6** 86.26 : 117.53
1,1,2-Trichloroethane	TM116	**98.0** 77.12 : 116.04	**90.8** 75.16 : 112.70

VOC MS (S)

		QC 2461	QC 2406
1,1-Dichloroethane	TM116	**106.6** 74.46 : 129.15	**100.8** 83.27 : 122.16
1,2-Dichloroethane	TM116	**107.8** 92.38 : 131.65	**110.6** 89.30 : 133.10
1,4-Dichlorobenzene	TM116	**108.4** 83.64 : 126.18	**96.6** 82.59 : 123.23
2-Chlorotoluene	TM116	**105.2** 76.03 : 113.25	**89.8** 66.81 : 118.43
4-Chlorotoluene	TM116	**106.6** 66.90 : 112.46	**87.0** 65.88 : 114.76
Benzene	TM116	**102.2** 88.60 : 113.80	**94.0** 93.16 : 123.63
Carbon Disulphide	TM116	**99.0** 74.91 : 122.14	**92.6** 75.11 : 124.81
Carbontetrachloride	TM116	**96.8** 80.31 : 124.50	**110.8** 82.35 : 126.46
Chlorobenzene	TM116	**105.2** 83.81 : 114.18	**97.4** 85.07 : 118.13
Chloroform	TM116	**106.0** 87.40 : 122.49	**103.8** 88.13 : 122.71
Chloromethane	TM116	**92.4** 65.89 : 136.93	**108.2** 61.62 : 145.66
Cis-1,2-Dichloroethene	TM116	**105.4** 80.67 : 126.72	**97.6** 88.41 : 121.33
Dibromomethane	TM116	**101.0** 73.23 : 118.35	**97.2** 77.47 : 121.29
Dichloromethane	TM116	**114.8** 81.11 : 133.25	**106.2** 87.89 : 134.72
Ethylbenzene	TM116	**98.8** 75.92 : 110.41	**87.8** 76.29 : 106.31
Hexachlorobutadiene	TM116	**95.8** 12.82 : 152.73	**74.4** 16.78 : 153.29
Isopropylbenzene	TM116	**100.8** 54.30 : 105.91	**79.8** 59.16 : 110.07
Naphthalene	TM116	**112.4** 80.86 : 128.81	**102.2** 79.29 : 125.59
o-Xylene	TM116	**94.6** 69.99 : 108.74	**84.2** 72.86 : 102.10
p/m-Xylene	TM116	**96.1** 68.32 : 108.91	**85.0** 68.99 : 102.40
Sec-Butylbenzene	TM116	**104.6** 38.50 : 101.50	**77.4** 44.71 : 117.87
Tetrachloroethene	TM116	**110.4** 76.95 : 121.02	**101.4** 77.82 : 125.00
Toluene	TM116	**93.0** 74.24 : 107.42	**87.4** 87.82 : 116.21
Trichloroethene	TM116	**99.4** 85.28 : 109.36	**96.8** 79.80 : 112.33
Trichlorofluoromethane	TM116	**102.4** 81.46 : 120.52	**110.0** 80.52 : 132.12
Vinyl Chloride	TM116	**99.6** 68.02 : 143.37	**94.2** 74.57 : 146.88

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.

The figure detailed is the percentage recovery result for the AQC.

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

Work Order	: **PR2152255**	Issue Date	: 16-Jun-2021
Customer	: **ALS Life Sciences Ltd**	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: [redacted]	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 210602-77	Page	: 1 of 2
Order number	: ----	Date Samples Received	: 04-Jun-2021
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 06-Jun-2021 - 16-Jun-2021
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories		*Position*
Zdeněk Jirák	[redacted]	Environmental Business Unit Manager

The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)

Analytical Results

Sub-Matrix: **SOIL**			Client sample ID	**24382865 BH49**		**----**		**----**	
			Laboratory sample ID	*PR2152255-001*		----		----	
			Client sampling date / time	03-Jun-2021 07:59		----		----	
Parameter	*Method*	*LOR*	*Unit*	**Result**	**MU**	**Result**	**MU**	**Result**	**MU**
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	**83.2**	± 6.0%	**----**	----	**----**	----
Pesticides									
2.4.5-T	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4.5-TP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-D	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
4-CPP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bentazone	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dinoseb	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Fluroxypyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPA	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Acifluorfen	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bromoxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
DNOC	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dicamba	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Diclofop	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Ioxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Propoxycarbazone-sodium	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclopyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclosan	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.
Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	*Method Descriptions*
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PESLMSA1	CZ_SOP_D06_03_182.B (CSN EN 15637, US EPA 1694) Determination of acidic herbicides and drug residues by liquid chromatography method with MS/MS detection.

A "*" symbol preceding any method indicates laboratory or subcontractor non-accredited test. If the UNICO-SUB code is stated in the method table, this only informs that the tests have been performed by a subcontractor and the results are given in an annex to the test report, including information on test accreditation. In the case when a procedure specified in an accredited method was used for non-accredited matrix, the reported results are non-accredited; please refer to information in General Comment section on the front page. If the report contains subcontracted analyses, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.
The calculation methods of summation parameters are available on request in the client service.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

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Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	16 June 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210602-78
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	602214

This report has been revised and directly supersedes 601306 in its entirety.

We received 12 samples on Tuesday May 25, 2021 and 4 of these samples were scheduled for analysis which was completed on Wednesday June 16, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Son

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210602-78	**Client Reference:**	784-B026948	**Report Number:**	602214
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601306

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24378015	BH35	ES10	0.40	21/05/2021
24378024	BH35	ES11	1.00	21/05/2021
24378063	BH48	ES6	0.30	21/05/2021
24378079	BH48	ES7	0.70	21/05/2021
24378091	BH50	ES8	0.40	21/05/2021
24378101	BH50	ES9	1.00	21/05/2021
24378007	BH53	ES1	0.10	21/05/2021
24378034	BH53	ES2	0.30	21/05/2021
24378044	BH53	ES3	0.50	21/05/2021
24377998	BH53		1.00	
24378050	BH53	ES4	1.40	21/05/2021
24378056	BH53	ES5	2.40	21/05/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210602-78	**Client Reference:**	784-B026948	**Report Number:**	602214
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601306

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24378024			24378079			24378007		24378044
Customer Sample Reference			BH35			BH48			BH53		BH53
AGS Reference			ES11			ES7			ES1		ES3
Depth (m)			1.00			0.70			0.10		0.50
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S
Acid herbicides*	All	NDPs: 0 Tests: 1							X			
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 3		X			X				X	
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 2	X			X						
Ammonium Soil by Titration	All	NDPs: 0 Tests: 3		X			X				X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 3		X			X				X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 3	X			X				X		
Boron Water Soluble	All	NDPs: 0 Tests: 3		X			X				X	
CEN Readings	All	NDPs: 0 Tests: 2	X			X						
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 5	X	X		X	X				X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2	X			X						
EPH	All	NDPs: 0 Tests: 3		X			X				X	
EPH by GCxGC-FID	All	NDPs: 0 Tests: 3		X			X				X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 3		X			X				X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 3			X			X				X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 3		X			X				X	

Validated

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Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601306

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24378024			24378079			24378007		24378044
Customer Sample Reference			BH35			BH48			BH53		BH53
AGS Reference			ES11			ES7			ES1		ES3
Depth (m)			1.00			0.70			0.10		0.50
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 2	X			X						
Mercury Dissolved	All	NDPs: 0 Tests: 2	X			X						
Metals in solid samples by OES	All	NDPs: 0 Tests: 3		X			X				X	
OC OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 1							X			
PAH by GCMS	All	NDPs: 0 Tests: 3		X			X				X	
pH	All	NDPs: 0 Tests: 3		X			X				X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 2	X			X						
Phenols by HPLC (S)	All	NDPs: 0 Tests: 3		X			X				X	
Sample description	All	NDPs: 0 Tests: 4		X			X		X		X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 2		X			X					
Sulphide	All	NDPs: 0 Tests: 2	X			X						
Total Organic Carbon	All	NDPs: 0 Tests: 3		X			X				X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 3		X			X				X	
VOC MS (S)	All	NDPs: 0 Tests: 3			X			X				X

CERTIFICATE OF ANALYSIS

SDG:	210602-78	**Client Reference:**	784-B026948	**Report Number:**	602214
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601306

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24378024	BH35	1.00	Light Brown	Sand	Stones	None
24378079	BH48	0.70	Light Brown	Sandy Loam	Stones	None
24378007	BH53	0.10	Dark Brown	Silty Clay Loam	Stones	Vegetation
24378044	BH53	0.50	Dark Brown	Clay Loam	Vegetation	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210602-78	**Client Reference:**	784-B026948	**Report Number:**	602214
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601306

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH35	BH48	BH53	BH53		
			Depth (m)	1.00	0.70	0.10	0.50		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	21/05/2021	21/05/2021	21/05/2021	21/05/2021		
			Sample Time	.	.	.	.		
			Date Received	25/05/2021	25/05/2021	25/05/2021	25/05/2021		
			SDG Ref	210602-78	210602-78	210602-78	210602-78		
			Lab Sample No.(s)	24378024	24378079	24378007	24378044		
			AGS Reference	ES11	ES7	ES1	ES3		
Moisture Content Ratio (% of as received sample)	%	PM024		1.9	4.5	21	15		
2,4,5-T*	<0.01 mg/kg	SUB				<0.01			
2,4,5-TP (Fenoprop)*	<0.01 mg/kg	SUB				<0.01			
2,4-D*	<0.01 mg/kg	SUB				<0.01			
2,4-DB*	<0.01 mg/kg	SUB				<0.01			
2,4-Dichloroprop (2,4 DP)*	<0.01 mg/kg	SUB				<0.01			
4-Chlorophenoxyacetic acid (4-CPA)*	<0.01 mg/kg	SUB				<0.01			
Acifluorfen*	<0.01 mg/kg	SUB				<0.01			
Bentazone*	<0.01 mg/kg	SUB				<0.01			
Bromoxynil*	<0.01 mg/kg	SUB				<0.01			
Dicamba*	<0.01 mg/kg	SUB				<0.01			
Diclofop*	<0.01 mg/kg	SUB				<0.01			
Dinoseb*	<0.01 mg/kg	SUB				<0.01			
DNOC*	<0.01 mg/kg	SUB				<0.01			
Fluroxypyr*	<0.01 mg/kg	SUB				<0.01			
Ioxynil*	<0.01 mg/kg	SUB				<0.01			
2-methyl-4-Chlorophenoxyacetic acid (MCPA)*	<0.01 mg/kg	SUB				<0.01			
4-(4-Chloro-o-tolyloxy) butyric acid (MCPB)*	<0.01 mg/kg	SUB				<0.01			
Mecoprop (MCPP)*	<0.01 mg/kg	SUB				<0.01			
Propoxycarbazone-sodium*	<0.01 mg/kg	SUB				<0.01			
Triclopyr*	<0.01 mg/kg	SUB				<0.01			
Triclosan*	<0.01 mg/kg	SUB				<0.01			
Exchangeable Ammonia as N	<12 mg/kg	TM024		<12 M	<12 M		296 M		
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 M	<0.01 M		<0.01 M		
Cresols	<0.01 mg/kg	TM062 (S)		<0.01 M	<0.01 M		<0.01 M		
Xylenols	<0.015 mg/kg	TM062 (S)		<0.015 M	<0.015 M		<0.015 M		
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 M	<0.035 M		<0.035 M		
Soil Organic Matter (SOM)	<0.35 %	TM132		<0.35 #	0.734 #		2.74 #		
pH	1 pH Units	TM133		8.7 M	9.14 M		7.8 M		
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #		<0.6 #		
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M		<1 M		
Arsenic	<0.6 mg/kg	TM181		3.8 M	6.52 M		14.8 M		
Cadmium	<0.02 mg/kg	TM181		0.215 M	0.418 M		1.76 M		

Validated

CERTIFICATE OF ANALYSIS

SDG:	210602-78	**Client Reference:**	784-B026948	**Report Number:**	602214
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601306

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH35	BH48	BH53	BH53		
			Depth (m)	1.00	0.70	0.10	0.50		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	21/05/2021	21/05/2021	21/05/2021	21/05/2021		
			Sample Time	.	.	.	.		
			Date Received	25/05/2021	25/05/2021	25/05/2021	25/05/2021		
			SDG Ref	210602-78	210602-78	210602-78	210602-78		
			Lab Sample No.(s)	24378024	24378079	24378007	24378044		
			AGS Reference	ES11	ES7	ES1	ES3		
Chromium	<0.9 mg/kg	TM181		<0.9 M	3.27 M		28.8 M		
Copper	<1.4 mg/kg	TM181		2.75 M	8.28 M		32 M		
Iron	<1000 mg/kg	TM181		12500 #	23800 #		36500 #		
Lead	<0.7 mg/kg	TM181		4.58 M	12 M		173 M		
Mercury	<0.1 mg/kg	TM181		<0.1 M	<0.1 M		<0.1 M		
Nickel	<0.2 mg/kg	TM181		5.89 M	13.5 M		38.6 M		
Selenium	<1 mg/kg	TM181		<1 #	<1 #		<1 #		
Vanadium	<0.2 mg/kg	TM181		8.7 #	16.4 #		55.9 #		
Zinc	<1.9 mg/kg	TM181		26.1 M	42.8 M		257 M		
Boron, water soluble	<1 mg/kg	TM222		<1 M	1.06 M		1.07 M		
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.0219 M	0.142 M		0.0251 M		
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248		5.69	5.48		1.2		
EPH (C5-C40)	<35 mg/kg	TM415		<35	<35		<35		
EPH Surrogate % recovery**	%	TM415		96.1	93.6		99.4		
EPH >C10-C40	<35 mg/kg	TM415		<35 M	<35 M		<35 M		

CERTIFICATE OF ANALYSIS

SDG:	210602-78	**Client Reference:**	784-B026948	**Report Number:**	602214
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601306

OC OP Pesticides and Triazine Herb

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH53
Depth (m)	0.10
Sample Type	Soil/Solid (S)
Date Sampled	21/05/2021
Sample Time	.
Date Received	25/05/2021
SDG Ref	210602-78
Lab Sample No.(s)	24378007
AGS Reference	ES1

Component	LOD/Units	Method	
Dichlorvos	<0.05 mg/kg	TM073	<0.5
Mevinphos	<0.05 mg/kg	TM073	<0.5
Phorate	<0.05 mg/kg	TM073	<0.5
alpha-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073	<0.5
Diazinon	<0.05 mg/kg	TM073	<0.5
gamma-Hexachlorocyclohexane (HCH / Lindane)	<0.05 mg/kg	TM073	<0.5
Disulfoton	<0.05 mg/kg	TM073	<0.5
Heptachlor	<0.05 mg/kg	TM073	<0.5
Aldrin	<0.05 mg/kg	TM073	<0.5
beta-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073	<0.5
Methyl parathion	<0.05 mg/kg	TM073	<0.5
Malathion	<0.05 mg/kg	TM073	<0.5
Fenitrothion	<0.05 mg/kg	TM073	<0.5
Heptachlor epoxide	<0.05 mg/kg	TM073	<0.5
Parathion	<0.05 mg/kg	TM073	<0.5
Endosulphan I	<0.05 mg/kg	TM073	<0.5
p,p-DDE	<0.05 mg/kg	TM073	<0.5
Dieldrin	<0.05 mg/kg	TM073	<0.5
Endrin	<0.05 mg/kg	TM073	<0.5
p,p-TDE (DDD)	<0.05 mg/kg	TM073	<0.5
Ethion	<0.05 mg/kg	TM073	<0.5
Endosulphan II	<0.05 mg/kg	TM073	<0.5
p,p-DDT	<0.05 mg/kg	TM073	<0.5
p,p-Methoxychlor	<0.05 mg/kg	TM073	<0.5
Endosulphan sulphate	<0.05 mg/kg	TM073	<0.5
Azinphos-methyl	<0.05 mg/kg	TM073	<0.5

Validated

CERTIFICATE OF ANALYSIS

SDG:	210602-78	**Client Reference:**	784-B026948	**Report Number:**	602214
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601306

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	BH35	BH48	BH53
Customer Sample Ref.			BH35	BH48	BH53
Depth (m)			1.00	0.70	0.50
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Date Sampled			21/05/2021	21/05/2021	21/05/2021
Sample Time			.	.	.
Date Received			25/05/2021	25/05/2021	25/05/2021
SDG Ref			210602-78	210602-78	210602-78
Lab Sample No.(s)			24378024	24378079	24378044
AGS Reference			ES11	ES7	ES3
Naphthalene-d8 % recovery**	%	TM218	85.1	87.4	87.8
Acenaphthene-d10 % recovery**	%	TM218	86.2	88.1	89
Phenanthrene-d10 % recovery**	%	TM218	86.5	87.9	90.2
Chrysene-d12 % recovery**	%	TM218	82.6	86.4	89.7
Perylene-d12 % recovery**	%	TM218	82.3	85.6	88.3
Naphthalene	<0.009 mg/kg	TM218	<0.009 M	<0.009 M	<0.009 M
Acenaphthylene	<0.012 mg/kg	TM218	<0.012 M	<0.012 M	<0.012 M
Acenaphthene	<0.008 mg/kg	TM218	<0.008 M	0.00963 M	0.0127 M
Fluorene	<0.01 mg/kg	TM218	<0.01 M	<0.01 M	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218	<0.015 M	0.12 M	0.201 M
Anthracene	<0.016 mg/kg	TM218	<0.016 M	0.0278 M	0.0534 M
Fluoranthene	<0.017 mg/kg	TM218	<0.017 M	0.218 M	0.633 M
Pyrene	<0.015 mg/kg	TM218	<0.015 M	0.189 M	0.58 M
Benz(a)anthracene	<0.014 mg/kg	TM218	<0.014 M	0.0952 M	0.315 M
Chrysene	<0.01 mg/kg	TM218	<0.01 M	0.105 M	0.331 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	<0.015 M	0.134 M	0.42 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	<0.014 M	0.0516 M	0.16 M
Benzo(a)pyrene	<0.015 mg/kg	TM218	<0.015 M	0.11 M	0.304 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	<0.018 M	0.106 M	0.253 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	<0.023 M	<0.023 M	0.0462 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	<0.024 M	0.113 M	0.222 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	<0.118	1.28	3.53

CERTIFICATE OF ANALYSIS

SDG:	210602-78	**Client Reference:**	784-B026948	**Report Number:**	602214
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601306

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH35	BH48				
			Depth (m)	1.00	0.70				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	21/05/2021	21/05/2021				
			Sample Time	.	.				
			Date Received	25/05/2021	25/05/2021				
			SDG Ref	210602-78	210602-78				
			Lab Sample No.(s)	24378024	24378079				
			AGS Reference	ES11	ES7				
Phenol	<0.1 mg/kg	TM157		<0.1	<0.2				
Pentachlorophenol	<0.1 mg/kg	TM157		<0.1	<0.2				
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157		<0.1	<0.2				
Nitrobenzene	<0.1 mg/kg	TM157		<0.1	<0.2				
Isophorone	<0.1 mg/kg	TM157		<0.1	<0.2				
Hexachloroethane	<0.1 mg/kg	TM157		<0.1	<0.2				
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157		<0.2	<0.4				
Hexachlorobutadiene	<0.1 mg/kg	TM157		<0.1	<0.2				
Hexachlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.2				
n-Dioctyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.2				
Dimethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.2				
Diethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.2				
n-Dibutyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.2				
Dibenzofuran	<0.1 mg/kg	TM157		<0.1	<0.2				
Carbazole	<0.1 mg/kg	TM157		<0.1	<0.2				
Butylbenzyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.2				
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157		<0.1	<0.2				
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157		<0.1	<0.2				
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157		<0.1	<0.2				
Azobenzene	<0.1 mg/kg	TM157		<0.1	<0.2				
4-Nitrophenol	<0.1 mg/kg	TM157		<0.5	<1				
4-Nitroaniline	<0.1 mg/kg	TM157		<0.5	<1				
4-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.2				
4-Chlorophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.2				
4-Chloroaniline	<0.1 mg/kg	TM157		<0.1	<0.2				
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157		<0.1	<0.2				
4-Bromophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.2				
3-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.2				
2-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.2				
2-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.2				
2-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.2				
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.2				
2-Chlorophenol	<0.1 mg/kg	TM157		<0.1	<0.2				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210602-78	**Client Reference:**	784-B026948	**Report Number:**	602214
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601306

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH35	BH48				
			Depth (m)	1.00	0.70				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	21/05/2021	21/05/2021				
			Sample Time	.	.				
			Date Received	25/05/2021	25/05/2021				
			SDG Ref	210602-78	210602-78				
			Lab Sample No.(s)	24378024	24378079				
			AGS Reference	ES11	ES7				
2,6-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.2				
2,4-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.2				
2,4-Dimethylphenol	<0.1 mg/kg	TM157		<0.1	<0.2				
2,4-Dichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.2				
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.2				
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.2				
1,4-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.2				
1,3-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.2				
1,2-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.2				
2-Chloronaphthalene	<0.1 mg/kg	TM157		<0.1	<0.2				
2-Methylnaphthalene	<0.1 mg/kg	TM157		<0.1	<0.2				
Acenaphthylene	<0.1 mg/kg	TM157		<0.1	<0.2				
Acenaphthene	<0.1 mg/kg	TM157		<0.1	<0.2				
Anthracene	<0.1 mg/kg	TM157		<0.1	<0.2				
Benzo(a)anthracene	<0.1 mg/kg	TM157		<0.1	<0.2				
Benzo(b)fluoranthene	<0.1 mg/kg	TM157		<0.1	<0.2				
Benzo(k)fluoranthene	<0.1 mg/kg	TM157		<0.1	<0.2				
Benzo(a)pyrene	<0.1 mg/kg	TM157		<0.1	<0.2				
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157		<0.1	<0.2				
Chrysene	<0.1 mg/kg	TM157		<0.1	<0.2				
Fluoranthene	<0.1 mg/kg	TM157		<0.1	0.262				
Fluorene	<0.1 mg/kg	TM157		<0.1	<0.2				
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157		<0.1	<0.2				
Phenanthrene	<0.1 mg/kg	TM157		<0.1	<0.2				
Pyrene	<0.1 mg/kg	TM157		<0.1	0.251				
Naphthalene	<0.1 mg/kg	TM157		<0.1	<0.2				
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157		<0.1	<0.2				
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157		<0.1	<0.2				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210602-78	**Client Reference:**	784-B026948	**Report Number:**	602214
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601306

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH35	BH48	BH53			
			Depth (m)	1.00	0.70	0.50			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	21/05/2021	21/05/2021	21/05/2021			
			Sample Time	.	.	.			
			Date Received	25/05/2021	25/05/2021	25/05/2021			
			SDG Ref	210602-78	210602-78	210602-78			
			Lab Sample No.(s)	24378024	24378079	24378044			
			AGS Reference	ES11	ES7	ES3			
GRO Surrogate % recovery**	%	TM089		106 @	110 @	94.7 @			
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01 @	<0.01 @	<0.01 @			
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01 @	<0.01 @	<0.01 @			
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01 @	<0.01 @	<0.01 @			
Aliphatics >C10-C12	<1 mg/kg	TM414		<1	<1	<1			
Aliphatics >C12-C16	<1 mg/kg	TM414		<1	<1	<1			
Aliphatics >C16-C21	<1 mg/kg	TM414		<1	<1	<1			
Aliphatics >C21-C35	<1 mg/kg	TM414		<1	<1	4.52			
Aliphatics >C35-C44	<1 mg/kg	TM414		<1	<1	<1			
Total Aliphatics >C10-C44	<5 mg/kg	TM414		<5	<5	<5			
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		<10	<10	17.9			
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01 @	<0.01 @	<0.01 @			
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01 @	<0.01 @	<0.01 @			
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01 @	<0.01 @	<0.01 @			
Aromatics > EC10-EC12	<1 mg/kg	TM414		<1	<1	<1			
Aromatics > EC12-EC16	<1 mg/kg	TM414		<1	<1	<1			
Aromatics > EC16-EC21	<1 mg/kg	TM414		<1	<1	2.5			
Aromatics > EC21-EC35	<1 mg/kg	TM414		<1	2.15	9.57			
Aromatics >EC35-EC44	<1 mg/kg	TM414		<1	1.18	<1			
Aromatics > EC40-EC44	<1 mg/kg	TM414		<1	<1	<1			
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		<5	<5	13.1			
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		<10	<10	13.1			
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		<0.05 @	<0.05 @	<0.05 @			
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		<0.05 @	<0.05 @	<0.05 @			
GRO >C5-C10	<0.02 mg/kg	TM089		<0.02 @	<0.02 @	<0.02 @			

CERTIFICATE OF ANALYSIS

SDG:	210602-78	**Client Reference:**	784-B026948	**Report Number:**	602214
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601306

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH35	BH48	BH53			
			Depth (m)	1.00	0.70	0.50			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	21/05/2021	21/05/2021	21/05/2021			
			Sample Time	.	.	.			
			Date Received	25/05/2021	25/05/2021	25/05/2021			
			SDG Ref	210602-78	210602-78	210602-78			
			Lab Sample No.(s)	24378024	24378079	24378044			
			AGS Reference	ES11	ES7	ES3			
Dibromofluoromethane**	%	TM116		110 @	110 @	110 @			
Toluene-d8**	%	TM116		99.3 @	98.1 @	98.2 @			
4-Bromofluorobenzene**	%	TM116		102 @	99.1 @	101 @			
Dichlorodifluoromethane	<0.006 mg/kg	TM116		<0.12 @ M	<0.12 @ M				
Chloromethane	<0.007 mg/kg	TM116		<0.14 @ #	<0.14 @ #				
Vinyl Chloride	<0.006 mg/kg	TM116		<0.12 @ M	<0.12 @ M				
Bromomethane	<0.01 mg/kg	TM116		<0.2 @ M	<0.2 @ M				
Chloroethane	<0.01 mg/kg	TM116		<0.2 @ M	<0.2 @ M				
Trichlorofluorormethane	<0.006 mg/kg	TM116		<0.12 @ M	<0.12 @ M				
1,1-Dichloroethene	<0.01 mg/kg	TM116		<0.2 @ #	<0.2 @ #				
Carbon Disulphide	<0.007 mg/kg	TM116		<0.14 @ M	<0.14 @ M				
Dichloromethane	<0.01 mg/kg	TM116		<0.2 @ #	<0.2 @ #				
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 @ M	<0.2 @ M	<0.2 @ M			
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116		<0.2 @ M	<0.2 @ M				
1,1-Dichloroethane	<0.008 mg/kg	TM116		<0.16 @ M	<0.16 @ M				
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116		<0.12 @ M	<0.12 @ M				
2,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2 @	<0.2 @				
Bromochloromethane	<0.01 mg/kg	TM116		<0.2 @ M	<0.2 @ M				
Chloroform	<0.008 mg/kg	TM116		<0.16 @ M	<0.16 @ M				
1,1,1-Trichloroethane	<0.007 mg/kg	TM116		<0.14 @ M	<0.14 @ M				
1,1-Dichloropropene	<0.01 mg/kg	TM116		<0.2 @ M	<0.2 @ M				
Carbontetrachloride	<0.01 mg/kg	TM116		<0.2 @ M	<0.2 @ M				
1,2-Dichloroethane	<0.005 mg/kg	TM116		<0.1 @ M	<0.1 @ M				
Benzene	<0.009 mg/kg	TM116		<0.18 @ M	<0.18 @ M	<0.18 @ M			
Trichloroethene	<0.009 mg/kg	TM116		<0.18 @ #	<0.18 @ #				
1,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2 @ M	<0.2 @ M				
Dibromomethane	<0.009 mg/kg	TM116		<0.18 @ M	<0.18 @ M				
Bromodichloromethane	<0.007 mg/kg	TM116		<0.14 @ M	<0.14 @ M				
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2 @ M	<0.2 @ M				
Toluene	<0.007 mg/kg	TM116		<0.14 @ M	<0.14 @ M	<0.14 @ M			
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2 @	<0.2 @				
1,1,2-Trichloroethane	<0.01 mg/kg	TM116		<0.2 @ M	<0.2 @ M				
1,3-Dichloropropane	<0.007 mg/kg	TM116		<0.14 @ M	<0.14 @ M				

CERTIFICATE OF ANALYSIS

SDG:	210602-78	**Client Reference:**	784-B026948	**Report Number:**	602214
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601306

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH35	BH48	BH53			
			Depth (m)	1.00	0.70	0.50			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	21/05/2021	21/05/2021	21/05/2021			
			Sample Time	.	.	.			
			Date Received	25/05/2021	25/05/2021	25/05/2021			
			SDG Ref	210602-78	210602-78	210602-78			
			Lab Sample No.(s)	24378024	24378079	24378044			
			AGS Reference	ES11	ES7	ES3			
Tetrachloroethene	<0.005 mg/kg	TM116		<0.1 @ M	<0.1 @ M				
Dibromochloromethane	<0.01 mg/kg	TM116		<0.2 @ M	<0.2 @ M				
1,2-Dibromoethane	<0.01 mg/kg	TM116		<0.2 @ M	<0.2 @ M				
Chlorobenzene	<0.005 mg/kg	TM116		<0.1 @ M	<0.1 @ M				
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 @ M	<0.2 @ M				
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 @ M	<0.08 @ M	<0.08 @ M			
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 @ #	<0.2 @ #	<0.2 @ #			
o-Xylene	<0.01 mg/kg	TM116		<0.2 @ M	<0.2 @ M	<0.2 @ M			
Styrene	<0.01 mg/kg	TM116		<0.2 @ #	<0.2 @ #				
Bromoform	<0.01 mg/kg	TM116		<0.2 @ M	<0.2 @ M				
Isopropylbenzene	<0.005 mg/kg	TM116		<0.1 3 @ #	<0.1 3 @ #				
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 @ #	<0.2 @ #				
1,2,3-Trichloropropane	<0.016 mg/kg	TM116		<0.32 @ M	<0.32 @ M				
Bromobenzene	<0.01 mg/kg	TM116		<0.2 @ M	<0.2 @ M				
Propylbenzene	<0.01 mg/kg	TM116		<0.2 @ M	<0.2 @ M				
2-Chlorotoluene	<0.009 mg/kg	TM116		<0.18 @ M	<0.18 @ M				
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116		<0.16 @ M	<0.16 @ M				
4-Chlorotoluene	<0.01 mg/kg	TM116		<0.2 @ M	<0.2 @ M				
tert-Butylbenzene	<0.014 mg/kg	TM116		<0.28 @ M	<0.28 @ M				
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116		<0.18 @ #	<0.18 @ #				
sec-Butylbenzene	<0.01 mg/kg	TM116		<0.2 3 @	<0.2 3 @				
4-Isopropyltoluene	<0.01 mg/kg	TM116		<0.2 @ M	<0.2 @ M				
1,3-Dichlorobenzene	<0.008 mg/kg	TM116		<0.16 @ M	<0.16 @ M				
1,4-Dichlorobenzene	<0.005 mg/kg	TM116		<0.1 @ M	<0.1 @ M				
n-Butylbenzene	<0.011 mg/kg	TM116		<0.22 @	<0.22 @				
1,2-Dichlorobenzene	<0.01 mg/kg	TM116		<0.2 @ M	<0.2 @ M				
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116		<0.28 @ M	<0.28 @ M				
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.2 @ #	<0.2 @ #				
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4 @	<0.4 @				
Hexachlorobutadiene	<0.02 mg/kg	TM116		<0.4 @	<0.4 @				
Naphthalene	<0.013 mg/kg	TM116		<0.26 @ M	<0.26 @ M				
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4 @ #	<0.4 @ #				
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4	<0.4				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210602-78	**Client Reference:**	784-B026948	**Report Number:**	602214
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601306

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH35	BH48	BH53			
			Depth (m)	1.00	0.70	0.50			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	21/05/2021	21/05/2021	21/05/2021			
			Sample Time	.	.	.			
			Date Received	25/05/2021	25/05/2021	25/05/2021			
			SDG Ref	210602-78	210602-78	210602-78			
			Lab Sample No.(s)	24378024	24378079	24378044			
			AGS Reference	ES11	ES7	ES3			
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4 @	<0.4 @	<0.4 @			
Sum of BTEX	<0.04 mg/kg	TM116		<0.8 @	<0.8 @	<0.8 @			

CERTIFICATE OF ANALYSIS

SDG:	210602-78	**Client Reference:**	784-B026948	**Report Number:**	602214
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601306

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH35ES11 1.00 SOLID 21/05/2021 00:00:00 25/05/2021 05:00:00 210602-78 24378024 TM048	03/06/2021	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH48ES7 0.70 SOLID 21/05/2021 00:00:00 25/05/2021 05:00:00 210602-78 24378079 TM048	04/06/2021	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH53ES3 0.50 SOLID 21/05/2021 00:00:00 25/05/2021 05:00:00 210602-78 24378044 TM048	03/06/2021	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	210602-78	**Client Reference:**	784-B026948	**Report Number:**	602214
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601306

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.094	**Natural Moisture Content (%)**	4.73
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	95.5
Particle Size <4mm	>95%		

Case	
SDG	210602-78
Lab Sample Number(s)	24378024
Sampled Date	21-May-2021
Customer Sample Ref.	BH35 ES11
Depth (m)	1.00

Eluate Analysis	**C_2 Conc^n in 10:1 eluate (mg/l)**		**A_2 10:1 conc^n leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.00111	<0.0005	0.0111	<0.005	-	-	-
Boron	<0.01	<0.01	<0.1	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.000667	<0.0003	0.00667	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.1	<0.019	1	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	0.000512	<0.0004	0.00512	<0.004	-	-	-
Selenium	0.00253	<0.001	0.0253	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	<0.001	<0.001	<0.01	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	03-Jun-2021
pH (pH Units)	8.84
Conductivity (µS/cm)	90.60
Temperature (°C)	18.00
Volume Leachant (Litres)	0.896

CERTIFICATE OF ANALYSIS

SDG:	210602-78	**Client Reference:**	784-B026948	**Report Number:**	602214
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601306

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.097	**Natural Moisture Content (%)**	8.27
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	92.4
Particle Size <4mm	>95%		

Case	
SDG	210602-78
Lab Sample Number(s)	24378079
Sampled Date	21-May-2021
Customer Sample Ref.	BH48 ES7
Depth (m)	0.70

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.000686	<0.0005	0.00686	<0.005	-	-	-
Boron	0.135	<0.01	1.35	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.19	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0674	<0.001	0.674	<0.01	-	-	-
Sulphide	0.0156	<0.01	0.156	<0.1	-	-	-

Leach Test Information

Date Prepared	03-Jun-2021
pH (pH Units)	8.66
Conductivity (µS/cm)	350.00
Temperature (°C)	17.20
Volume Leachant (Litres)	0.893

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210602-78	**Client Reference:**	784-B026948	**Report Number:**	602214
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601306

Test Completion Dates

Lab Sample No(s)	24378024	24378079	24378007	24378044
Customer Sample Ref.	BH35	BH48	BH53	BH53
AGS Ref.	ES11	ES7	ES1	ES3
Depth	1.00	0.70	0.10	0.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Acid herbicides*			16-Jun-2021	
Ammoniacal N as NH4 in 2:1 extract	07-Jun-2021	07-Jun-2021		07-Jun-2021
Ammoniacal Nitrogen	08-Jun-2021	08-Jun-2021		
Ammonium Soil by Titration	04-Jun-2021	04-Jun-2021		04-Jun-2021
Anions by Kone (soil)	04-Jun-2021	04-Jun-2021		04-Jun-2021
Asbestos ID in Solid Samples	03-Jun-2021	04-Jun-2021		03-Jun-2021
Boron Water Soluble	07-Jun-2021	07-Jun-2021		07-Jun-2021
CEN 10:1 Leachate (1 Stage)	04-Jun-2021	04-Jun-2021		
CEN Readings	05-Jun-2021	05-Jun-2021		
Cyanide Comp/Free/Total/Thiocyanate	08-Jun-2021	08-Jun-2021		04-Jun-2021
Dissolved Metals by ICP-MS	07-Jun-2021	07-Jun-2021		
EPH	07-Jun-2021	07-Jun-2021		07-Jun-2021
EPH by GCxGC-FID	04-Jun-2021	04-Jun-2021		04-Jun-2021
EPH CWG GC (S)	04-Jun-2021	04-Jun-2021		04-Jun-2021
GRO by GC-FID (S)	07-Jun-2021	07-Jun-2021		07-Jun-2021
Hexavalent Chromium (s)	04-Jun-2021	04-Jun-2021		04-Jun-2021
Hexavalent Chromium (w)	08-Jun-2021	08-Jun-2021		
Mercury Dissolved	09-Jun-2021	07-Jun-2021		
Metals in solid samples by OES	09-Jun-2021	07-Jun-2021		08-Jun-2021
Moisture at 105C	03-Jun-2021	03-Jun-2021		
OC OP Pesticides and Triazine Herb			09-Jun-2021	
PAH by GCMS	04-Jun-2021	04-Jun-2021		04-Jun-2021
pH	03-Jun-2021	03-Jun-2021		03-Jun-2021
pH Value of Filtered Water	07-Jun-2021	07-Jun-2021		
Phenols by HPLC (S)	04-Jun-2021	04-Jun-2021		04-Jun-2021
Sample description	02-Jun-2021	02-Jun-2021	02-Jun-2021	02-Jun-2021
Semi Volatile Organic Compounds	04-Jun-2021	04-Jun-2021		
Sulphide	08-Jun-2021	08-Jun-2021		
Total Organic Carbon	07-Jun-2021	07-Jun-2021		07-Jun-2021
TPH CWG GC (S)	07-Jun-2021	07-Jun-2021		07-Jun-2021
VOC MS (S)	07-Jun-2021	07-Jun-2021		07-Jun-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2468
Ammoniacal Nitrogen as N	TM099	**92.0** 88.02 : 104.70

Ammonium Soil by Titration

Component	Method Code	QC 2416
Exchangeable Ammonium as NH4	TM024	**92.04** 74.04 : 103.44

Anions by Kone (soil)

Component	Method Code	QC 2490	QC 2440
Chloride (soluble)	TM243	**149.22** 80.93 : 111.66	**138.86** 80.93 : 111.66
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**161.68** 70.00 : 130.00	**154.67** 70.00 : 130.00

Boron Water Soluble

Component	Method Code	QC 2468
Water Soluble Boron	TM222	**94.5** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2428	QC 2466
Free Cyanide	TM153	**94.65** 78.00 : 114.00	
Free Cyanide (W)	TM227		**83.0** 90.67 : 122.67
Thiocyanate	TM153	**96.79** 94.53 : 113.33	
Thiocyanate (W)	TM227		**111.75** 92.25 : 117.75
Total Cyanide	TM153	**95.8** 77.13 : 111.53	
Total Cyanide (W)	TM227		**105.75** 88.75 : 111.25

Dissolved Metals by ICP-MS

CERTIFICATE OF ANALYSIS

SDG:	210602-78	**Client Reference:**	784-B026948	**Report Number:**	602214
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601306

Dissolved Metals by ICP-MS

Component	Method Code	QC 2461
Aluminium	TM152	**103.0** 94.21 : 111.52
Antimony	TM152	**100.5** 88.37 : 130.57
Arsenic	TM152	**99.5** 92.62 : 113.52
Barium	TM152	**99.33** 88.62 : 113.14
Beryllium	TM152	**101.33** 87.08 : 111.38
Bismuth	TM152	**98.0** 92.62 : 115.02
Boron	TM152	**105.67** 86.31 : 120.88
Cadmium	TM152	**101.33** 93.85 : 111.65
Calcium	TM152	**100.67** 89.20 : 126.91
Chromium	TM152	**99.5** 92.50 : 113.03
Cobalt	TM152	**99.33** 85.01 : 114.87
Copper	TM152	**99.5** 89.87 : 119.73
Iron	TM152	**100.67** 93.02 : 113.86
Lead	TM152	**99.0** 91.11 : 116.98
Lithium	TM152	**101.83** 87.70 : 115.90
Magnesium	TM152	**100.0** 89.60 : 116.61
Manganese	TM152	**101.17** 93.97 : 112.46
Molybdenum	TM152	**97.33** 89.07 : 110.96
Nickel	TM152	**99.67** 93.70 : 112.15
Phosphorus	TM152	**99.67** 89.24 : 114.18
Potassium	TM152	**100.67** 93.20 : 115.55
Selenium	TM152	**99.83** 91.69 : 117.12
Silver	TM152	**98.5** 90.93 : 121.73
Sodium	TM152	**99.33** 92.42 : 113.24
Strontium	TM152	**104.0** 92.14 : 116.24
Tellurium	TM152	**99.5** 89.88 : 111.78
Thallium	TM152	**89.83** 82.43 : 113.83

Dissolved Metals by ICP-MS

		QC 2461
Tin	TM152	**100.67** 94.62 : 107.79
Titanium	TM152	**100.67** 90.29 : 115.23
Tungsten	TM152	**99.33** 77.61 : 132.31
Uranium	TM152	**98.0** 86.97 : 115.76
Vanadium	TM152	**96.0** 89.61 : 115.48
Zinc	TM152	**101.33** 87.51 : 116.26

GRO by GC-FID (S)

Component	Method Code	QC 2478
QC	TM089	**74.81** 68.78 : 110.61

Hexavalent Chromium (s)

Component	Method Code	QC 2409
Hexavalent Chromium	TM151	**106.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2465
Hexavalent Chromium	TM241	**102.8** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2481	QC 2453
Mercury Dissolved (CVAF)	TM183	**111.0** 69.30 : 128.70	**91.2** 69.30 : 128.70

Metals in solid samples by OES

Metals in solid samples by OES

Component	Method Code	QC 2472	QC 2414
Aluminium	TM181	**106.19** 73.56 : 108.85	**100.88** 73.56 : 108.85
Antimony	TM181	**100.0** 76.89 : 111.24	**97.97** 76.89 : 111.24
Arsenic	TM181	**102.03** 88.53 : 111.01	**101.16** 88.53 : 111.01
Barium	TM181	**99.08** 77.67 : 105.35	**100.0** 77.67 : 105.35
Beryllium	TM181	**104.48** 85.44 : 109.61	**103.36** 85.44 : 109.61
Boron	TM181	**100.0** 73.51 : 104.66	**92.84** 73.51 : 104.66
Cadmium	TM181	**96.3** 77.67 : 104.12	**95.06** 77.67 : 104.12
Chromium	TM181	**92.9** 79.64 : 105.83	**90.67** 79.64 : 105.83
Cobalt	TM181	**94.65** 84.60 : 104.13	**93.08** 84.60 : 104.13
Copper	TM181	**101.76** 82.40 : 105.45	**100.88** 82.40 : 105.45
Iron	TM181	**103.17** 82.95 : 110.58	**100.0** 82.95 : 110.58
Lead	TM181	**95.95** 78.24 : 104.05	**96.62** 78.24 : 104.05
Manganese	TM181	**111.94** 94.29 : 119.51	**110.0** 94.29 : 119.51
Mercury	TM181	**98.79** 83.16 : 107.81	**97.58** 83.16 : 107.81
Molybdenum	TM181	**103.29** 87.11 : 106.87	**100.41** 87.11 : 106.87
Nickel	TM181	**94.62** 80.26 : 102.28	**94.62** 80.26 : 102.28
Phosphorus	TM181	**109.49** 94.56 : 124.28	**106.87** 94.56 : 124.28
Selenium	TM181	**105.49** 82.28 : 110.48	**102.75** 82.28 : 110.48
Strontium	TM181	**101.56** 79.13 : 102.79	**96.44** 79.13 : 102.79
Thallium	TM181	**96.02** 82.94 : 111.86	**96.46** 82.94 : 111.86
Tin	TM181	**103.8** 86.72 : 110.03	**102.66** 86.72 : 110.03
Titanium	TM181	**93.13** 66.23 : 102.06	**87.02** 66.23 : 102.06
Vanadium	TM181	**104.03** 86.19 : 109.45	**98.17** 86.19 : 109.45
Zinc	TM181	**103.49** 84.68 : 113.99	**101.85** 84.68 : 113.99

PAH by GCMS

PAH by GCMS

Component	Method Code	QC 2422
Acenaphthene	TM218	**97.0** 73.47 : 109.80
Acenaphthylene	TM218	**95.0** 70.00 : 130.00
Anthracene	TM218	**94.0** 68.68 : 111.89
Benz(a)anthracene	TM218	**91.5** 68.12 : 118.39
Benzo(a)pyrene	TM218	**87.5** 71.72 : 115.31
Benzo(b)fluoranthene	TM218	**78.0** 66.89 : 120.40
Benzo(ghi)perylene	TM218	**84.0** 67.82 : 118.49
Benzo(k)fluoranthene	TM218	**93.5** 73.10 : 117.03
Chrysene	TM218	**89.5** 69.58 : 115.47
Dibenzo(ah)anthracene	TM218	**86.5** 67.32 : 121.35
Fluoranthene	TM218	**96.5** 75.16 : 117.28
Fluorene	TM218	**96.5** 73.81 : 108.66
Indeno(123cd)pyrene	TM218	**82.5** 68.91 : 117.62
Naphthalene	TM218	**96.0** 72.12 : 106.18
Phenanthrene	TM218	**97.5** 69.01 : 113.72
Pyrene	TM218	**97.0** 64.28 : 115.75

pH

Component	Method Code	QC 2465	QC 2498
pH	TM133	**100.29** 98.41 : 102.48	**100.15** 98.09 : 101.62

pH Value of Filtered Water

Component	Method Code	QC 2459
pH	TM256	**101.34** 99.33 : 102.54

Phenols by HPLC (S)

Phenols by HPLC (S)

Component	Method Code	QC 2495
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**51.95** 69.38 : 125.27
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**45.03** 69.79 : 122.84
Cresols by HPLC (S)	TM062 (S)	**50.1** 77.98 : 111.41
Phenol by HPLC (S)	TM062 (S)	**52.32** 67.94 : 117.69
Xylenols by HPLC (S)	TM062 (S)	**50.73** 88.23 : 104.42

Semi Volatile Organic Compounds

Component	Method Code	QC 2437
4-Bromophenylphenylether (Soil)	TM157	**91.0** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**107.0** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**96.5** 68.25 : 126.75
Naphthalene (Soil)	TM157	**94.0** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**98.0** 66.50 : 123.50
Phenol (Soil)	TM157	**101.0** 69.92 : 114.02

Sulphide

Component	Method Code	QC 2490	QC 2421
Sulphide	TM101	**100.0** 88.90 : 112.50	**100.0** 88.90 : 112.50

Total Organic Carbon

Component	Method Code	QC 2402
Total Organic Carbon	TM132	**103.52** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2461
1,1,1,2-tetrachloroethane	TM116	**105.0** 84.84 : 116.25
1,1,1-Trichloroethane	TM116	**96.8** 73.73 : 118.05
1,1,2-Trichloroethane	TM116	**98.0** 77.12 : 116.04

VOC MS (S)

		QC 2461
1,1-Dichloroethane	TM116	**106.6** 74.46 : 129.15
1,2-Dichloroethane	TM116	**107.8** 92.38 : 131.65
1,4-Dichlorobenzene	TM116	**108.4** 83.64 : 126.18
2-Chlorotoluene	TM116	**105.2** 76.03 : 113.25
4-Chlorotoluene	TM116	**106.6** 66.90 : 112.46
Benzene	TM116	**102.2** 88.60 : 113.80
Carbon Disulphide	TM116	**99.0** 74.91 : 122.14
Carbontetrachloride	TM116	**96.8** 80.31 : 124.50
Chlorobenzene	TM116	**105.2** 83.81 : 114.18
Chloroform	TM116	**106.0** 87.40 : 122.49
Chloromethane	TM116	**92.4** 65.89 : 136.93
Cis-1,2-Dichloroethene	TM116	**105.4** 80.67 : 126.72
Dibromomethane	TM116	**101.0** 73.23 : 118.35
Dichloromethane	TM116	**114.8** 81.11 : 133.25
Ethylbenzene	TM116	**98.8** 75.92 : 110.41
Hexachlorobutadiene	TM116	**95.8** 12.82 : 152.73
Isopropylbenzene	TM116	**100.8** 54.30 : 105.91
Naphthalene	TM116	**112.4** 80.86 : 128.81
o-Xylene	TM116	**94.6** 69.99 : 108.74
p/m-Xylene	TM116	**96.1** 68.32 : 108.91
Sec-Butylbenzene	TM116	**104.6** 38.50 : 101.50
Tetrachloroethene	TM116	**110.4** 76.95 : 121.02
Toluene	TM116	**93.0** 74.24 : 107.42
Trichloroethene	TM116	**99.4** 85.28 : 109.36
Trichlorofluoromethane	TM116	**102.4** 81.46 : 120.52
Vinyl Chloride	TM116	**99.6** 68.02 : 143.37

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.

The figure detailed is the percentage recovery result for the AQC.

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

Work Order	: **PR2152253**	Issue Date	: 16-Jun-2021
Customer	: **ALS Life Sciences Ltd**	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: [redacted]	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 210602-78	Page	: 1 of 2
Order number	: ----	Date Samples Received	: 04-Jun-2021
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 06-Jun-2021 - 16-Jun-2021
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories		*Position*
Zdeněk Jirák	[redacted]	Environmental Business Unit Manager

The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)

Analytical Results

Sub-Matrix: **SOIL**			Client sample ID	**24380567 BH53**		----		----	
			Laboratory sample ID	*PR2152253-001*		----		----	
			Client sampling date / time	02-Jun-2021 15:34		----		----	
Parameter	*Method*	*LOR*	*Unit*	**Result**	**MU**	**Result**	**MU**	**Result**	**MU**
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	**76.2**	± 6.0%	**----**	----	**----**	----
Pesticides									
2.4.5-T	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4.5-TP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-D	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
4-CPP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bentazone	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dinoseb	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Fluroxypyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPA	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Acifluorfen	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bromoxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
DNOC	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dicamba	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Diclofop	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Ioxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Propoxycarbazone-sodium	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclopyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclosan	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.
Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	*Method Descriptions*
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PESLMSA1	CZ_SOP_D06_03_182.B (CSN EN 15637, US EPA 1694) Determination of acidic herbicides and drug residues by liquid chromatography method with MS/MS detection.

A "*" symbol preceding any method indicates laboratory or subcontractor non-accredited test. If the UNICO-SUB code is stated in the method table, this only informs that the tests have been performed by a subcontractor and the results are given in an annex to the test report, including information on test accreditation. In the case when a procedure specified in an accredited method was used for non-accredited matrix, the reported results are non-accredited; please refer to information in General Comment section on the front page. If the report contains subcontracted analyses, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.
The calculation methods of summation parameters are available on request in the client service.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	09 June 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210602-79
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	601307

We received 3 samples on Thursday May 27, 2021 and 1 of these samples were scheduled for analysis which was completed on Wednesday June 09, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

So

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210602-79	**Client Reference:**	784-B026948	**Report Number:**	601307
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24378067	BH47	ES1	0.10	25/05/2021
24378098	BH47	ES2	0.40	25/05/2021
24378113	BH47	ES3	0.80	25/05/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	210602-79	**Client Reference:**	784-B026948	**Report Number:**	601307
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24378067			
Customer Sample Reference			BH47			
AGS Reference			ES1			
Depth (m)			0.10			
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 1		X		
Ammonium Soil by Titration	All	NDPs: 0 Tests: 1		X		
Anions by Kone (soil)	All	NDPs: 0 Tests: 1		X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1	X			
Boron Water Soluble	All	NDPs: 0 Tests: 1		X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 1		X		
EPH	All	NDPs: 0 Tests: 1		X		
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1		X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 1		X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1			X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1		X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 1		X		
PAH by GCMS	All	NDPs: 0 Tests: 1		X		
pH	All	NDPs: 0 Tests: 1		X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1		X		

CERTIFICATE OF ANALYSIS

SDG:	210602-79	**Client Reference:**	784-B026948	**Report Number:**	601307
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24378067		
Customer Sample Reference			BH47		
AGS Reference			ES1		
Depth (m)			0.10		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S
Sample description	All	NDPs: 0 Tests: 1		X	
Total Organic Carbon	All	NDPs: 0 Tests: 1		X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 1		X	
VOC MS (S)	All	NDPs: 0 Tests: 1			X

CERTIFICATE OF ANALYSIS

SDG:	210602-79	**Client Reference:**	784-B026948	**Report Number:**	601307
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24378067	BH47	0.10	Dark Brown	Sandy Silt Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210602-79	**Client Reference:**	784-B026948	**Report Number:**	601307
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BH47	0.10	Soil/Solid (S)	25/05/2021	.	27/05/2021	210602-79	24378067	ES1
Moisture Content Ratio (% of as received sample)	%	PM024	11								
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12 M								
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 @ M								
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 @ M								
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 @ M								
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 @ M								
Soil Organic Matter (SOM)	<0.35 %	TM132	9.15 #								
pH	1 pH Units	TM133	7.93 M								
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #								
Cyanide, Total	<1 mg/kg	TM153	<1 M								
Arsenic	<0.6 mg/kg	TM181	8.55 M								
Cadmium	<0.02 mg/kg	TM181	0.495 M								
Chromium	<0.9 mg/kg	TM181	13.5 M								
Copper	<1.4 mg/kg	TM181	28.5 M								
Iron	<1000 mg/kg	TM181	19800 #								
Lead	<0.7 mg/kg	TM181	61.7 M								
Mercury	<0.1 mg/kg	TM181	0.168 M								
Nickel	<0.2 mg/kg	TM181	18.8 M								
Selenium	<1 mg/kg	TM181	<1 #								
Vanadium	<0.2 mg/kg	TM181	22.2 #								
Zinc	<1.9 mg/kg	TM181	96 M								
Boron, water soluble	<1 mg/kg	TM222	<1 M								
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	<0.004 M								
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248	4.02								
EPH (C5-C40)	<35 mg/kg	TM415	<35								
EPH Surrogate % recovery**	%	TM415	98.8								
EPH >C10-C40	<35 mg/kg	TM415	<35 M								

Validated

CERTIFICATE OF ANALYSIS

SDG:	210602-79	**Client Reference:**	784-B026948	**Report Number:**	601307
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH47
Depth (m)	0.10
Sample Type	Soil/Solid (S)
Date Sampled	25/05/2021
Sample Time	.
Date Received	27/05/2021
SDG Ref	210602-79
Lab Sample No.(s)	24378067
AGS Reference	ES1

Component	LOD/Units	Method	
Naphthalene-d8 % recovery**	%	TM218	85.5
Acenaphthene-d10 % recovery**	%	TM218	86.8
Phenanthrene-d10 % recovery**	%	TM218	90.4
Chrysene-d12 % recovery**	%	TM218	92.4
Perylene-d12 % recovery**	%	TM218	96.1
Naphthalene	<0.009 mg/kg	TM218	<0.009 M
Acenaphthylene	<0.012 mg/kg	TM218	0.0613 M
Acenaphthene	<0.008 mg/kg	TM218	<0.008 M
Fluorene	<0.01 mg/kg	TM218	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218	0.136 M
Anthracene	<0.016 mg/kg	TM218	0.0445 M
Fluoranthene	<0.017 mg/kg	TM218	0.491 M
Pyrene	<0.015 mg/kg	TM218	0.441 M
Benz(a)anthracene	<0.014 mg/kg	TM218	0.324 M
Chrysene	<0.01 mg/kg	TM218	0.34 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	0.563 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	0.188 M
Benzo(a)pyrene	<0.015 mg/kg	TM218	0.386 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	0.351 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	0.0487 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	0.29 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	3.66

Validated

CERTIFICATE OF ANALYSIS

SDG:	210602-79	**Client Reference:**	784-B026948	**Report Number:**	601307
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BH47	0.10	Soil/Solid (S)	25/05/2021	.	27/05/2021	210602-79	24378067	ES1
GRO Surrogate % recovery**	%	TM089	98.5								
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01								
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01								
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01								
Aliphatics >C10-C12	<1 mg/kg	TM414	<1								
Aliphatics >C12-C16	<1 mg/kg	TM414	<1								
Aliphatics >C16-C21	<1 mg/kg	TM414	<1								
Aliphatics >C21-C35	<1 mg/kg	TM414	6.37								
Aliphatics >C35-C44	<1 mg/kg	TM414	<1								
Total Aliphatics >C10-C44	<5 mg/kg	TM414	6.66								
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414	18.2								
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01								
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01								
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	<0.01								
Aromatics > EC10-EC12	<1 mg/kg	TM414	<1								
Aromatics > EC12-EC16	<1 mg/kg	TM414	<1								
Aromatics > EC16-EC21	<1 mg/kg	TM414	1.52								
Aromatics > EC21-EC35	<1 mg/kg	TM414	8.95								
Aromatics >EC35-EC44	<1 mg/kg	TM414	<1								
Aromatics > EC40-EC44	<1 mg/kg	TM414	<1								
Total Aromatics > EC10-EC44	<5 mg/kg	TM414	11.6								
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414	18.2								
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089	<0.05								
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089	<0.05								
GRO >C5-C10	<0.02 mg/kg	TM089	<0.02								

CERTIFICATE OF ANALYSIS

SDG:	210602-79	**Client Reference:**	784-B026948	**Report Number:**	601307
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH47
Depth (m)	0.10
Sample Type	Soil/Solid (S)
Date Sampled	25/05/2021
Sample Time	.
Date Received	27/05/2021
SDG Ref	210602-79
Lab Sample No.(s)	24378067
AGS Reference	ES1

Component	LOD/Units	Method	
Dibromofluoromethane**	%	TM116	109
Toluene-d8**	%	TM116	92
4-Bromofluorobenzene**	%	TM116	73.7
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.01 M
Benzene	<0.009 mg/kg	TM116	<0.009 M
Toluene	<0.007 mg/kg	TM116	<0.007 M
Ethylbenzene	<0.004 mg/kg	TM116	<0.004 M
p/m-Xylene	<0.01 mg/kg	TM116	<0.01 #
o-Xylene	<0.01 mg/kg	TM116	<0.01 M
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02
Sum of BTEX	<0.04 mg/kg	TM116	<0.04

CERTIFICATE OF ANALYSIS

SDG:	210602-79	**Client Reference:**	784-B026948	**Report Number:**	601307
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref.	BH47ES1	03/06/2021	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	0.10										
Sample Type	SOLID										
Date Sampled	25/05/2021 00:00:00										
Date Receieved	27/05/2021 05:00:00										
SDG	210602-79										
Original Sample	24378067										
Method Number	TM048										

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210602-79	**Client Reference:**	784-B026948	**Report Number:**	601307
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24378067
Customer Sample Ref.	BH47
AGS Ref.	ES1
Depth	0.10
Type	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	07-Jun-2021
Ammonium Soil by Titration	04-Jun-2021
Anions by Kone (soil)	08-Jun-2021
Asbestos ID in Solid Samples	03-Jun-2021
Boron Water Soluble	07-Jun-2021
Cyanide Comp/Free/Total/Thiocyanate	07-Jun-2021
EPH	07-Jun-2021
EPH by GCxGC-FID	04-Jun-2021
EPH CWG GC (S)	07-Jun-2021
GRO by GC-FID (S)	07-Jun-2021
Hexavalent Chromium (s)	08-Jun-2021
Metals in solid samples by OES	09-Jun-2021
PAH by GCMS	07-Jun-2021
pH	04-Jun-2021
Phenols by HPLC (S)	09-Jun-2021
Sample description	03-Jun-2021
Total Organic Carbon	08-Jun-2021
TPH CWG GC (S)	07-Jun-2021
VOC MS (S)	07-Jun-2021

ASSOCIATED AQC DATA

Ammonium Soil by Titration

Component	Method Code	QC 2416
Exchangeable Ammonium as NH4	TM024	**92.04** 74.04 : 103.44

Boron Water Soluble

Component	Method Code	QC 2468
Water Soluble Boron	TM222	**94.5** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2495
Free Cyanide	TM153	**94.06** 78.00 : 114.00
Thiocyanate	TM153	**96.79** 94.53 : 113.33
Total Cyanide	TM153	**100.0** 77.13 : 111.53

GRO by GC-FID (S)

Component	Method Code	QC 2458
QC	TM089	**85.69** 68.78 : 110.61

Hexavalent Chromium (s)

Component	Method Code	QC 2449
Hexavalent Chromium	TM151	**96.0** 91.40 : 115.40

Metals in solid samples by OES

Component	Method Code	QC 2414
Aluminium	TM181	**100.88** 73.56 : 108.85
Antimony	TM181	**97.97** 76.89 : 111.24
Arsenic	TM181	**101.16** 88.53 : 111.01

CERTIFICATE OF ANALYSIS

SDG:	210602-79	**Client Reference:**	784-B026948	**Report Number:**	601307
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Metals in solid samples by OES

		QC 2414
Barium	TM181	**100.0** 77.67 : 105.35
Beryllium	TM181	**103.36** 85.44 : 109.61
Boron	TM181	**92.84** 73.51 : 104.66
Cadmium	TM181	**95.06** 77.67 : 104.12
Chromium	TM181	**90.67** 79.64 : 105.83
Cobalt	TM181	**93.08** 84.60 : 104.13
Copper	TM181	**100.88** 82.40 : 105.45
Iron	TM181	**100.0** 82.95 : 110.58
Lead	TM181	**96.62** 78.24 : 104.05
Manganese	TM181	**110.0** 94.29 : 119.51
Mercury	TM181	**97.58** 83.16 : 107.81
Molybdenum	TM181	**100.41** 87.11 : 106.87
Nickel	TM181	**94.62** 80.26 : 102.28
Phosphorus	TM181	**106.87** 94.56 : 124.28
Selenium	TM181	**102.75** 82.28 : 110.48
Strontium	TM181	**96.44** 79.13 : 102.79
Thallium	TM181	**96.46** 82.94 : 111.86
Tin	TM181	**102.66** 86.72 : 110.03
Titanium	TM181	**87.02** 66.23 : 102.06
Vanadium	TM181	**98.17** 86.19 : 109.45
Zinc	TM181	**101.85** 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2499
Acenaphthene	TM218	**93.0** 76.79 : 103.90
Acenaphthylene	TM218	**90.5** 74.19 : 106.17
Anthracene	TM218	**89.5** 70.90 : 109.22
Benz(a)anthracene	TM218	**89.5** 73.77 : 119.26

PAH by GCMS

		QC 2499
Benzo(a)pyrene	TM218	**91.0** 73.20 : 114.18
Benzo(b)fluoranthene	TM218	**84.0** 75.36 : 117.58
Benzo(ghi)perylene	TM218	**92.0** 70.73 : 116.12
Benzo(k)fluoranthene	TM218	**88.5** 75.98 : 116.59
Chrysene	TM218	**88.5** 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	**88.0** 69.17 : 115.30
Fluoranthene	TM218	**89.5** 66.06 : 114.63
Fluorene	TM218	**92.5** 76.66 : 107.56
Indeno(123cd)pyrene	TM218	**90.0** 70.26 : 117.95
Naphthalene	TM218	**89.5** 74.70 : 101.83
Phenanthrene	TM218	**91.5** 73.62 : 109.34
Pyrene	TM218	**89.0** 71.46 : 117.00

pH

Component	Method Code	QC 2497
pH	TM133	**99.56** 98.09 : 101.62

Phenols by HPLC (S)

Component	Method Code	QC 2443	QC 2453
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**58.44** 69.38 : 125.27	**55.19** 69.38 : 125.27
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**50.88** 69.79 : 122.84	**47.95** 69.79 : 122.84
Cresols by HPLC (S)	TM062 (S)	**56.37** 77.98 : 111.41	**51.98** 77.98 : 111.41
Phenol by HPLC (S)	TM062 (S)	**58.28** 67.94 : 117.69	**53.64** 67.94 : 117.69
Xylenols by HPLC (S)	TM062 (S)	**56.67** 88.23 : 104.42	**52.71** 88.23 : 104.42

Total Organic Carbon

Total Organic Carbon

Component	Method Code	QC 2472
Total Organic Carbon	TM132	**109.77** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2491
1,1,1,2-tetrachloroethane	TM116	**104.6** 86.59 : 118.97
1,1,1-Trichloroethane	TM116	**103.6** 86.26 : 117.53
1,1,2-Trichloroethane	TM116	**94.0** 75.16 : 112.70
1,1-Dichloroethane	TM116	**99.6** 83.27 : 122.16
1,2-Dichloroethane	TM116	**117.6** 89.30 : 133.10
1,4-Dichlorobenzene	TM116	**112.8** 82.59 : 123.23
2-Chlorotoluene	TM116	**107.0** 66.81 : 118.43
4-Chlorotoluene	TM116	**101.4** 65.88 : 114.76
Benzene	TM116	**95.2** 93.16 : 123.63
Carbon Disulphide	TM116	**90.2** 75.11 : 124.81
Carbontetrachloride	TM116	**113.2** 82.35 : 126.46
Chlorobenzene	TM116	**102.0** 85.07 : 118.13
Chloroform	TM116	**106.0** 88.13 : 122.71
Chloromethane	TM116	**99.6** 61.62 : 145.66
Cis-1,2-Dichloroethene	TM116	**101.6** 88.41 : 121.33
Dibromomethane	TM116	**103.4** 77.47 : 121.29
Dichloromethane	TM116	**104.2** 87.89 : 134.72
Ethylbenzene	TM116	**96.6** 76.29 : 106.31
Hexachlorobutadiene	TM116	**107.6** 16.78 : 153.29
Isopropylbenzene	TM116	**93.6** 59.16 : 110.07
Naphthalene	TM116	**111.8** 79.29 : 125.59
o-Xylene	TM116	**88.4** 72.86 : 102.10

VOC MS (S)

		QC 2491
p/m-Xylene	TM116	**93.4** 68.99 : 102.40
Sec-Butylbenzene	TM116	**102.0** 44.71 : 117.87
Tetrachloroethene	TM116	**109.4** 77.82 : 125.00
Toluene	TM116	**88.8** 87.82 : 116.21
Trichloroethene	TM116	**96.2** 79.80 : 112.33
Trichlorofluoromethane	TM116	**107.6** 80.52 : 132.12
Vinyl Chloride	TM116	**87.8** 74.57 : 146.88

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	16 June 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210602-80
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	602222

This report has been revised and directly supersedes 601309 in its entirety.

We received 4 samples on Thursday May 27, 2021 and 3 of these samples were scheduled for analysis which was completed on Wednesday June 16, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210602-80	**Client Reference:**	784-B026948	**Report Number:**	602222
Location:	A46 Newark Northern Bypas	**Order Number:**		**Superseded Report:**	601309

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24378138	BH18	ES1	0.10	26/05/2021
24378153	BH18	ES2	0.50	26/05/2021
24378165	BH18	ES3	1.50	26/05/2021
24378171	BH18	ES4	2.50	26/05/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

Results Legend

- X Test
- N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24378138	24378153			24378165		
Customer Sample Reference			BH18	BH18			BH18		
AGS Reference			ES1	ES2			ES3		
Depth (m)			0.10	0.50			1.50		
Container			250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S
Acid herbicides*	All	NDPs: 0 Tests: 1	X						
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 2			X			X	
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1		X					
Ammonium Soil by Titration	All	NDPs: 0 Tests: 2			X			X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 2			X			X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2		X			X		
Boron Water Soluble	All	NDPs: 0 Tests: 2			X			X	
CEN Readings	All	NDPs: 0 Tests: 1		X					
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 3		X	X			X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1		X					
EPH	All	NDPs: 0 Tests: 2			X			X	
EPH by GCxGC-FID	All	NDPs: 0 Tests: 2			X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 2			X			X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2				X			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2			X			X	

Validated

CERTIFICATE OF ANALYSIS

SDG: 210602-80 **Client Reference:** 784-B026948 **Report Number:** 602222
Location: A46 Newark Northern Bypas **Order Number:** **Superseded Report:** 601309

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24378138	24378153			24378165		
Customer Sample Reference			BH18	BH18			BH18		
AGS Reference			ES1	ES2			ES3		
Depth (m)			0.10	0.50			1.50		
Container			250g Amber Jar (ALE210)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1		X					
Mercury Dissolved	All	NDPs: 0 Tests: 1		X					
Metals in solid samples by OES	All	NDPs: 0 Tests: 2			X			X	
OC OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 1	X						
PAH by GCMS	All	NDPs: 0 Tests: 2			X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 1			X				
pH	All	NDPs: 0 Tests: 2			X			X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 1		X					
Phenols by HPLC (S)	All	NDPs: 0 Tests: 2			X			X	
Sample description	All	NDPs: 0 Tests: 3	X		X			X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1			X				
Sulphide	All	NDPs: 0 Tests: 1		X					
Total Organic Carbon	All	NDPs: 0 Tests: 2			X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 2			X			X	
VOC MS (S)	All	NDPs: 0 Tests: 2				X			X

CERTIFICATE OF ANALYSIS

SDG:	210602-80	**Client Reference:**	784-B026948	**Report Number:**	602222
Location:	A46 Newark Northern Bypas	**Order Number:**		**Superseded Report:**	601309

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24378138	BH18	0.10	Dark Brown	Silty Clay Loam	Stones	Vegetation
24378153	BH18	0.50	Dark Brown	Silty Clay Loam	Stones	Vegetation
24378165	BH18	1.50	Dark Brown	Silty Clay	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210602-80	**Client Reference:**	784-B026948	**Report Number:**	602222
Location:	A46 Newark Northern Bypas	**Order Number:**		**Superseded Report:**	601309

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH18	BH18	BH18			
			Depth (m)	0.10	0.50	1.50			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	26/05/2021	26/05/2021	26/05/2021			
			Sample Time	.	.	.			
			Date Received	27/05/2021	27/05/2021	27/05/2021			
			SDG Ref	210602-80	210602-80	210602-80			
			Lab Sample No.(s)	24378138	24378153	24378165			
			AGS Reference	ES1	ES2	ES3			
Moisture Content Ratio (% of as received sample)	%	PM024		9.9	11	11			
2,4,5-T*	<0.01 mg/kg	SUB		<0.01					
2,4,5-TP (Fenoprop)*	<0.01 mg/kg	SUB		<0.01					
2,4-D*	<0.01 mg/kg	SUB		<0.01					
2,4-DB*	<0.01 mg/kg	SUB		<0.01					
2,4-Dichloroprop (2,4 DP)*	<0.01 mg/kg	SUB		<0.01					
4-Chlorophenoxyacetic acid (4-CPA)*	<0.01 mg/kg	SUB		<0.01					
Acifluorfen*	<0.01 mg/kg	SUB		<0.01					
Bentazone*	<0.01 mg/kg	SUB		<0.01					
Bromoxynil*	<0.01 mg/kg	SUB		<0.01					
Dicamba*	<0.01 mg/kg	SUB		<0.01					
Diclofop*	<0.01 mg/kg	SUB		<0.01					
Dinoseb*	<0.01 mg/kg	SUB		<0.01					
DNOC*	<0.01 mg/kg	SUB		<0.01					
Fluroxypyr*	<0.01 mg/kg	SUB		<0.01					
Ioxynil*	<0.01 mg/kg	SUB		<0.01					
2-methyl-4-Chlorophenoxyacetic acid (MCPA)*	<0.01 mg/kg	SUB		<0.01					
4-(4-Chloro-o-tolyloxy) butyric acid (MCPB)*	<0.01 mg/kg	SUB		<0.01					
Mecoprop (MCPP)*	<0.01 mg/kg	SUB		<0.01					
Propoxycarbazone-sodium*	<0.01 mg/kg	SUB		<0.01					
Triclopyr*	<0.01 mg/kg	SUB		<0.01					
Triclosan*	<0.01 mg/kg	SUB		<0.01					
Exchangeable Ammonia as N	<12 mg/kg	TM024			<12 M	<12 M			
Phenol	<0.01 mg/kg	TM062 (S)			<0.01 @ M	<0.01 @ M			
Cresols	<0.01 mg/kg	TM062 (S)			<0.01 @ M	<0.01 @ M			
Xylenols	<0.015 mg/kg	TM062 (S)			<0.015 @ M	<0.015 @ M			
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)			<0.035 @ M	<0.035 @ M			
Soil Organic Matter (SOM)	<0.35 %	TM132			0.574 #	0.493 #			
pH	1 pH Units	TM133			7.28 M	8.59 M			
Chromium, Hexavalent	<0.6 mg/kg	TM151			<0.6 #	<0.6 #			
Cyanide, Total	<1 mg/kg	TM153			<1 M	<1 M			
PCB congener 118	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 81	<0.003 mg/kg	TM168			<0.003 M				

CERTIFICATE OF ANALYSIS

SDG:	210602-80	**Client Reference:**	784-B026948	**Report Number:**	602222
Location:	A46 Newark Northern Bypas	**Order Number:**		**Superseded Report:**	601309

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH18	BH18	BH18			
			Depth (m)	0.10	0.50	1.50			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	26/05/2021	26/05/2021	26/05/2021			
			Sample Time	.	.	.			
			Date Received	27/05/2021	27/05/2021	27/05/2021			
			SDG Ref	210602-80	210602-80	210602-80			
			Lab Sample No.(s)	24378138	24378153	24378165			
			AGS Reference	ES1	ES2	ES3			
PCB congener 77	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 123	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 114	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 105	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 126	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 167	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 156	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 157	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 169	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 189	<0.003 mg/kg	TM168			<0.003 M				
Sum of detected WHO 12 PCBs	<0.036 mg/kg	TM168			<0.036				
Arsenic	<0.6 mg/kg	TM181			10 M	2.64 M			
Cadmium	<0.02 mg/kg	TM181			0.352 M	0.137 M			
Chromium	<0.9 mg/kg	TM181			23.3 M	33.6 M			
Copper	<1.4 mg/kg	TM181			11.8 M	8.16 M			
Iron	<1000 mg/kg	TM181			23800 #	20400 #			
Lead	<0.7 mg/kg	TM181			16.4 M	5.23 M			
Mercury	<0.1 mg/kg	TM181			<0.1 M	<0.1 M			
Nickel	<0.2 mg/kg	TM181			29.2 M	24 M			
Selenium	<1 mg/kg	TM181			<1 #	1.04 #			
Vanadium	<0.2 mg/kg	TM181			26 #	28.3 #			
Zinc	<1.9 mg/kg	TM181			56.3 M	59.9 M			
Boron, water soluble	<1 mg/kg	TM222			<1 M	<1 M			
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243			0.0123 M	0.0222 M			
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248			3.26	2.49			
EPH (C5-C40)	<35 mg/kg	TM415			<35	<35			
EPH Surrogate % recovery**	%	TM415			102	96.7			
EPH >C10-C40	<35 mg/kg	TM415			<35 M	<35 M			

CERTIFICATE OF ANALYSIS

SDG:	210602-80	**Client Reference:**	784-B026948	**Report Number:**	602222
Location:	A46 Newark Northern Bypas	**Order Number:**		**Superseded Report:**	601309

OC OP Pesticides and Triazine Herb

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH18
Depth (m)	0.10
Sample Type	Soil/Solid (S)
Date Sampled	26/05/2021
Sample Time	.
Date Received	27/05/2021
SDG Ref	210602-80
Lab Sample No.(s)	24378138
AGS Reference	ES1

Component	LOD/Units	Method	
Dichlorvos	<0.05 mg/kg	TM073	<0.5
Mevinphos	<0.05 mg/kg	TM073	<0.5
Phorate	<0.05 mg/kg	TM073	<0.5
alpha-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073	<0.5
Diazinon	<0.05 mg/kg	TM073	<0.5
gamma-Hexachlorocyclohexane (HCH / Lindane)	<0.05 mg/kg	TM073	<0.5
Disulfoton	<0.05 mg/kg	TM073	<0.5
Heptachlor	<0.05 mg/kg	TM073	<0.5
Aldrin	<0.05 mg/kg	TM073	<0.5
beta-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073	<0.5
Methyl parathion	<0.05 mg/kg	TM073	<0.5
Malathion	<0.05 mg/kg	TM073	<0.5
Fenitrothion	<0.05 mg/kg	TM073	<0.5
Heptachlor epoxide	<0.05 mg/kg	TM073	<0.5
Parathion	<0.05 mg/kg	TM073	<0.5
Endosulphan I	<0.05 mg/kg	TM073	<0.5
p,p-DDE	<0.05 mg/kg	TM073	<0.5
Dieldrin	<0.05 mg/kg	TM073	<0.5
Endrin	<0.05 mg/kg	TM073	<0.5
p,p-TDE (DDD)	<0.05 mg/kg	TM073	<0.5
Ethion	<0.05 mg/kg	TM073	<0.5
Endosulphan II	<0.05 mg/kg	TM073	<0.5
p,p-DDT	<0.05 mg/kg	TM073	<0.5
p,p-Methoxychlor	<0.05 mg/kg	TM073	<0.5
Endosulphan sulphate	<0.05 mg/kg	TM073	<0.5
Azinphos-methyl	<0.05 mg/kg	TM073	<0.5

Validated

CERTIFICATE OF ANALYSIS

SDG:	210602-80	**Client Reference:**	784-B026948	**Report Number:**	602222
Location:	A46 Newark Northern Bypas	**Order Number:**		**Superseded Report:**	601309

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH18	BH18
			Depth (m)	0.50	1.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	26/05/2021	26/05/2021
			Sample Time	.	.
			Date Received	27/05/2021	27/05/2021
			SDG Ref	210602-80	210602-80
			Lab Sample No.(s)	24378153	24378165
			AGS Reference	ES2	ES3
Naphthalene-d8 % recovery**	%	TM218		85.7	89.3
Acenaphthene-d10 % recovery**	%	TM218		85.2	89.7
Phenanthrene-d10 % recovery**	%	TM218		86.4	89.8
Chrysene-d12 % recovery**	%	TM218		77.5	83.4
Perylene-d12 % recovery**	%	TM218		73.4	76.6
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	<0.009 M
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 M	<0.012 M
Acenaphthene	<0.008 mg/kg	TM218		<0.008 M	<0.008 M
Fluorene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218		0.0234 M	<0.015 M
Anthracene	<0.016 mg/kg	TM218		<0.016 M	<0.016 M
Fluoranthene	<0.017 mg/kg	TM218		0.0667 M	<0.017 M
Pyrene	<0.015 mg/kg	TM218		0.0588 M	<0.015 M
Benz(a)anthracene	<0.014 mg/kg	TM218		0.0366 M	<0.014 M
Chrysene	<0.01 mg/kg	TM218		0.0422 M	<0.01 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		0.0563 M	<0.015 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.0253 M	<0.014 M
Benzo(a)pyrene	<0.015 mg/kg	TM218		0.0392 M	<0.015 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.0341 M	<0.018 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	<0.023 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.0312 M	<0.024 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		0.414	<0.118

CERTIFICATE OF ANALYSIS

SDG: 210602-80 **Client Reference:** 784-B026948 **Report Number:** 602222
Location: A46 Newark Northern Bypas **Order Number:** **Superseded Report:** 601309

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH18
Depth (m)	0.50
Sample Type	Soil/Solid (S)
Date Sampled	26/05/2021
Sample Time	.
Date Received	27/05/2021
SDG Ref	210602-80
Lab Sample No.(s)	24378153
AGS Reference	ES2

Component	LOD/Units	Method	
Phenol	<0.1 mg/kg	TM157	<0.1
Pentachlorophenol	<0.1 mg/kg	TM157	<0.1
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157	<0.1
Nitrobenzene	<0.1 mg/kg	TM157	<0.1
Isophorone	<0.1 mg/kg	TM157	<0.1
Hexachloroethane	<0.1 mg/kg	TM157	<0.1
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157	<0.2
Hexachlorobutadiene	<0.1 mg/kg	TM157	<0.1
Hexachlorobenzene	<0.1 mg/kg	TM157	<0.1
n-Dioctyl phthalate	<0.1 mg/kg	TM157	<0.1
Dimethyl phthalate	<0.1 mg/kg	TM157	<0.1
Diethyl phthalate	<0.1 mg/kg	TM157	<0.1
n-Dibutyl phthalate	<0.1 mg/kg	TM157	<0.1
Dibenzofuran	<0.1 mg/kg	TM157	<0.1
Carbazole	<0.1 mg/kg	TM157	<0.1
Butylbenzyl phthalate	<0.1 mg/kg	TM157	<0.1
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157	<0.1
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157	<0.1
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157	<0.1
Azobenzene	<0.1 mg/kg	TM157	<0.1
4-Nitrophenol	<0.1 mg/kg	TM157	<0.5
4-Nitroaniline	<0.1 mg/kg	TM157	<0.5
4-Methylphenol	<0.1 mg/kg	TM157	<0.1
4-Chlorophenylphenylether	<0.1 mg/kg	TM157	<0.1
4-Chloroaniline	<0.1 mg/kg	TM157	<0.1
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157	<0.1
4-Bromophenylphenylether	<0.1 mg/kg	TM157	<0.1
3-Nitroaniline	<0.1 mg/kg	TM157	<0.1
2-Nitrophenol	<0.1 mg/kg	TM157	<0.1
2-Nitroaniline	<0.1 mg/kg	TM157	<0.1
2-Methylphenol	<0.1 mg/kg	TM157	<0.1
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157	<0.1
2-Chlorophenol	<0.1 mg/kg	TM157	<0.1

CERTIFICATE OF ANALYSIS

SDG:	210602-80	**Client Reference:**	784-B026948	**Report Number:**	602222
Location:	A46 Newark Northern Bypas	**Order Number:**		**Superseded Report:**	601309

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.	BH18							
Depth (m)	0.50							
Sample Type	Soil/Solid (S)							
Date Sampled	26/05/2021							
Sample Time	.							
Date Received	27/05/2021							
SDG Ref	210602-80							
Lab Sample No.(s)	24378153							
AGS Reference	ES2							
Component	**LOD/Units**	**Method**						
2,6-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1					
2,4-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1					
2,4-Dimethylphenol	<0.1 mg/kg	TM157	<0.1					
2,4-Dichlorophenol	<0.1 mg/kg	TM157	<0.1					
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157	<0.1					
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157	<0.1					
1,4-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1					
1,3-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1					
1,2-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1					
2-Chloronaphthalene	<0.1 mg/kg	TM157	<0.1					
2-Methylnaphthalene	<0.1 mg/kg	TM157	<0.1					
Acenaphthylene	<0.1 mg/kg	TM157	<0.1					
Acenaphthene	<0.1 mg/kg	TM157	<0.1					
Anthracene	<0.1 mg/kg	TM157	<0.1					
Benzo(a)anthracene	<0.1 mg/kg	TM157	<0.1					
Benzo(b)fluoranthene	<0.1 mg/kg	TM157	<0.1					
Benzo(k)fluoranthene	<0.1 mg/kg	TM157	<0.1					
Benzo(a)pyrene	<0.1 mg/kg	TM157	<0.1					
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157	<0.1					
Chrysene	<0.1 mg/kg	TM157	<0.1					
Fluoranthene	<0.1 mg/kg	TM157	<0.1					
Fluorene	<0.1 mg/kg	TM157	<0.1					
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157	<0.1					
Phenanthrene	<0.1 mg/kg	TM157	<0.1					
Pyrene	<0.1 mg/kg	TM157	<0.1					
Naphthalene	<0.1 mg/kg	TM157	<0.1					
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157	<0.1					
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157	<0.1					

CERTIFICATE OF ANALYSIS

SDG: 210602-80 **Client Reference:** 784-B026948 **Report Number:** 602222
Location: A46 Newark Northern Bypas **Order Number:** **Superseded Report:** 601309

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH18	BH18				
			Depth (m)	0.50	1.50				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	26/05/2021	26/05/2021				
			Sample Time	.	.				
			Date Received	27/05/2021	27/05/2021				
			SDG Ref	210602-80	210602-80				
			Lab Sample No.(s)	24378153	24378165				
			AGS Reference	ES2	ES3				
GRO Surrogate % recovery**	%	TM089		106	110				
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C8-C10	<0.01 mg/kg	TM089		0.0101	<0.01				
Aliphatics >C10-C12	<1 mg/kg	TM414		<1	<1				
Aliphatics >C12-C16	<1 mg/kg	TM414		<1	<1				
Aliphatics >C16-C21	<1 mg/kg	TM414		<1	<1				
Aliphatics >C21-C35	<1 mg/kg	TM414		2.98	<1				
Aliphatics >C35-C44	<1 mg/kg	TM414		<1	<1				
Total Aliphatics >C10-C44	<5 mg/kg	TM414		<5	<5				
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		<10	<10				
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics > EC10-EC12	<1 mg/kg	TM414		<1	<1				
Aromatics > EC12-EC16	<1 mg/kg	TM414		<1	<1				
Aromatics > EC16-EC21	<1 mg/kg	TM414		<1	<1				
Aromatics > EC21-EC35	<1 mg/kg	TM414		<1	<1				
Aromatics >EC35-EC44	<1 mg/kg	TM414		<1	<1				
Aromatics > EC40-EC44	<1 mg/kg	TM414		<1	<1				
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		<5	<5				
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		<10	<10				
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		<0.05	<0.05				
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		<0.05	<0.05				
GRO >C5-C10	<0.02 mg/kg	TM089		<0.02	<0.02				

CERTIFICATE OF ANALYSIS

SDG: 210602-80 **Client Reference:** 784-B026948 **Report Number:** 602222
Location: A46 Newark Northern Bypas **Order Number:** **Superseded Report:** 601309

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH18	BH18				
			Depth (m)	0.50	1.50				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	26/05/2021	26/05/2021				
			Sample Time	.	.				
			Date Received	27/05/2021	27/05/2021				
			SDG Ref	210602-80	210602-80				
			Lab Sample No.(s)	24378153	24378165				
			AGS Reference	ES2	ES3				
Dibromofluoromethane**	%	TM116		109	115				
Toluene-d8**	%	TM116		97.7	98.9				
4-Bromofluorobenzene**	%	TM116		100	104				
Dichlorodifluoromethane	<0.006 mg/kg	TM116		<0.12 M					
Chloromethane	<0.007 mg/kg	TM116		<0.14 #					
Vinyl Chloride	<0.006 mg/kg	TM116		<0.12 @ M					
Bromomethane	<0.01 mg/kg	TM116		<0.2 M					
Chloroethane	<0.01 mg/kg	TM116		<0.2 M					
Trichlorofluorormethane	<0.006 mg/kg	TM116		<0.12 M					
1,1-Dichloroethene	<0.01 mg/kg	TM116		<0.2 #					
Carbon Disulphide	<0.007 mg/kg	TM116		<0.14 M					
Dichloromethane	<0.01 mg/kg	TM116		<0.2 #					
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116		<0.2 M					
1,1-Dichloroethane	<0.008 mg/kg	TM116		<0.16 M					
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116		<0.12 M					
2,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2					
Bromochloromethane	<0.01 mg/kg	TM116		<0.2 M					
Chloroform	<0.008 mg/kg	TM116		<0.16 M					
1,1,1-Trichloroethane	<0.007 mg/kg	TM116		<0.14 M					
1,1-Dichloropropene	<0.01 mg/kg	TM116		<0.2 M					
Carbontetrachloride	<0.01 mg/kg	TM116		<0.2 M					
1,2-Dichloroethane	<0.005 mg/kg	TM116		<0.1 M					
Benzene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M				
Trichloroethene	<0.009 mg/kg	TM116		<0.18 #					
1,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2 M					
Dibromomethane	<0.009 mg/kg	TM116		<0.18 M					
Bromodichloromethane	<0.007 mg/kg	TM116		<0.14 M					
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2 M					
Toluene	<0.007 mg/kg	TM116		<0.14 M	<0.14 M				
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2					
1,1,2-Trichloroethane	<0.01 mg/kg	TM116		<0.2 M					
1,3-Dichloropropane	<0.007 mg/kg	TM116		<0.14 M					

CERTIFICATE OF ANALYSIS

SDG: 210602-80 **Client Reference:** 784-B026948 **Report Number:** 602222
Location: A46 Newark Northern Bypas **Order Number:** **Superseded Report:** 601309

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH18	BH18				
			Depth (m)	0.50	1.50				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	26/05/2021	26/05/2021				
			Sample Time	.	.				
			Date Received	27/05/2021	27/05/2021				
			SDG Ref	210602-80	210602-80				
			Lab Sample No.(s)	24378153	24378165				
			AGS Reference	ES2	ES3				
Tetrachloroethene	<0.005 mg/kg	TM116		<0.1 M					
Dibromochloromethane	<0.01 mg/kg	TM116		<0.2 M					
1,2-Dibromoethane	<0.01 mg/kg	TM116		<0.2 M					
Chlorobenzene	<0.005 mg/kg	TM116		<0.1 M					
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 M					
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 M	<0.08 M				
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #				
o-Xylene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Styrene	<0.01 mg/kg	TM116		<0.2 @ #					
Bromoform	<0.01 mg/kg	TM116		<0.2 M					
Isopropylbenzene	<0.005 mg/kg	TM116		<0.1 3 #					
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 #					
1,2,3-Trichloropropane	<0.016 mg/kg	TM116		<0.32 M					
Bromobenzene	<0.01 mg/kg	TM116		<0.2 M					
Propylbenzene	<0.01 mg/kg	TM116		<0.2 M					
2-Chlorotoluene	<0.009 mg/kg	TM116		<0.18 M					
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116		<0.16 M					
4-Chlorotoluene	<0.01 mg/kg	TM116		<0.2 M					
tert-Butylbenzene	<0.014 mg/kg	TM116		<0.28 M					
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116		<0.18 #					
sec-Butylbenzene	<0.01 mg/kg	TM116		<0.2 3					
4-Isopropyltoluene	<0.01 mg/kg	TM116		<0.2 M					
1,3-Dichlorobenzene	<0.008 mg/kg	TM116		<0.16 M					
1,4-Dichlorobenzene	<0.005 mg/kg	TM116		<0.1 M					
n-Butylbenzene	<0.011 mg/kg	TM116		<0.22					
1,2-Dichlorobenzene	<0.01 mg/kg	TM116		<0.2 M					
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116		<0.28 M					
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.2 #					
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4					
Hexachlorobutadiene	<0.02 mg/kg	TM116		<0.4					
Naphthalene	<0.013 mg/kg	TM116		<0.26 M					
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4 #					
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4					

Validated

CERTIFICATE OF ANALYSIS

SDG:	210602-80	**Client Reference:**	784-B026948	**Report Number:**	602222
Location:	A46 Newark Northern Bypas	**Order Number:**		**Superseded Report:**	601309

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BH18	0.50	Soil/Solid (S)	26/05/2021	.	27/05/2021	210602-80	24378153	ES2
			BH18	1.50	Soil/Solid (S)	26/05/2021	.	27/05/2021	210602-80	24378165	ES3
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4	<0.4							
Sum of BTEX	<0.04 mg/kg	TM116	<0.8	<0.8							

CERTIFICATE OF ANALYSIS

SDG:	210602-80	**Client Reference:**	784-B026948	**Report Number:**	602222
Location:	A46 Newark Northern Bypas	**Order Number:**		**Superseded Report:**	601309

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	BH18ES2 0.50 SOLID 26/05/2021 00:00:00 27/05/2021 05:00:00 210602-80 24378153 TM048	03/06/2021	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	BH18ES3 1.50 SOLID 26/05/2021 00:00:00 27/05/2021 05:00:00 210602-80 24378165 TM048	03/06/2021	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	210602-80	**Client Reference:**	784-B026948	**Report Number:**	602222
Location:	A46 Newark Northern Bypas	**Order Number:**		**Superseded Report:**	601309

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.108	**Natural Moisture Content (%)**	20.5
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	83
Particle Size <4mm	>95%		

Case	
SDG	210602-80
Lab Sample Number(s)	24378153
Sampled Date	26-May-2021
Customer Sample Ref.	BH18 ES2
Depth (m)	0.50

Eluate Analysis	**C_2 Conc^n in 10:1 eluate (mg/l)**		**A_2 10:1 conc^n leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.000839	<0.0005	0.00839	<0.005	-	-	-
Boron	0.025	<0.01	0.25	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.278	<0.019	2.78	<0.19	-	-	-
Lead	0.00029	<0.0002	0.0029	<0.002	-	-	-
Nickel	0.000826	<0.0004	0.00826	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00935	<0.001	0.0935	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	03-Jun-2021
pH (pH Units)	7.67
Conductivity (µS/cm)	26.70
Temperature (°C)	14.90
Volume Leachant (Litres)	0.882

CERTIFICATE OF ANALYSIS

SDG:	210602-80	**Client Reference:**	784-B026948	**Report Number:**	602222
Location:	A46 Newark Northern Bypas	**Order Number:**		**Superseded Report:**	601309

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210602-80	**Client Reference:**	784-B026948	**Report Number:**	602222
Location:	A46 Newark Northern Bypas	**Order Number:**		**Superseded Report:**	601309

Test Completion Dates

Lab Sample No(s)	24378138	24378153	24378165
Customer Sample Ref.	BH18	BH18	BH18
AGS Ref.	ES1	ES2	ES3
Depth	0.10	0.50	1.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Acid herbicides*	16-Jun-2021		
Ammoniacal N as NH4 in 2:1 extract		07-Jun-2021	07-Jun-2021
Ammoniacal Nitrogen		08-Jun-2021	
Ammonium Soil by Titration		04-Jun-2021	04-Jun-2021
Anions by Kone (soil)		04-Jun-2021	04-Jun-2021
Asbestos ID in Solid Samples		03-Jun-2021	03-Jun-2021
Boron Water Soluble		07-Jun-2021	07-Jun-2021
CEN 10:1 Leachate (1 Stage)		03-Jun-2021	
CEN Readings		04-Jun-2021	
Cyanide Comp/Free/Total/Thiocyanate		08-Jun-2021	04-Jun-2021
Dissolved Metals by ICP-MS		05-Jun-2021	
EPH		07-Jun-2021	07-Jun-2021
EPH by GCxGC-FID		04-Jun-2021	04-Jun-2021
EPH CWG GC (S)		04-Jun-2021	04-Jun-2021
GRO by GC-FID (S)		07-Jun-2021	07-Jun-2021
Hexavalent Chromium (s)		04-Jun-2021	04-Jun-2021
Hexavalent Chromium (w)		08-Jun-2021	
Mercury Dissolved		07-Jun-2021	
Metals in solid samples by OES		07-Jun-2021	07-Jun-2021
Moisture at 105C		03-Jun-2021	
OC OP Pesticides and Triazine Herb	09-Jun-2021		
PAH by GCMS		07-Jun-2021	04-Jun-2021
PCBs by GCMS		07-Jun-2021	
pH		04-Jun-2021	04-Jun-2021
pH Value of Filtered Water		07-Jun-2021	
Phenols by HPLC (S)		09-Jun-2021	09-Jun-2021
Sample description	02-Jun-2021	02-Jun-2021	02-Jun-2021
Semi Volatile Organic Compounds		04-Jun-2021	
Sulphide		08-Jun-2021	
Total Organic Carbon		07-Jun-2021	07-Jun-2021
TPH CWG GC (S)		07-Jun-2021	07-Jun-2021
VOC MS (S)		07-Jun-2021	07-Jun-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2468
Ammoniacal Nitrogen as N	TM099	**92.0** 88.02 : 104.70

Ammonium Soil by Titration

Component	Method Code	QC 2416
Exchangeable Ammonium as NH4	TM024	**92.04** 74.04 : 103.44

Anions by Kone (soil)

Component	Method Code	QC 2490
Chloride (soluble)	TM243	**149.22** 80.93 : 111.66
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**161.68** 70.00 : 130.00

Boron Water Soluble

Component	Method Code	QC 2468
Water Soluble Boron	TM222	**94.5** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2428	QC 2466
Free Cyanide	TM153	**94.65** 78.00 : 114.00	
Free Cyanide (W)	TM227		**83.0** 90.67 : 122.67
Thiocyanate	TM153	**96.79** 94.53 : 113.33	
Thiocyanate (W)	TM227		**111.75** 92.25 : 117.75
Total Cyanide	TM153	**95.8** 77.13 : 111.53	
Total Cyanide (W)	TM227		**105.75** 88.75 : 111.25

Dissolved Metals by ICP-MS

CERTIFICATE OF ANALYSIS

SDG:	210602-80	**Client Reference:**	784-B026948	**Report Number:**	602222
Location:	A46 Newark Northern Bypas	**Order Number:**		**Superseded Report:**	601309

Dissolved Metals by ICP-MS

Component	Method Code	QC 2483
Aluminium	TM152	**104.67** 94.21 : 111.52
Antimony	TM152	**103.83** 88.37 : 130.57
Arsenic	TM152	**103.17** 92.62 : 113.52
Barium	TM152	**103.0** 88.62 : 113.14
Beryllium	TM152	**104.33** 87.08 : 111.38
Bismuth	TM152	**102.17** 92.62 : 115.02
Boron	TM152	**102.33** 86.31 : 120.88
Cadmium	TM152	**103.17** 93.85 : 111.65
Calcium	TM152	**102.67** 89.20 : 126.91
Chromium	TM152	**104.5** 92.50 : 113.03
Cobalt	TM152	**104.0** 85.01 : 114.87
Copper	TM152	**104.33** 89.87 : 119.73
Iron	TM152	**104.67** 93.02 : 113.86
Lead	TM152	**101.0** 91.11 : 116.98
Lithium	TM152	**103.0** 87.70 : 115.90
Magnesium	TM152	**100.67** 89.60 : 116.61
Manganese	TM152	**105.33** 93.97 : 112.46
Molybdenum	TM152	**103.17** 89.07 : 110.96
Nickel	TM152	**103.5** 93.70 : 112.15
Phosphorus	TM152	**103.17** 89.24 : 114.18
Potassium	TM152	**101.33** 93.20 : 115.55
Selenium	TM152	**103.67** 91.69 : 117.12
Silver	TM152	**103.5** 90.93 : 121.73
Sodium	TM152	**102.0** 92.42 : 113.24
Strontium	TM152	**106.33** 92.14 : 116.24
Tellurium	TM152	**102.17** 89.88 : 111.78
Thallium	TM152	**104.33** 82.43 : 113.83

Dissolved Metals by ICP-MS

		QC 2483
Tin	TM152	**88.17** 94.62 : 107.79
Titanium	TM152	**102.67** 90.29 : 115.23
Tungsten	TM152	**100.0** 77.61 : 132.31
Uranium	TM152	**101.33** 86.97 : 115.76
Vanadium	TM152	**105.0** 89.61 : 115.48
Zinc	TM152	**104.0** 87.51 : 116.26

GRO by GC-FID (S)

Component	Method Code	QC 2478
QC	TM089	**74.81** 68.78 : 110.61

Hexavalent Chromium (s)

Component	Method Code	QC 2409
Hexavalent Chromium	TM151	**106.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2454
Hexavalent Chromium	TM241	**102.0** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2479
Mercury Dissolved (CVAF)	TM183	**109.0** 69.30 : 128.70

Metals in solid samples by OES

Metals in solid samples by OES

Component	Method Code	QC 2472
Aluminium	TM181	**106.19** 73.56 : 108.85
Antimony	TM181	**100.0** 76.89 : 111.24
Arsenic	TM181	**102.03** 88.53 : 111.01
Barium	TM181	**99.08** 77.67 : 105.35
Beryllium	TM181	**104.48** 85.44 : 109.61
Boron	TM181	**100.0** 73.51 : 104.66
Cadmium	TM181	**96.3** 77.67 : 104.12
Chromium	TM181	**92.9** 79.64 : 105.83
Cobalt	TM181	**94.65** 84.60 : 104.13
Copper	TM181	**101.76** 82.40 : 105.45
Iron	TM181	**103.17** 82.95 : 110.58
Lead	TM181	**95.95** 78.24 : 104.05
Manganese	TM181	**111.94** 94.29 : 119.51
Mercury	TM181	**98.79** 83.16 : 107.81
Molybdenum	TM181	**103.29** 87.11 : 106.87
Nickel	TM181	**94.62** 80.26 : 102.28
Phosphorus	TM181	**109.49** 94.56 : 124.28
Selenium	TM181	**105.49** 82.28 : 110.48
Strontium	TM181	**101.56** 79.13 : 102.79
Thallium	TM181	**96.02** 82.94 : 111.86
Tin	TM181	**103.8** 86.72 : 110.03
Titanium	TM181	**93.13** 66.23 : 102.06
Vanadium	TM181	**104.03** 86.19 : 109.45
Zinc	TM181	**103.49** 84.68 : 113.99

PAH by GCMS

PAH by GCMS

Component	Method Code	QC 2422	QC 2400
Acenaphthene	TM218	**97.0** 73.47 : 109.80	**92.5** 73.47 : 109.80
Acenaphthylene	TM218	**95.0** 70.00 : 130.00	**91.5** 70.00 : 130.00
Anthracene	TM218	**94.0** 68.68 : 111.89	**91.0** 68.68 : 111.89
Benz(a)anthracene	TM218	**91.5** 68.12 : 118.39	**87.0** 68.12 : 118.39
Benzo(a)pyrene	TM218	**87.5** 71.72 : 115.31	**88.5** 71.72 : 115.31
Benzo(b)fluoranthene	TM218	**78.0** 66.89 : 120.40	**81.0** 66.89 : 120.40
Benzo(ghi)perylene	TM218	**84.0** 67.82 : 118.49	**90.0** 67.82 : 118.49
Benzo(k)fluoranthene	TM218	**93.5** 73.10 : 117.03	**91.5** 73.10 : 117.03
Chrysene	TM218	**89.5** 69.58 : 115.47	**90.0** 69.58 : 115.47
Dibenzo(ah)anthracene	TM218	**86.5** 67.32 : 121.35	**89.0** 67.32 : 121.35
Fluoranthene	TM218	**96.5** 75.16 : 117.28	**93.0** 75.16 : 117.28
Fluorene	TM218	**96.5** 73.81 : 108.66	**94.5** 73.81 : 108.66
Indeno(123cd)pyrene	TM218	**82.5** 68.91 : 117.62	**91.0** 68.91 : 117.62
Naphthalene	TM218	**96.0** 72.12 : 106.18	**91.0** 72.12 : 106.18
Phenanthrene	TM218	**97.5** 69.01 : 113.72	**94.5** 69.01 : 113.72
Pyrene	TM218	**97.0** 64.28 : 115.75	**93.0** 64.28 : 115.75

PCBs by GCMS

Component	Method Code	QC 2428
PCB congener 101	TM168	**80.6** 65.66 : 110.06
PCB congener 105	TM168	**76.9** 58.10 : 106.34
PCB congener 114	TM168	**76.1** 59.38 : 106.48
PCB congener 118	TM168	**77.2** 60.02 : 106.23
PCB congener 123	TM168	**82.6** 65.01 : 99.81
PCB congener 126	TM168	**79.3** 59.31 : 109.23
PCB congener 138	TM168	**81.0** 63.95 : 107.63
PCB congener 153	TM168	**85.0** 62.65 : 108.85
PCB congener 156	TM168	**78.7** 61.69 : 112.27

PCBs by GCMS

		QC 2428
PCB congener 157	TM168	**72.7** 55.37 : 104.81
PCB congener 167	TM168	**77.7** 65.58 : 109.14
PCB congener 169	TM168	**77.0** 56.84 : 112.10
PCB congener 180	TM168	**82.2** 66.99 : 111.63
PCB congener 189	TM168	**75.9** 57.75 : 112.59
PCB congener 28	TM168	**84.7** 73.68 : 105.96
PCB congener 52	TM168	**83.8** 67.24 : 107.62
PCB congener 77	TM168	**82.3** 64.87 : 108.49
PCB congener 81	TM168	**80.8** 70.78 : 110.80

pH

Component	Method Code	QC 2497
pH	TM133	**99.56** 98.09 : 101.62

pH Value of Filtered Water

Component	Method Code	QC 2447
pH	TM256	**101.2** 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2443	QC 2453
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**58.44** 69.38 : 125.27	**55.19** 69.38 : 125.27
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**50.88** 69.79 : 122.84	**47.95** 69.79 : 122.84
Cresols by HPLC (S)	TM062 (S)	**56.37** 77.98 : 111.41	**51.98** 77.98 : 111.41
Phenol by HPLC (S)	TM062 (S)	**58.28** 67.94 : 117.69	**53.64** 67.94 : 117.69
Xylenols by HPLC (S)	TM062 (S)	**56.67** 88.23 : 104.42	**52.71** 88.23 : 104.42

Semi Volatile Organic Compounds

Semi Volatile Organic Compounds

Component	Method Code	QC 2437
4-Bromophenylphenylether (Soil)	TM157	**91.0** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**107.0** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**96.5** 68.25 : 126.75
Naphthalene (Soil)	TM157	**94.0** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**98.0** 66.50 : 123.50
Phenol (Soil)	TM157	**101.0** 69.92 : 114.02

Sulphide

Component	Method Code	QC 2490
Sulphide	TM101	**100.0** 88.90 : 112.50

Total Organic Carbon

Component	Method Code	QC 2402
Total Organic Carbon	TM132	**103.52** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2461
1,1,1,2-tetrachloroethane	TM116	**105.0** 84.84 : 116.25
1,1,1-Trichloroethane	TM116	**96.8** 73.73 : 118.05
1,1,2-Trichloroethane	TM116	**98.0** 77.12 : 116.04
1,1-Dichloroethane	TM116	**106.6** 74.46 : 129.15
1,2-Dichloroethane	TM116	**107.8** 92.38 : 131.65
1,4-Dichlorobenzene	TM116	**108.4** 83.64 : 126.18
2-Chlorotoluene	TM116	**105.2** 76.03 : 113.25
4-Chlorotoluene	TM116	**106.6** 66.90 : 112.46
Benzene	TM116	**102.2** 88.60 : 113.80
Carbon Disulphide	TM116	**99.0** 74.91 : 122.14

VOC MS (S)

		QC 2461
Carbontetrachloride	TM116	**96.8** 80.31 : 124.50
Chlorobenzene	TM116	**105.2** 83.81 : 114.18
Chloroform	TM116	**106.0** 87.40 : 122.49
Chloromethane	TM116	**92.4** 65.89 : 136.93
Cis-1,2-Dichloroethene	TM116	**105.4** 80.67 : 126.72
Dibromomethane	TM116	**101.0** 73.23 : 118.35
Dichloromethane	TM116	**114.8** 81.11 : 133.25
Ethylbenzene	TM116	**98.8** 75.92 : 110.41
Hexachlorobutadiene	TM116	**95.8** 12.82 : 152.73
Isopropylbenzene	TM116	**100.8** 54.30 : 105.91
Naphthalene	TM116	**112.4** 80.86 : 128.81
o-Xylene	TM116	**94.6** 69.99 : 108.74
p/m-Xylene	TM116	**96.1** 68.32 : 108.91
Sec-Butylbenzene	TM116	**104.6** 38.50 : 101.50
Tetrachloroethene	TM116	**110.4** 76.95 : 121.02
Toluene	TM116	**93.0** 74.24 : 107.42
Trichloroethene	TM116	**99.4** 85.28 : 109.36
Trichlorofluoromethane	TM116	**102.4** 81.46 : 120.52
Vinyl Chloride	TM116	**99.6** 68.02 : 143.37

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

Work Order	: **PR2152256**	Issue Date	: 16-Jun-2021
Customer	: **ALS Life Sciences Ltd**	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: [redacted]	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 210602-80	Page	: 1 of 2
Order number	: ----	Date Samples Received	: 04-Jun-2021
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 06-Jun-2021 - 16-Jun-2021
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories		*Position*
Zdeněk Jirák	[redacted]	Environmental Business Unit Manager

The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)

Analytical Results

Sub-Matrix: **SOIL**			Client sample ID	**24379543 BH18**		**----**		**----**	
			Laboratory sample ID	*PR2152256-001*		----		----	
			Client sampling date / time	02-Jun-2021 13:40		----		----	
Parameter	*Method*	*LOR*	*Unit*	**Result**	**MU**	**Result**	**MU**	**Result**	**MU**
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	**89.0**	± 6.0%	**----**	----	**----**	----
Pesticides									
2.4.5-T	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4.5-TP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-D	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
4-CPP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bentazone	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dinoseb	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Fluroxypyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPA	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Acifluorfen	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bromoxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
DNOC	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dicamba	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Diclofop	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Ioxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Propoxycarbazone-sodium	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclopyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclosan	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.
Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	*Method Descriptions*
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PESLMSA1	CZ_SOP_D06_03_182.B (CSN EN 15637, US EPA 1694) Determination of acidic herbicides and drug residues by liquid chromatography method with MS/MS detection.

A "*" symbol preceding any method indicates laboratory or subcontractor non-accredited test. If the UNICO-SUB code is stated in the method table, this only informs that the tests have been performed by a subcontractor and the results are given in an annex to the test report, including information on test accreditation. In the case when a procedure specified in an accredited method was used for non-accredited matrix, the reported results are non-accredited; please refer to information in General Comment section on the front page. If the report contains subcontracted analyses, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.
The calculation methods of summation parameters are available on request in the client service.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
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Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
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email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	16 June 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210603-58
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	602217

This report has been revised and directly supersedes 601698 in its entirety.

We received 9 samples on Thursday June 03, 2021 and 5 of these samples were scheduled for analysis which was completed on Wednesday June 16, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210603-58	**Client Reference:**	784-B026948	**Report Number:**	602217
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601698

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24383315	BH32	ES1	0.40	01/06/2021
24383326	BH32	ES2	1.00	01/06/2021
24383376	BH64	ES1	0.10	01/06/2021
24383391	BH64	ES2	1.00	01/06/2021
24383340	BH66	ES1	0.10	01/06/2021
24383357	BH66	ES2	1.00	01/06/2021
24383400	TP32	ES1	0.20	01/06/2021
24383411	TP32	ES2	0.70	01/06/2021
24383422	TP32	ES3	1.50	01/06/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	210603-58	**Client Reference:**	784-B026948	**Report Number:**	602217
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601698

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)																	
			24383315			24383326			24383340			24383357			24383411					
			Customer Sample Reference			BH32			BH32			BH66			BH66			TP32		
			AGS Reference			ES1			ES2			ES1			ES2			ES2		
			Depth (m)			0.40			1.00			0.10			1.00			0.70		
			Container	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)		
			Sample Type	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S		
Acid herbicides*	All	NDPs: 0 Tests: 1															X			
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 4		X			X			X							X			
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 4	X			X			X						X					
Ammonium Soil by Titration	All	NDPs: 0 Tests: 4		X			X			X							X			
Anions by Kone (soil)	All	NDPs: 0 Tests: 4		X			X			X							X			
Anions by Kone (w)	All	NDPs: 0 Tests: 1											X							
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 4	X			X			X						X					
Boron Water Soluble	All	NDPs: 0 Tests: 4		X			X			X							X			
CEN Readings	All	NDPs: 0 Tests: 5	X			X			X			X			X					
Coronene	All	NDPs: 0 Tests: 1												X						
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 8	X	X		X	X		X	X					X	X				
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 5	X			X			X			X			X					
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1											X							
EPH	All	NDPs: 0 Tests: 4		X			X			X							X			
EPH by GCxGC-FID	All	NDPs: 0 Tests: 5		X			X			X			X				X			

Validated

CERTIFICATE OF ANALYSIS

SDG:	210603-58	**Client Reference:**	784-B026948	**Report Number:**	602217
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601698

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24383315			24383326			24383340			24383357			24383411		
Customer Sample Reference			BH32			BH32			BH66			BH66			TP32		
AGS Reference			ES1			ES2			ES1			ES2			ES2		
Depth (m)			0.40			1.00			0.10			1.00			0.70		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
EPH CWG GC (S)	All	NDPs: 0 Tests: 4		X			X			X						X	
Fluoride	All	NDPs: 0 Tests: 1										X					
GRO by GC-FID (S)	All	NDPs: 0 Tests: 4			X			X			X						X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 4		X			X			X						X	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 4	X			X			X						X		
Mercury Dissolved	All	NDPs: 0 Tests: 5	X			X			X			X			X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 4		X			X			X						X	
OC OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 1														X	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1											X				
PAH by GCMS	All	NDPs: 0 Tests: 5		X			X			X			X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 1											X				
pH	All	NDPs: 0 Tests: 4		X			X			X						X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 4	X			X			X						X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 4		X			X			X						X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1										X					

Validated

CERTIFICATE OF ANALYSIS

SDG:	210603-58	**Client Reference:**	784-B026948	**Report Number:**	602217
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601698

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24383315			24383326			24383340			24383357			24383411					
Customer Sample Reference			BH32			BH32			BH66			BH66			TP32					
AGS Reference			ES1			ES2			ES1			ES2			ES2					
Depth (m)			0.40			1.00			0.10			1.00			0.70					
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)			
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S			
Sample description	All	NDPs: 0 Tests: 5		X			X			X			X			X				
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1		X																
Sulphide	All	NDPs: 0 Tests: 4	X			X			X						X					
Total Dissolved Solids	All	NDPs: 0 Tests: 1										X								
Total Organic Carbon	All	NDPs: 0 Tests: 5		X			X			X			X			X				
TPH CWG GC (S)	All	NDPs: 0 Tests: 4		X			X			X						X				
VOC MS (S)	All	NDPs: 0 Tests: 5			X			X			X			X			X			

CERTIFICATE OF ANALYSIS

SDG:	210603-58	**Client Reference:**	784-B026948	**Report Number:**	602217
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601698

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24383315	BH32	0.40	Light Brown	Stone/Soil	Stones	None
24383326	BH32	1.00	Dark Brown	Loamy Sand	Stones	None
24383340	BH66	0.10	Dark Brown	Sandy Clay Loam	Stones	None
24383357	BH66	1.00	Dark Brown	Silty Clay	Stones	None
24383411	TP32	0.70	Dark Brown	Sand	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210603-58	**Client Reference:**	784-B026948	**Report Number:**	602217
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601698

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH32	BH32	BH66	BH66	TP32
			Depth (m)	0.40	1.00	0.10	1.00	0.70
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	01/06/2021	01/06/2021	01/06/2021	01/06/2021	01/06/2021
			Sample Time	.	.	.	.	.
			Date Received	03/06/2021	03/06/2021	03/06/2021	03/06/2021	03/06/2021
			SDG Ref	210603-58	210603-58	210603-58	210603-58	210603-58
			Lab Sample No.(s)	24383315	24383326	24383340	24383357	24383411
			AGS Reference	ES1	ES2	ES1	ES2	ES2
Moisture Content Ratio (% of as received sample)	%	PM024		4.3	1.1	12	15	7.8
2,4,5-T*	<0.01 mg/kg	SUB						<0.01
2,4,5-TP (Fenoprop)*	<0.01 mg/kg	SUB						<0.01
2,4-D*	<0.01 mg/kg	SUB						<0.01
2,4-DB*	<0.01 mg/kg	SUB						<0.01
2,4-Dichloroprop (2,4 DP)*	<0.01 mg/kg	SUB						<0.01
4-Chlorophenoxyacetic acid (4-CPA)*	<0.01 mg/kg	SUB						<0.01
Acifluorfen*	<0.01 mg/kg	SUB						<0.01
Bentazone*	<0.01 mg/kg	SUB						<0.01
Bromoxynil*	<0.01 mg/kg	SUB						<0.01
Dicamba*	<0.01 mg/kg	SUB						<0.01
Diclofop*	<0.01 mg/kg	SUB						<0.01
Dinoseb*	<0.01 mg/kg	SUB						<0.01
DNOC*	<0.01 mg/kg	SUB						<0.01
Fluroxypyr*	<0.01 mg/kg	SUB						<0.01
Ioxynil*	<0.01 mg/kg	SUB						<0.01
2-methyl-4-Chlorophenoxyacetic acid (MCPA)*	<0.01 mg/kg	SUB						<0.01
4-(4-Chloro-o-tolyloxy) butyric acid (MCPB)*	<0.01 mg/kg	SUB						<0.01
Mecoprop (MCPP)*	<0.01 mg/kg	SUB						<0.01
Propoxycarbazone-sodium*	<0.01 mg/kg	SUB						<0.01
Triclopyr*	<0.01 mg/kg	SUB						<0.01
Triclosan*	<0.01 mg/kg	SUB						<0.01
Exchangeable Ammonia as N	<12 mg/kg	TM024		<12 #	<12 M	<12 M		<12 M
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 #	<0.01 M	<0.01 M		<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)		<0.01 #	<0.01 M	<0.01 M		<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)		<0.015 #	<0.015 M	<0.015 M		<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 #	<0.035 M	<0.035 M		<0.035 M
Organic Carbon, Total	<0.2 %	TM132					<0.2 M	
Soil Organic Matter (SOM)	<0.35 %	TM132		<0.35 #	<0.35 #	0.884 #		<0.35 #
pH	1 pH Units	TM133		9.83 #	8.87 M	7.58 M		8.17 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #		<0.6 #
Cyanide, Total	<1 mg/kg	TM153		<1 #	<1 M	<1 M		<1 M
PCB congener 28	<0.003 mg/kg	TM168					<0.003 M	

CERTIFICATE OF ANALYSIS

SDG:	210603-58	**Client Reference:**	784-B026948	**Report Number:**	602217
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601698

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH32	BH32	BH66	BH66	TP32
			Depth (m)	0.40	1.00	0.10	1.00	0.70
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	01/06/2021	01/06/2021	01/06/2021	01/06/2021	01/06/2021
			Sample Time	.	.	.	.	.
			Date Received	03/06/2021	03/06/2021	03/06/2021	03/06/2021	03/06/2021
			SDG Ref	210603-58	210603-58	210603-58	210603-58	210603-58
			Lab Sample No.(s)	24383315	24383326	24383340	24383357	24383411
			AGS Reference	ES1	ES2	ES1	ES2	ES2
PCB congener 52	<0.003 mg/kg	TM168					<0.003 M	
PCB congener 101	<0.003 mg/kg	TM168					<0.003 M	
PCB congener 118	<0.003 mg/kg	TM168					<0.003 M	
PCB congener 138	<0.003 mg/kg	TM168					<0.003 M	
PCB congener 153	<0.003 mg/kg	TM168					<0.003 M	
PCB congener 180	<0.003 mg/kg	TM168					<0.003 M	
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168					<0.021	
Arsenic	<0.6 mg/kg	TM181		<0.6 #	5.34 M	6.91 M		6.01 M
Cadmium	<0.02 mg/kg	TM181		0.267 #	0.163 M	0.451 M		0.254 M
Chromium	<0.9 mg/kg	TM181		1.2 #	<0.9 M	10.5 M		5.68 M
Copper	<1.4 mg/kg	TM181		3.57 #	5.35 M	15.8 M		9.01 M
Iron	<1000 mg/kg	TM181		2000 #	12000 #	20600 #		17200 #
Lead	<0.7 mg/kg	TM181		2.27 #	4.64 M	26.5 M		12.6 M
Mercury	<0.1 mg/kg	TM181		<0.1 #	<0.1 M	<0.1 M		<0.1 M
Nickel	<0.2 mg/kg	TM181		1.12 #	7.2 M	20 M		14.6 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #		<1 #
Vanadium	<0.2 mg/kg	TM181		2.22 #	6.68 #	22.3 #		14.7 #
Zinc	<1.9 mg/kg	TM181		34.2 #	36.9 M	76.5 M		40.6 M
Boron, water soluble	<1 mg/kg	TM222		<1 #	<1 M	<1 M		<1 M
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.0075 #	0.0075 M	<0.004 M		0.0274 M
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248		5	6.26	2.5		3.01
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410					<10	
Coronene	<0.2 mg/kg	TM410					<0.2	
EPH (C5-C40)	<35 mg/kg	TM415		<35	<35	<35		<35
EPH Surrogate % recovery**	%	TM415		103	102	103	95.5	93.5
EPH >C10-C40	<35 mg/kg	TM415		<35 #	<35 M	<35 M		<35 M
Mineral Oil >C10-C40	<5 mg/kg	TM415					<5	

CERTIFICATE OF ANALYSIS

SDG:	210603-58	**Client Reference:**	784-B026948	**Report Number:**	602217
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601698

OC OP Pesticides and Triazine Herb

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	TP32
Depth (m)	0.70
Sample Type	Soil/Solid (S)
Date Sampled	01/06/2021
Sample Time	.
Date Received	03/06/2021
SDG Ref	210603-58
Lab Sample No.(s)	24383411
AGS Reference	ES2

Component	LOD/Units	Method	
Dichlorvos	<0.05 mg/kg	TM073	<0.05
Mevinphos	<0.05 mg/kg	TM073	<0.05
Phorate	<0.05 mg/kg	TM073	<0.05
alpha-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073	<0.05
Diazinon	<0.05 mg/kg	TM073	<0.05
gamma-Hexachlorocyclohexane (HCH / Lindane)	<0.05 mg/kg	TM073	<0.05
Disulfoton	<0.05 mg/kg	TM073	<0.05
Heptachlor	<0.05 mg/kg	TM073	<0.05
Aldrin	<0.05 mg/kg	TM073	<0.05
beta-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073	<0.05
Methyl parathion	<0.05 mg/kg	TM073	<0.05
Malathion	<0.05 mg/kg	TM073	<0.05
Fenitrothion	<0.05 mg/kg	TM073	<0.05
Heptachlor epoxide	<0.05 mg/kg	TM073	<0.05
Parathion	<0.05 mg/kg	TM073	<0.05
Endosulphan I	<0.05 mg/kg	TM073	<0.05
p,p-DDE	<0.05 mg/kg	TM073	<0.05
Dieldrin	<0.05 mg/kg	TM073	<0.05
Endrin	<0.05 mg/kg	TM073	<0.05
p,p-TDE (DDD)	<0.05 mg/kg	TM073	<0.05
Ethion	<0.05 mg/kg	TM073	<0.05
Endosulphan II	<0.05 mg/kg	TM073	<0.05
p,p-DDT	<0.05 mg/kg	TM073	<0.1
p,p-Methoxychlor	<0.05 mg/kg	TM073	<0.05
Endosulphan sulphate	<0.05 mg/kg	TM073	<0.05
Azinphos-methyl	<0.05 mg/kg	TM073	<0.05

CERTIFICATE OF ANALYSIS

SDG:	210603-58	**Client Reference:**	784-B026948	**Report Number:**	602217
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601698

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH32	BH32	BH66	TP32		
			Depth (m)	0.40	1.00	0.10	0.70		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	01/06/2021	01/06/2021	01/06/2021	01/06/2021		
			Sample Time	.	.	.	.		
			Date Received	03/06/2021	03/06/2021	03/06/2021	03/06/2021		
			SDG Ref	210603-58	210603-58	210603-58	210603-58		
			Lab Sample No.(s)	24383315	24383326	24383340	24383411		
			AGS Reference	ES1	ES2	ES1	ES2		
Naphthalene-d8 % recovery**	%	TM218		85	90.9	85.6	89.1		
Acenaphthene-d10 % recovery**	%	TM218		85.4	89.3	85	87.9		
Phenanthrene-d10 % recovery**	%	TM218		86.9	91.5	85.5	89		
Chrysene-d12 % recovery**	%	TM218		79.4	82.6	74.9	79		
Perylene-d12 % recovery**	%	TM218		77.5	78.7	70	74.9		
Naphthalene	<0.009 mg/kg	TM218		<0.009 #	<0.009 M	<0.009 M	<0.009 M		
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 #	<0.012 M	<0.012 M	<0.012 M		
Acenaphthene	<0.008 mg/kg	TM218		<0.008 #	<0.008 M	<0.008 M	<0.008 M		
Fluorene	<0.01 mg/kg	TM218		<0.01 #	<0.01 M	<0.01 M	<0.01 M		
Phenanthrene	<0.015 mg/kg	TM218		<0.015 #	<0.015 M	<0.015 M	<0.015 M		
Anthracene	<0.016 mg/kg	TM218		<0.016 #	<0.016 M	<0.016 M	<0.016 M		
Fluoranthene	<0.017 mg/kg	TM218		<0.017 #	0.0239 M	<0.017 M	<0.017 M		
Pyrene	<0.015 mg/kg	TM218		<0.015 #	0.0225 M	<0.015 M	<0.015 M		
Benz(a)anthracene	<0.014 mg/kg	TM218		<0.014 #	0.0142 M	<0.014 M	<0.014 M		
Chrysene	<0.01 mg/kg	TM218		<0.01 #	0.0149 M	<0.01 M	<0.01 M		
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		<0.015 #	0.0194 M	<0.015 M	<0.015 M		
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		<0.014 #	<0.014 M	<0.014 M	<0.014 M		
Benzo(a)pyrene	<0.015 mg/kg	TM218		<0.015 #	<0.015 M	<0.015 M	<0.015 M		
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		<0.018 #	<0.018 M	<0.018 M	<0.018 M		
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 #	<0.023 M	<0.023 M	<0.023 M		
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		<0.024 #	<0.024 M	<0.024 M	<0.024 M		
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		<0.118	<0.118	<0.118	<0.118		

CERTIFICATE OF ANALYSIS

SDG:	210603-58	**Client Reference:**	784-B026948	**Report Number:**	602217
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601698

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH32
Depth (m)	0.40
Sample Type	Soil/Solid (S)
Date Sampled	01/06/2021
Sample Time	.
Date Received	03/06/2021
SDG Ref	210603-58
Lab Sample No.(s)	24383315
AGS Reference	ES1

Component	LOD/Units	Method	
Phenol	<0.1 mg/kg	TM157	<0.1
Pentachlorophenol	<0.1 mg/kg	TM157	<0.1
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157	<0.1
Nitrobenzene	<0.1 mg/kg	TM157	<0.1
Isophorone	<0.1 mg/kg	TM157	<0.1
Hexachloroethane	<0.1 mg/kg	TM157	<0.1
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157	<0.1
Hexachlorobutadiene	<0.1 mg/kg	TM157	<0.1
Hexachlorobenzene	<0.1 mg/kg	TM157	<0.1
n-Dioctyl phthalate	<0.1 mg/kg	TM157	<0.1
Dimethyl phthalate	<0.1 mg/kg	TM157	<0.1
Diethyl phthalate	<0.1 mg/kg	TM157	<0.1
n-Dibutyl phthalate	<0.1 mg/kg	TM157	<0.1
Dibenzofuran	<0.1 mg/kg	TM157	<0.1
Carbazole	<0.1 mg/kg	TM157	<0.1
Butylbenzyl phthalate	<0.1 mg/kg	TM157	<0.1
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157	<0.1
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157	<0.1
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157	<0.1
Azobenzene	<0.1 mg/kg	TM157	<0.1
4-Nitrophenol	<0.1 mg/kg	TM157	<0.5
4-Nitroaniline	<0.1 mg/kg	TM157	<0.5
4-Methylphenol	<0.1 mg/kg	TM157	<0.1
4-Chlorophenylphenylether	<0.1 mg/kg	TM157	<0.1
4-Chloroaniline	<0.1 mg/kg	TM157	<0.1
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157	<0.1
4-Bromophenylphenylether	<0.1 mg/kg	TM157	<0.1
3-Nitroaniline	<0.1 mg/kg	TM157	<0.1
2-Nitrophenol	<0.1 mg/kg	TM157	<0.1
2-Nitroaniline	<0.1 mg/kg	TM157	<0.1
2-Methylphenol	<0.1 mg/kg	TM157	<0.1
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157	<0.1
2-Chlorophenol	<0.1 mg/kg	TM157	<0.1

CERTIFICATE OF ANALYSIS

SDG:	210603-58	**Client Reference:**	784-B026948	**Report Number:**	602217
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601698

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BH32	0.40	Soil/Solid (S)	01/06/2021	.	03/06/2021	210603-58	24383315	ES1
2,6-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1								
2,4-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1								
2,4-Dimethylphenol	<0.1 mg/kg	TM157	<0.1								
2,4-Dichlorophenol	<0.1 mg/kg	TM157	<0.1								
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157	<0.1								
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157	<0.1								
1,4-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1								
1,3-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1								
1,2-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1								
2-Chloronaphthalene	<0.1 mg/kg	TM157	<0.1								
2-Methylnaphthalene	<0.1 mg/kg	TM157	<0.1								
Acenaphthylene	<0.1 mg/kg	TM157	<0.1								
Acenaphthene	<0.1 mg/kg	TM157	<0.1								
Anthracene	<0.1 mg/kg	TM157	<0.1								
Benzo(a)anthracene	<0.1 mg/kg	TM157	<0.1								
Benzo(b)fluoranthene	<0.1 mg/kg	TM157	<0.1								
Benzo(k)fluoranthene	<0.1 mg/kg	TM157	<0.1								
Benzo(a)pyrene	<0.1 mg/kg	TM157	<0.1								
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157	<0.1								
Chrysene	<0.1 mg/kg	TM157	<0.1								
Fluoranthene	<0.1 mg/kg	TM157	<0.1								
Fluorene	<0.1 mg/kg	TM157	<0.1								
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157	<0.1								
Phenanthrene	<0.1 mg/kg	TM157	<0.1								
Pyrene	<0.1 mg/kg	TM157	<0.1								
Naphthalene	<0.1 mg/kg	TM157	<0.1								
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157	<0.1								
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157	<0.1								

Validated

CERTIFICATE OF ANALYSIS

SDG:	210603-58	**Client Reference:**	784-B026948	**Report Number:**	602217
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601698

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH32	BH32	BH66	TP32		
			Depth (m)	0.40	1.00	0.10	0.70		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	01/06/2021	01/06/2021	01/06/2021	01/06/2021		
			Sample Time	.	.	.	.		
			Date Received	03/06/2021	03/06/2021	03/06/2021	03/06/2021		
			SDG Ref	210603-58	210603-58	210603-58	210603-58		
			Lab Sample No.(s)	24383315	24383326	24383340	24383411		
			AGS Reference	ES1	ES2	ES1	ES2		
GRO Surrogate % recovery**	%	TM089		96.3	97.4	109	95		
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01		
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01		
Aliphatics >C8-C10	<0.01 mg/kg	TM089		0.0105	<0.01	<0.01	<0.01		
Aliphatics >C10-C12	<1 mg/kg	TM414		<1	<1	<1	<1		
Aliphatics >C12-C16	<1 mg/kg	TM414		<1	<1	<1	<1		
Aliphatics >C16-C21	<1 mg/kg	TM414		<1	<1	<1	<1		
Aliphatics >C21-C35	<1 mg/kg	TM414		<1	<1	<1	<1		
Aliphatics >C35-C44	<1 mg/kg	TM414		<1	<1	<1	<1		
Total Aliphatics >C10-C44	<5 mg/kg	TM414		<5	<5	<5	<5		
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		<10	<10	<10	<10		
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01		
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01		
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01		
Aromatics > EC10-EC12	<1 mg/kg	TM414		<1	<1	<1	<1		
Aromatics > EC12-EC16	<1 mg/kg	TM414		<1	<1	<1	<1		
Aromatics > EC16-EC21	<1 mg/kg	TM414		<1	<1	<1	<1		
Aromatics > EC21-EC35	<1 mg/kg	TM414		3.61	<1	<1	<1		
Aromatics >EC35-EC44	<1 mg/kg	TM414		<1	<1	<1	<1		
Aromatics > EC40-EC44	<1 mg/kg	TM414		<1	<1	<1	<1		
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		<5	<5	<5	<5		
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		<10	<10	<10	<10		
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		<0.05	<0.05	<0.05	<0.05		
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		<0.05	<0.05	<0.05	<0.05		
GRO >C5-C10	<0.02 mg/kg	TM089		<0.02	<0.02	<0.02	<0.02		

CERTIFICATE OF ANALYSIS

SDG:	210603-58	**Client Reference:**	784-B026948	**Report Number:**	602217
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601698

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH32	BH32	BH66	BH66	TP32
			Depth (m)	0.40	1.00	0.10	1.00	0.70
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	01/06/2021	01/06/2021	01/06/2021	01/06/2021	01/06/2021
			Sample Time	.	.	.	.	.
			Date Received	03/06/2021	03/06/2021	03/06/2021	03/06/2021	03/06/2021
			SDG Ref	210603-58	210603-58	210603-58	210603-58	210603-58
			Lab Sample No.(s)	24383315	24383326	24383340	24383357	24383411
			AGS Reference	ES1	ES2	ES1	ES2	ES2
Dibromofluoromethane**	%	TM116		117	108	110	115	108
Toluene-d8**	%	TM116		101	97.6	98.5	97.5	98.3
4-Bromofluorobenzene**	%	TM116		93.7	97.2	103	94.7	98.7
Dichlorodifluoromethane	<0.006 mg/kg	TM116		<0.12 #				
Chloromethane	<0.007 mg/kg	TM116		<0.14 #				
Vinyl Chloride	<0.006 mg/kg	TM116		<0.12 #				
Bromomethane	<0.01 mg/kg	TM116		<0.2 #				
Chloroethane	<0.01 mg/kg	TM116		<0.2 #				
Trichlorofluorormethane	<0.006 mg/kg	TM116		<0.12 #				
1,1-Dichloroethene	<0.01 mg/kg	TM116		<0.2 #				
Carbon Disulphide	<0.007 mg/kg	TM116		<0.14 #				
Dichloromethane	<0.01 mg/kg	TM116		<0.2 #				
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 #	<0.2 M	<0.2 M	<0.2 M	<0.2 M
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116		<0.2 #				
1,1-Dichloroethane	<0.008 mg/kg	TM116		<0.16 #				
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116		<0.12 #				
2,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2				
Bromochloromethane	<0.01 mg/kg	TM116		<0.2 #				
Chloroform	<0.008 mg/kg	TM116		<0.16 #				
1,1,1-Trichloroethane	<0.007 mg/kg	TM116		<0.14 #				
1,1-Dichloropropene	<0.01 mg/kg	TM116		<0.2 #				
Carbontetrachloride	<0.01 mg/kg	TM116		<0.2 #				
1,2-Dichloroethane	<0.005 mg/kg	TM116		<0.1 #				
Benzene	<0.009 mg/kg	TM116		<0.18 #	<0.18 M	<0.18 M	<0.18 M	<0.18 M
Trichloroethene	<0.009 mg/kg	TM116		<0.18 #				
1,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2 #				
Dibromomethane	<0.009 mg/kg	TM116		<0.18 #				
Bromodichloromethane	<0.007 mg/kg	TM116		<0.14 #				
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2 #				
Toluene	<0.007 mg/kg	TM116		<0.14 #	<0.14 M	<0.14 M	<0.14 M	<0.14 M
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2				
1,1,2-Trichloroethane	<0.01 mg/kg	TM116		<0.2 #				
1,3-Dichloropropane	<0.007 mg/kg	TM116		<0.14 #				

CERTIFICATE OF ANALYSIS

SDG:	210603-58	**Client Reference:**	784-B026948	**Report Number:**	602217
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601698

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH32	BH32	BH66	BH66	TP32
			Depth (m)	0.40	1.00	0.10	1.00	0.70
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	01/06/2021	01/06/2021	01/06/2021	01/06/2021	01/06/2021
			Sample Time	.	.	.	.	.
			Date Received	03/06/2021	03/06/2021	03/06/2021	03/06/2021	03/06/2021
			SDG Ref	210603-58	210603-58	210603-58	210603-58	210603-58
			Lab Sample No.(s)	24383315	24383326	24383340	24383357	24383411
			AGS Reference	ES1	ES2	ES1	ES2	ES2
Tetrachloroethene	<0.005 mg/kg	TM116		<0.1 #				
Dibromochloromethane	<0.01 mg/kg	TM116		<0.2 #				
1,2-Dibromoethane	<0.01 mg/kg	TM116		<0.2 #				
Chlorobenzene	<0.005 mg/kg	TM116		<0.1 #				
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 #				
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 #	<0.08 M	<0.08 M	<0.08 M	<0.08 M
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #	<0.2 #	<0.2 #	<0.2 #
o-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 M	<0.2 M	<0.2 M	<0.2 M
Styrene	<0.01 mg/kg	TM116		<0.2 #				
Bromoform	<0.01 mg/kg	TM116		<0.2 #				
Isopropylbenzene	<0.005 mg/kg	TM116		<0.1 #				
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 #				
1,2,3-Trichloropropane	<0.016 mg/kg	TM116		<0.32 #				
Bromobenzene	<0.01 mg/kg	TM116		<0.2 #				
Propylbenzene	<0.01 mg/kg	TM116		<0.2 #				
2-Chlorotoluene	<0.009 mg/kg	TM116		<0.18 #				
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116		<0.16 #				
4-Chlorotoluene	<0.01 mg/kg	TM116		<0.2 #				
tert-Butylbenzene	<0.014 mg/kg	TM116		<0.28 #				
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116		<0.18 #				
sec-Butylbenzene	<0.01 mg/kg	TM116		<0.2				
4-Isopropyltoluene	<0.01 mg/kg	TM116		<0.2 #				
1,3-Dichlorobenzene	<0.008 mg/kg	TM116		<0.16 #				
1,4-Dichlorobenzene	<0.005 mg/kg	TM116		<0.1 #				
n-Butylbenzene	<0.011 mg/kg	TM116		<0.22				
1,2-Dichlorobenzene	<0.01 mg/kg	TM116		<0.2 #				
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116		<0.28 #				
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.2 #				
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4				
Hexachlorobutadiene	<0.02 mg/kg	TM116		<0.4				
Naphthalene	<0.013 mg/kg	TM116		<0.26 #				
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4 #				
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210603-58	**Client Reference:**	784-B026948	**Report Number:**	602217
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601698

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH32	BH32	BH66	BH66	TP32
			Depth (m)	0.40	1.00	0.10	1.00	0.70
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	01/06/2021	01/06/2021	01/06/2021	01/06/2021	01/06/2021
			Sample Time	.	.	.	.	.
			Date Received	03/06/2021	03/06/2021	03/06/2021	03/06/2021	03/06/2021
			SDG Ref	210603-58	210603-58	210603-58	210603-58	210603-58
			Lab Sample No.(s)	24383315	24383326	24383340	24383357	24383411
			AGS Reference	ES1	ES2	ES1	ES2	ES2
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4	<0.4	<0.4		<0.4
Sum of BTEX	<0.04 mg/kg	TM116		<0.8	<0.8	<0.8		<0.8

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CERTIFICATE OF ANALYSIS

SDG:	210603-58	**Client Reference:**	784-B026948	**Report Number:**	602217
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601698

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH32ES1 0.40 SOLID 01/06/2021 00:00:00 03/06/2021 05:00:00 210603-58 24383315 TM048	04.06.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH32ES2 1.00 SOLID 01/06/2021 00:00:00 03/06/2021 05:00:00 210603-58 24383326 TM048	04.06.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH66ES1 0.10 SOLID 01/06/2021 00:00:00 03/06/2021 05:00:00 210603-58 24383340 TM048	04/06/2021	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP32ES2 0.70 SOLID 01/06/2021 00:00:00 03/06/2021 05:00:00 210603-58 24383411 TM048	04/06/2021	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG:	210603-58	**Client Reference:**	784-B026948	**Report Number:**	602217
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601698

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.108	**Natural Moisture Content (%)**	20.6
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	82.9
Particle Size <4mm	>95%		

Case	
SDG	210603-58
Lab Sample Number(s)	24383357
Sampled Date	01-Jun-2021
Customer Sample Ref.	BH66 ES2
Depth (m)	1.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	-	-	-	-
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	-	-	-	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	**C_2 Conc^n in 10:1 eluate (mg/l)**		**A_2 10:1 conc^n leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00171	<0.0005	0.0171	<0.005	0.5	2	25
Barium	0.01	<0.0002	0.1	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	<0.0003	<0.0003	<0.003	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000738	<0.0004	0.00738	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00185	<0.001	0.0185	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	63	<5	630	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	5.85	<3	58.5	<30	500	800	1000

Leach Test Information

Date Prepared	04-Jun-2021
pH (pH Units)	7.87
Conductivity (µS/cm)	91.80
Temperature (°C)	16.30
Volume Leachant (Litres)	0.882

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation

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CERTIFICATE OF ANALYSIS

SDG:	210603-58	**Client Reference:**	784-B026948	**Report Number:**	602217
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601698

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.099	**Natural Moisture Content (%)**	10
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	90.9
Particle Size <4mm	>95%		

Case	
SDG	210603-58
Lab Sample Number(s)	24383315
Sampled Date	01-Jun-2021
Customer Sample Ref.	BH32 ES1
Depth (m)	0.40

Eluate Analysis	**C_2 Conc^n in 10:1 eluate (mg/l)**		**A_2 10:1 conc^n leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Boron	<0.01	<0.01	<0.1	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.19	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0374	<0.001	0.374	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	04-Jun-2021
pH (pH Units)	9.87
Conductivity (µS/cm)	127.00
Temperature (°C)	20.50
Volume Leachant (Litres)	0.891

CERTIFICATE OF ANALYSIS

SDG:	210603-58	**Client Reference:**	784-B026948	**Report Number:**	602217
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601698

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.093	**Natural Moisture Content (%)**	3.81
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	96.3
Particle Size <4mm	>95%		

Case	
SDG	210603-58
Lab Sample Number(s)	24383326
Sampled Date	01-Jun-2021
Customer Sample Ref.	BH32 ES2
Depth (m)	1.00

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.000806	<0.0005	0.00806	<0.005	-	-	-
Boron	0.0525	<0.01	0.525	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.35	<0.019	3.5	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00139	<0.001	0.0139	<0.01	-	-	-
Sulphide	0.0717	<0.01	0.717	<0.1	-	-	-

Leach Test Information

Date Prepared	04-Jun-2021
pH (pH Units)	8.97
Conductivity (µS/cm)	87.00
Temperature (°C)	20.00
Volume Leachant (Litres)	0.897

CERTIFICATE OF ANALYSIS

SDG:	210603-58	**Client Reference:**	784-B026948	**Report Number:**	602217
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601698

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.102	**Natural Moisture Content (%)**	14.2
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	87.6
Particle Size <4mm	>95%		

Case	
SDG	210603-58
Lab Sample Number(s)	24383340
Sampled Date	01-Jun-2021
Customer Sample Ref.	BH66 ES1
Depth (m)	0.10

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.000583	<0.0005	0.00583	<0.005	-	-	-
Boron	0.0268	<0.01	0.268	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.123	<0.019	1.23	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	0.000551	<0.0004	0.00551	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00497	<0.001	0.0497	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	04-Jun-2021
pH (pH Units)	6.25
Conductivity (µS/cm)	12.30
Temperature (°C)	14.20
Volume Leachant (Litres)	0.888

CERTIFICATE OF ANALYSIS

SDG:	210603-58	**Client Reference:**	784-B026948	**Report Number:**	602217
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601698

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.099	**Natural Moisture Content (%)**	9.73
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	91.1
Particle Size <4mm	>95%		

Case	
SDG	210603-58
Lab Sample Number(s)	24383411
Sampled Date	01-Jun-2021
Customer Sample Ref.	TP32 ES2
Depth (m)	0.70

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Boron	0.0105	<0.01	0.105	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.000532	<0.0003	0.00532	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.247	<0.019	2.47	<0.19	-	-	-
Lead	0.000266	<0.0002	0.00266	<0.002	-	-	-
Nickel	0.000911	<0.0004	0.00911	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00171	<0.001	0.0171	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	04-Jun-2021
pH (pH Units)	8.93
Conductivity (µS/cm)	14.20
Temperature (°C)	13.50
Volume Leachant (Litres)	0.891

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210603-58	**Client Reference:**	784-B026948	**Report Number:**	602217
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Test Completion Dates

Lab Sample No(s)	24383315	24383326	24383340	24383357	24383411
Customer Sample Ref.	BH32	BH32	BH66	BH66	TP32
AGS Ref.	ES1	ES2	ES1	ES2	ES2
Depth	0.40	1.00	0.10	1.00	0.70
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Acid herbicides*					16-Jun-2021
Ammoniacal N as NH4 in 2:1 extract	09-Jun-2021	07-Jun-2021	07-Jun-2021		09-Jun-2021
Ammoniacal Nitrogen	08-Jun-2021	09-Jun-2021	09-Jun-2021		09-Jun-2021
Ammonium Soil by Titration	08-Jun-2021	08-Jun-2021	08-Jun-2021		08-Jun-2021
Anions by Kone (soil)	08-Jun-2021	08-Jun-2021	08-Jun-2021		08-Jun-2021
Anions by Kone (w)				09-Jun-2021	
Asbestos ID in Solid Samples	04-Jun-2021	04-Jun-2021	04-Jun-2021		04-Jun-2021
Boron Water Soluble	08-Jun-2021	08-Jun-2021	08-Jun-2021		08-Jun-2021
CEN 10:1 Leachate (1 Stage)	04-Jun-2021	04-Jun-2021	06-Jun-2021	06-Jun-2021	06-Jun-2021
CEN Readings	05-Jun-2021	05-Jun-2021	07-Jun-2021	07-Jun-2021	07-Jun-2021
Coronene				08-Jun-2021	
Cyanide Comp/Free/Total/Thiocyanate	09-Jun-2021	09-Jun-2021	09-Jun-2021		09-Jun-2021
Dissolved Metals by ICP-MS	07-Jun-2021	07-Jun-2021	08-Jun-2021	08-Jun-2021	08-Jun-2021
Dissolved Organic/Inorganic Carbon				12-Jun-2021	
EPH	07-Jun-2021	07-Jun-2021	07-Jun-2021		07-Jun-2021
EPH by GCxGC-FID	07-Jun-2021	07-Jun-2021	07-Jun-2021	07-Jun-2021	04-Jun-2021
EPH CWG GC (S)	07-Jun-2021	07-Jun-2021	07-Jun-2021		07-Jun-2021
Fluoride				08-Jun-2021	
GRO by GC-FID (S)	07-Jun-2021	07-Jun-2021	07-Jun-2021		07-Jun-2021
Hexavalent Chromium (s)	08-Jun-2021	08-Jun-2021	08-Jun-2021		08-Jun-2021
Hexavalent Chromium (w)	08-Jun-2021	08-Jun-2021	08-Jun-2021		08-Jun-2021
Mercury Dissolved	08-Jun-2021	09-Jun-2021	09-Jun-2021	09-Jun-2021	09-Jun-2021
Metals in solid samples by OES	09-Jun-2021	08-Jun-2021	08-Jun-2021		08-Jun-2021
Moisture at 105C	04-Jun-2021	04-Jun-2021	04-Jun-2021	04-Jun-2021	04-Jun-2021
OC OP Pesticides and Triazine Herb					10-Jun-2021
PAH 16 & 17 Calc				10-Jun-2021	
PAH by GCMS	07-Jun-2021	07-Jun-2021	07-Jun-2021	10-Jun-2021	07-Jun-2021
PCBs by GCMS				07-Jun-2021	
pH	09-Jun-2021	09-Jun-2021	09-Jun-2021		09-Jun-2021
pH Value of Filtered Water	07-Jun-2021	07-Jun-2021	08-Jun-2021		08-Jun-2021
Phenols by HPLC (S)	10-Jun-2021	10-Jun-2021	10-Jun-2021		10-Jun-2021
Phenols by HPLC (W)				09-Jun-2021	
Sample description	03-Jun-2021	03-Jun-2021	03-Jun-2021	03-Jun-2021	03-Jun-2021
Semi Volatile Organic Compounds	07-Jun-2021				
Sulphide	08-Jun-2021	08-Jun-2021	08-Jun-2021		08-Jun-2021
Total Dissolved Solids				09-Jun-2021	
Total Organic Carbon	07-Jun-2021	08-Jun-2021	08-Jun-2021	07-Jun-2021	08-Jun-2021
TPH CWG GC (S)	07-Jun-2021	07-Jun-2021	07-Jun-2021		07-Jun-2021
VOC MS (S)	07-Jun-2021	07-Jun-2021	07-Jun-2021	07-Jun-2021	07-Jun-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2474	QC 2495
Ammoniacal Nitrogen as N	TM099	**100.4** 88.02 : 104.70	**101.2** 88.02 : 104.70

Ammonium Soil by Titration

Component	Method Code	QC 2487
Exchangeable Ammonium as NH4	TM024	**90.05** 74.04 : 103.44

Anions by Kone (w)

Component	Method Code	QC 2460
Chloride	TM184	**105.0** 92.93 : 115.43
Sulphate (soluble)	TM184	**98.4** 90.53 : 113.03

Boron Water Soluble

Component	Method Code	QC 2463	QC 2457
Water Soluble Boron	TM222	**98.5** 84.00 : 111.00	**94.0** 84.00 : 111.00

Coronene

Component	Method Code	QC 2415
Coronene RAW	TM410	**126.0** 79.43 : 137.78

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2460	QC 2495	QC 2433	QC 2440
Free Cyanide	TM153	**92.87** 78.00 : 114.00	**94.06** 78.00 : 114.00		
Free Cyanide (W)	TM227			**84.5** 90.67 : 122.67	**83.25** 90.67 : 122.67
Thiocyanate	TM153	**94.23** 94.53 : 113.33	**96.79** 94.53 : 113.33		

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Cyanide Comp/Free/Total/Thiocyanate

		QC 2460	QC 2495	QC 2433	QC 2440
Thiocyanate (W)	TM227			**109.75** 92.25 : 117.75	**108.0** 92.25 : 117.75
Total Cyanide	TM153	**100.7** 77.13 : 111.53	**100.0** 77.13 : 111.53		
Total Cyanide (W)	TM227			**104.75** 88.75 : 111.25	**102.5** 88.75 : 111.25

Dissolved Metals by ICP-MS

Component	Method Code	QC 2458	QC 2432	QC 2444
Aluminium	TM152	**105.0** 94.21 : 111.52	**110.0** 94.21 : 111.52	**107.0** 94.21 : 111.52
Antimony	TM152	**102.17** 88.37 : 130.57	**109.5** 88.37 : 130.57	**105.67** 88.37 : 130.57
Arsenic	TM152	**101.5** 92.62 : 113.52	**111.0** 92.62 : 113.52	**104.0** 92.62 : 113.52
Barium	TM152	**100.83** 88.62 : 113.14	**110.0** 88.62 : 113.14	**106.67** 88.62 : 113.14
Beryllium	TM152	**103.17** 87.08 : 111.38	**109.0** 87.08 : 111.38	**105.67** 87.08 : 111.38
Bismuth	TM152	**101.33** 92.62 : 115.02	**108.67** 92.62 : 115.02	**105.17** 92.62 : 115.02
Boron	TM152	**109.0** 86.31 : 120.88	**110.33** 86.31 : 120.88	**107.67** 86.31 : 120.88
Cadmium	TM152	**104.0** 93.85 : 111.65	**108.0** 93.85 : 111.65	**104.0** 93.85 : 111.65
Calcium	TM152	**102.67** 89.20 : 126.91	**112.0** 89.20 : 126.91	**106.0** 89.20 : 126.91
Chromium	TM152	**102.0** 92.50 : 113.03	**108.5** 92.50 : 113.03	**101.33** 92.50 : 113.03
Cobalt	TM152	**102.0** 85.01 : 114.87	**108.33** 85.01 : 114.87	**102.5** 85.01 : 114.87
Copper	TM152	**102.67** 89.87 : 119.73	**108.5** 89.87 : 119.73	**102.83** 89.87 : 119.73
Iron	TM152	**103.33** 93.02 : 113.86	**108.67** 93.02 : 113.86	**103.33** 93.02 : 113.86
Lead	TM152	**101.0** 91.11 : 116.98	**111.83** 91.11 : 116.98	**107.83** 91.11 : 116.98
Lithium	TM152	**104.83** 87.70 : 115.90	**108.83** 87.70 : 115.90	**105.0** 87.70 : 115.90
Magnesium	TM152	**102.67** 89.60 : 116.61	**110.0** 89.60 : 116.61	**103.33** 89.60 : 116.61
Manganese	TM152	**104.67** 93.97 : 112.46	**110.33** 93.97 : 112.46	**105.0** 93.97 : 112.46
Molybdenum	TM152	**100.33** 89.07 : 110.96	**104.17** 89.07 : 110.96	**99.83** 89.07 : 110.96
Nickel	TM152	**102.67** 93.70 : 112.15	**108.33** 93.70 : 112.15	**103.17** 93.70 : 112.15
Phosphorus	TM152	**103.67** 89.24 : 114.18	**112.83** 89.24 : 114.18	**107.5** 89.24 : 114.18
Potassium	TM152	**103.33** 93.20 : 115.55	**112.67** 93.20 : 115.55	**106.67** 93.20 : 115.55
Selenium	TM152	**106.0** 91.69 : 117.12	**110.33** 91.69 : 117.12	**109.83** 91.69 : 117.12

CERTIFICATE OF ANALYSIS

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Dissolved Metals by ICP-MS

		QC 2458	QC 2432	QC 2444
Silver	TM152	**101.17** 90.93 : 121.73	**107.33** 90.93 : 121.73	**103.17** 90.93 : 121.73
Sodium	TM152	**102.0** 92.42 : 113.24	**110.67** 92.42 : 113.24	**102.67** 92.42 : 113.24
Strontium	TM152	**103.67** 92.14 : 116.24	**108.67** 92.14 : 116.24	**106.0** 92.14 : 116.24
Tellurium	TM152	**102.17** 89.88 : 111.78	**108.5** 89.88 : 111.78	**104.83** 89.88 : 111.78
Thallium	TM152	**91.33** 82.43 : 113.83	**97.67** 82.43 : 113.83	**95.0** 82.43 : 113.83
Tin	TM152	**103.17** 94.62 : 107.79	**108.33** 94.62 : 107.79	**105.33** 94.62 : 107.79
Titanium	TM152	**101.17** 90.29 : 115.23	**108.33** 90.29 : 115.23	**108.17** 90.29 : 115.23
Tungsten	TM152	**101.17** 77.61 : 132.31	**106.0** 77.61 : 132.31	**103.33** 77.61 : 132.31
Uranium	TM152	**99.33** 86.97 : 115.76	**106.17** 86.97 : 115.76	**102.5** 86.97 : 115.76
Vanadium	TM152	**100.5** 89.61 : 115.48	**107.5** 89.61 : 115.48	**96.83** 89.61 : 115.48
Zinc	TM152	**103.33** 87.51 : 116.26	**109.67** 87.51 : 116.26	**103.33** 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2421
Dissolved Inorganic Carbon	TM090	**109.0** 93.58 : 112.28
Dissolved Organic Carbon	TM090	**102.0** 96.13 : 109.53

Fluoride

Component	Method Code	QC 2447
Fluoride	TM104	**104.67** 96.67 : 108.67

GRO by GC-FID (S)

Component	Method Code	QC 2468
QC	TM089	**84.88** 68.78 : 110.61

Hexavalent Chromium (s)

Hexavalent Chromium (s)

Component	Method Code	QC 2449	QC 2484	QC 2421
Hexavalent Chromium	TM151	**96.0** 91.40 : 115.40	**106.0** 91.40 : 115.40	**112.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2460	QC 2454	QC 2489
Hexavalent Chromium	TM241	**103.8** 94.17 : 106.17	**102.0** 94.17 : 106.17	**101.4** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2445	QC 2474	QC 2422
Mercury Dissolved (CVAF)	TM183	**83.8** 69.30 : 128.70	**89.4** 69.30 : 128.70	**96.5** 69.30 : 128.70

Metals in solid samples by OES

Component	Method Code	QC 2474	QC 2426
Aluminium	TM181	**95.58** 73.56 : 108.85	**96.46** 73.56 : 108.85
Antimony	TM181	**97.56** 76.89 : 111.24	**94.31** 76.89 : 111.24
Arsenic	TM181	**103.2** 88.53 : 111.01	**97.67** 88.53 : 111.01
Barium	TM181	**100.0** 77.67 : 105.35	**97.25** 77.67 : 105.35
Beryllium	TM181	**102.99** 85.44 : 109.61	**98.51** 85.44 : 109.61
Boron	TM181	**96.56** 73.51 : 104.66	**91.12** 73.51 : 104.66
Cadmium	TM181	**97.53** 77.67 : 104.12	**90.95** 77.67 : 104.12
Chromium	TM181	**92.29** 79.64 : 105.83	**87.83** 79.64 : 105.83
Cobalt	TM181	**93.71** 84.60 : 104.13	**88.68** 84.60 : 104.13
Copper	TM181	**100.7** 82.40 : 105.45	**95.6** 82.40 : 105.45
Iron	TM181	**96.83** 82.95 : 110.58	**91.27** 82.95 : 110.58
Lead	TM181	**96.17** 78.24 : 104.05	**91.22** 78.24 : 104.05
Manganese	TM181	**110.0** 94.29 : 119.51	**104.17** 94.29 : 119.51

Metals in solid samples by OES

		QC 2474	QC 2426
Mercury	TM181	**96.86** 83.16 : 107.81	**93.0** 83.16 : 107.81
Molybdenum	TM181	**100.0** 87.11 : 106.87	**95.88** 87.11 : 106.87
Nickel	TM181	**95.35** 80.26 : 102.28	**90.71** 80.26 : 102.28
Phosphorus	TM181	**109.09** 94.56 : 124.28	**103.43** 94.56 : 124.28
Selenium	TM181	**103.14** 82.28 : 110.48	**98.82** 82.28 : 110.48
Strontium	TM181	**95.55** 79.13 : 102.79	**92.43** 79.13 : 102.79
Thallium	TM181	**94.25** 82.94 : 111.86	**92.04** 82.94 : 111.86
Tin	TM181	**104.56** 86.72 : 110.03	**98.86** 86.72 : 110.03
Titanium	TM181	**91.6** 66.23 : 102.06	**86.26** 66.23 : 102.06
Vanadium	TM181	**98.53** 86.19 : 109.45	**94.51** 86.19 : 109.45
Zinc	TM181	**103.49** 84.68 : 113.99	**98.97** 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2481	QC 2471
Acenaphthene	TM218	**95.0** 73.47 : 109.80	**88.0** 73.47 : 109.80
Acenaphthylene	TM218	**93.0** 70.00 : 130.00	**85.5** 70.00 : 130.00
Anthracene	TM218	**93.5** 68.68 : 111.89	**89.0** 68.68 : 111.89
Benz(a)anthracene	TM218	**93.5** 68.12 : 118.39	**88.5** 68.12 : 118.39
Benzo(a)pyrene	TM218	**90.5** 71.72 : 115.31	**81.5** 71.72 : 115.31
Benzo(b)fluoranthene	TM218	**84.5** 66.89 : 120.40	**89.5** 66.89 : 120.40
Benzo(ghi)perylene	TM218	**86.5** 67.82 : 118.49	**79.0** 67.82 : 118.49
Benzo(k)fluoranthene	TM218	**92.5** 73.10 : 117.03	**87.5** 73.10 : 117.03
Chrysene	TM218	**91.5** 69.58 : 115.47	**88.5** 69.58 : 115.47
Dibenzo(ah)anthracene	TM218	**89.0** 67.32 : 121.35	**78.0** 67.32 : 121.35
Fluoranthene	TM218	**99.5** 75.16 : 117.28	**87.5** 75.16 : 117.28
Fluorene	TM218	**95.0** 73.81 : 108.66	**85.0** 73.81 : 108.66
Indeno(123cd)pyrene	TM218	**89.5** 68.91 : 117.62	**78.0** 68.91 : 117.62
Naphthalene	TM218	**91.0** 72.12 : 106.18	**88.5** 72.12 : 106.18

PAH by GCMS

		QC 2481	QC 2471
Phenanthrene	TM218	**97.5** 69.01 : 113.72	**90.5** 69.01 : 113.72
Pyrene	TM218	**98.5** 64.28 : 115.75	**90.0** 64.28 : 115.75

PCBs by GCMS

Component	Method Code	QC 2428
PCB congener 101	TM168	**80.6** 65.66 : 110.06
PCB congener 105	TM168	**76.9** 58.10 : 106.34
PCB congener 114	TM168	**76.1** 59.38 : 106.48
PCB congener 118	TM168	**77.2** 60.02 : 106.23
PCB congener 123	TM168	**82.6** 65.01 : 99.81
PCB congener 126	TM168	**79.3** 59.31 : 109.23
PCB congener 138	TM168	**81.0** 63.95 : 107.63
PCB congener 153	TM168	**85.0** 62.65 : 108.85
PCB congener 156	TM168	**78.7** 61.69 : 112.27
PCB congener 157	TM168	**72.7** 55.37 : 104.81
PCB congener 167	TM168	**77.7** 65.58 : 109.14
PCB congener 169	TM168	**77.0** 56.84 : 112.10
PCB congener 180	TM168	**82.2** 66.99 : 111.63
PCB congener 189	TM168	**75.9** 57.75 : 112.59
PCB congener 28	TM168	**84.7** 73.68 : 105.96
PCB congener 52	TM168	**83.8** 67.24 : 107.62
PCB congener 77	TM168	**82.3** 64.87 : 108.49
PCB congener 81	TM168	**80.8** 70.78 : 110.80

pH

Component	Method Code	QC 2415
pH	TM133	**99.71** 98.09 : 101.62

pH Value of Filtered Water

Component	Method Code	QC 2453	QC 2449
pH	TM256	**100.94** 99.33 : 102.54	**100.27** 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2473
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**57.14** 69.38 : 125.27
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**50.29** 69.79 : 122.84
Cresols by HPLC (S)	TM062 (S)	**53.86** 77.98 : 111.41
Phenol by HPLC (S)	TM062 (S)	**55.63** 67.94 : 117.69
Xylenols by HPLC (S)	TM062 (S)	**53.85** 88.23 : 104.42

Phenols by HPLC (W)

Component	Method Code	QC 2435
2.3.5 Trimethyl-Phenol by HPLC (W)	TM259	**109.38** 77.41 : 127.55
2-Isopropyl Phenol by HPLC (W)	TM259	**103.25** 82.77 : 126.51
Cresols by HPLC (W)	TM259	**111.84** 76.60 : 126.28
Napthol by HPLC (W)	TM259	**105.47** 75.40 : 129.40
Phenol by HPLC (W)	TM259	**105.86** 85.77 : 125.91
Xylenols by HPLC (W)	TM259	**108.23** 79.09 : 131.82

Semi Volatile Organic Compounds

Component	Method Code	QC 2417
4-Bromophenylphenylether (Soil)	TM157	**92.0** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**96.0** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**93.5** 68.25 : 126.75
Naphthalene (Soil)	TM157	**92.0** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**87.5** 66.50 : 123.50
Phenol (Soil)	TM157	**94.5** 69.92 : 114.02

Sulphide

Sulphide

Component	Method Code	QC 2411	QC 2475
Sulphide	TM101	**98.0** 88.90 : 112.50	**100.0** 88.90 : 112.50

Total Dissolved Solids

Component	Method Code	QC 2482
Total Dissolved Solids	TM123	**97.9** 97.30 : 100.92

Total Organic Carbon

Component	Method Code	QC 2470	QC 2472
Total Organic Carbon	TM132	**98.05** 87.02 : 113.45	**109.77** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2427
1,1,1,2-tetrachloroethane	TM116	**111.4** 88.29 : 116.31
1,1,1-Trichloroethane	TM116	**111.4** 88.34 : 114.50
1,1,2-Trichloroethane	TM116	**95.0** 81.29 : 113.79
1,1-Dichloroethane	TM116	**108.2** 86.77 : 122.11
1,2-Dichloroethane	TM116	**115.4** 90.04 : 132.28
1,4-Dichlorobenzene	TM116	**106.8** 80.81 : 125.07
2-Chlorotoluene	TM116	**96.6** 73.13 : 114.13
4-Chlorotoluene	TM116	**93.6** 68.66 : 109.13
Benzene	TM116	**102.4** 84.29 : 112.22
Carbon Disulphide	TM116	**97.4** 75.11 : 124.81
Carbontetrachloride	TM116	**103.2** 82.35 : 126.46
Chlorobenzene	TM116	**105.0** 82.88 : 122.42
Chloroform	TM116	**106.8** 90.35 : 120.38

VOC MS (S)

		QC 2427
Chloromethane	TM116	**91.8** 67.89 : 143.51
Cis-1,2-Dichloroethene	TM116	**103.8** 78.27 : 128.90
Dibromomethane	TM116	**97.4** 76.00 : 120.73
Dichloromethane	TM116	**116.0** 92.27 : 134.36
Ethylbenzene	TM116	**93.0** 70.95 : 113.07
Hexachlorobutadiene	TM116	**90.0** 14.55 : 147.92
Isopropylbenzene	TM116	**83.2** 52.00 : 108.19
Naphthalene	TM116	**109.4** 80.29 : 135.77
o-Xylene	TM116	**87.6** 68.34 : 101.99
p/m-Xylene	TM116	**88.6** 69.47 : 97.31
Sec-Butylbenzene	TM116	**78.6** 27.03 : 135.73
Tetrachloroethene	TM116	**113.4** 81.43 : 126.65
Toluene	TM116	**87.2** 82.44 : 103.50
Trichloroethene	TM116	**96.6** 79.80 : 112.33
Trichlorofluoromethane	TM116	**105.0** 83.13 : 123.97
Vinyl Chloride	TM116	**96.2** 69.66 : 136.55

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

Work Order	: **PR2152262**	Issue Date	: 16-Jun-2021
Customer	: **ALS Life Sciences Ltd**	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: [redacted]	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 210603-58	Page	: 1 of 2
Order number	: ----	Date Samples Received	: 07-Jun-2021
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 07-Jun-2021 - 16-Jun-2021
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories		*Position*
Zdeněk Jirák	[redacted]	Environmental Business Unit Manager

The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)

Analytical Results

Sub-Matrix: **SOIL**			Client sample ID	**24386283 TP32**		**----**		**----**	
			Laboratory sample ID	*PR2152262-001*		----		----	
			Client sampling date / time	03-Jun-2021 11:52		----		----	
Parameter	*Method*	*LOR*	*Unit*	**Result**	**MU**	**Result**	**MU**	**Result**	**MU**
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	**91.8**	± 6.0%	**----**	----	**----**	----
Pesticides									
2.4.5-T	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4.5-TP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-D	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
4-CPP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bentazone	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dinoseb	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Fluroxypyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPA	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Acifluorfen	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bromoxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
DNOC	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dicamba	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Diclofop	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Ioxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Propoxycarbazone-sodium	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclopyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclosan	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.
Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	*Method Descriptions*
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PESLMSA1	CZ_SOP_D06_03_182.B (CSN EN 15637, US EPA 1694) Determination of acidic herbicides and drug residues by liquid chromatography method with MS/MS detection.

A "*" symbol preceding any method indicates laboratory or subcontractor non-accredited test. If the UNICO-SUB code is stated in the method table, this only informs that the tests have been performed by a subcontractor and the results are given in an annex to the test report, including information on test accreditation. In the case when a procedure specified in an accredited method was used for non-accredited matrix, the reported results are non-accredited; please refer to information in General Comment section on the front page. If the report contains subcontracted analyses, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.
The calculation methods of summation parameters are available on request in the client service.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	16 June 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210603-83
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	602218

We received 11 samples on Friday May 28, 2021 and 5 of these samples were scheduled for analysis which was completed on Wednesday June 16, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210603-83	**Client Reference:**	784-B026948	**Report Number:**	602218
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24385205	BH34	ES1	0.40	26/05/2021
24385213	BH34	ES2	0.90	26/05/2021
24385220	BH46	ES1	0.05	26/05/2021
24385140	BH46	ES2	0.60	26/05/2021
24385150	BH46	ES3	1.20	26/05/2021
24385134	BH63	ES1	0.10	26/05/2021
24385161	BH63	ES2	0.40	26/05/2021
24385169	BH63	ES3	1.30	26/05/2021
24385179	BH65	ES1	0.10	26/05/2021
24385189	BH65	ES2	0.40	26/05/2021
24385196	BH65	ES3	1.40	26/05/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	210603-83	**Client Reference:**	784-B026948	**Report Number:**	602218
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24385205			24385213			24385161			24385179			24385189					
Customer Sample Reference			BH34			BH34			BH63			BH65			BH65					
AGS Reference			ES1			ES2			ES2			ES1			ES2					
Depth (m)			0.40			0.90			0.40			0.10			0.40					
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)			
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S			
Acid herbicides*	All	NDPs: 0 Tests: 2								X			X							
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 4		X			X			X			X							
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 2	X			X														
Ammonium Soil by Titration	All	NDPs: 0 Tests: 4		X			X			X			X							
Anions by Kone (soil)	All	NDPs: 0 Tests: 4		X			X			X			X							
Anions by Kone (w)	All	NDPs: 0 Tests: 1													X					
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 4	X			X			X			X								
Boron Water Soluble	All	NDPs: 0 Tests: 4		X			X			X			X							
CEN Readings	All	NDPs: 0 Tests: 3	X			X									X					
Coronene	All	NDPs: 0 Tests: 1														X				
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 6	X	X		X	X			X			X							
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 3	X			X									X					
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1													X					
EPH	All	NDPs: 0 Tests: 4		X			X			X			X							
EPH by GCxGC-FID	All	NDPs: 0 Tests: 5		X			X			X			X			X					

Validated

CERTIFICATE OF ANALYSIS

SDG: 210603-83
Location: A46 Newark Northern Bypas
Client Reference: 784-B026948
Order Number: 7001649
Report Number: 602218
Superseded Report:

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

Lab Sample No(s)			24385205			24385213			24385161			24385179			24385189		
Customer Sample Reference			BH34			BH34			BH63			BH65			BH65		
AGS Reference			ES1			ES2			ES2			ES1			ES2		
Depth (m)			0.40			0.90			0.40			0.10			0.40		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
EPH CWG GC (S)	All	NDPs: 0 Tests: 4		X			X			X			X				
Fluoride	All	NDPs: 0 Tests: 1													X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 4			X			X			X			X			
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 4		X			X			X			X				
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 2	X			X											
Mercury Dissolved	All	NDPs: 0 Tests: 3	X			X									X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 4		X			X			X			X				
OC OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 2								X			X				
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1														X	
PAH by GCMS	All	NDPs: 0 Tests: 5		X			X			X			X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 1														X	
pH	All	NDPs: 0 Tests: 4		X			X			X			X				
pH Value of Filtered Water	All	NDPs: 0 Tests: 2	X			X											
Phenols by HPLC (S)	All	NDPs: 0 Tests: 4		X			X			X			X				
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1													X		

12:27:11 16/06/2021

Validated

CERTIFICATE OF ANALYSIS

SDG:	210603-83	**Client Reference:**	784-B026948	**Report Number:**	602218
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24385205			24385213			24385161			24385179			24385189					
Customer Sample Reference			BH34			BH34			BH63			BH65			BH65					
AGS Reference			ES1			ES2			ES2			ES1			ES2					
Depth (m)			0.40			0.90			0.40			0.10			0.40					
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)			
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S			
Sample description	All	NDPs: 0 Tests: 5		X			X			X			X			X				
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 2		X			X													
Sulphide	All	NDPs: 0 Tests: 2	X			X														
Total Dissolved Solids	All	NDPs: 0 Tests: 1													X					
Total Organic Carbon	All	NDPs: 0 Tests: 5		X			X			X			X			X				
TPH CWG GC (S)	All	NDPs: 0 Tests: 4		X			X			X			X							
VOC MS (S)	All	NDPs: 0 Tests: 5			X			X			X			X			X			

CERTIFICATE OF ANALYSIS

SDG:	210603-83	**Client Reference:**	784-B026948	**Report Number:**	602218
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24385205	BH34	0.40	Light Brown	Stone/Soil	Stones	None
24385213	BH34	0.90	Light Brown	Sand	Stones	None
24385161	BH63	0.40	Dark Brown	Loamy Sand	Stones	Vegetation
24385179	BH65	0.10	Dark Brown	Sandy Silt Loam	Stones	Vegetation
24385189	BH65	0.40	Dark Brown	Sandy Silt Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210603-83	**Client Reference:**	784-B026948	**Report Number:**	602218
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH34	BH34	BH63	BH65	BH65
			Depth (m)	0.40	0.90	0.40	0.10	0.40
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	26/05/2021	26/05/2021	26/05/2021	26/05/2021	26/05/2021
			Sample Time	.	.	.	.	.
			Date Received	28/05/2021	28/05/2021	28/05/2021	28/05/2021	28/05/2021
			SDG Ref	210603-83	210603-83	210603-83	210603-83	210603-83
			Lab Sample No.(s)	24385205	24385213	24385161	24385179	24385189
			AGS Reference	ES1	ES2	ES2	ES1	ES2
Moisture Content Ratio (% of as received sample)	%	PM024		2.9	3.4	5.9	10	7.1
2,4,5-T*	<0.01 mg/kg	SUB				<0.01	<0.01	
2,4,5-TP (Fenoprop)*	<0.01 mg/kg	SUB				<0.01	<0.01	
2,4-D*	<0.01 mg/kg	SUB				<0.01	<0.01	
2,4-DB*	<0.01 mg/kg	SUB				<0.01	<0.01	
2,4-Dichloroprop (2,4 DP)*	<0.01 mg/kg	SUB				<0.01	<0.01	
4-Chlorophenoxyacetic acid (4-CPA)*	<0.01 mg/kg	SUB				<0.01	<0.01	
Acifluorfen*	<0.01 mg/kg	SUB				<0.01	<0.01	
Bentazone*	<0.01 mg/kg	SUB				<0.01	<0.01	
Bromoxynil*	<0.01 mg/kg	SUB				<0.01	<0.01	
Dicamba*	<0.01 mg/kg	SUB				<0.01	<0.01	
Diclofop*	<0.01 mg/kg	SUB				<0.01	<0.01	
Dinoseb*	<0.01 mg/kg	SUB				<0.01	<0.01	
DNOC*	<0.01 mg/kg	SUB				<0.01	<0.01	
Fluroxypyr*	<0.01 mg/kg	SUB				<0.01	<0.01	
Ioxynil*	<0.01 mg/kg	SUB				<0.01	<0.01	
2-methyl-4-Chlorophenoxyacetic acid (MCPA)*	<0.01 mg/kg	SUB				<0.01	<0.01	
4-(4-Chloro-o-tolyloxy) butyric acid (MCPB)*	<0.01 mg/kg	SUB				<0.01	<0.01	
Mecoprop (MCPP)*	<0.01 mg/kg	SUB				<0.01	<0.01	
Propoxycarbazone-sodium*	<0.01 mg/kg	SUB				<0.01	<0.01	
Triclopyr*	<0.01 mg/kg	SUB				<0.01	<0.01	
Triclosan*	<0.01 mg/kg	SUB				<0.01	<0.01	
Exchangeable Ammonia as N	<12 mg/kg	TM024		<12 #	<12 M	<12 M	<12 M	
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 @ #	<0.01 @ M	<0.01 @ M	<0.01 M	
Cresols	<0.01 mg/kg	TM062 (S)		<0.01 @ #	<0.01 @ M	<0.01 @ M	<0.01 M	
Xylenols	<0.015 mg/kg	TM062 (S)		<0.015 @ #	<0.015 @ M	<0.015 @ M	<0.015 M	
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 @ #	<0.035 @ M	<0.035 @ M	<0.035 M	
Organic Carbon, Total	<0.2 %	TM132						0.628 M
Soil Organic Matter (SOM)	<0.35 %	TM132		<0.35 #	<0.35 #	0.497 #	2.47 #	
pH	1 pH Units	TM133		9.64 #	9.39 M	7.32 M	6.7 M	
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	
Cyanide, Total	<1 mg/kg	TM153		<1 #	<1 M	<1 M	<1 M	
PCB congener 28	<0.003 mg/kg	TM168						<0.003 M

Validated

CERTIFICATE OF ANALYSIS

SDG:	210603-83	**Client Reference:**	784-B026948	**Report Number:**	602218
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH34	BH34	BH63	BH65	BH65
			Depth (m)	0.40	0.90	0.40	0.10	0.40
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	26/05/2021	26/05/2021	26/05/2021	26/05/2021	26/05/2021
			Sample Time	.	.	.	.	.
			Date Received	28/05/2021	28/05/2021	28/05/2021	28/05/2021	28/05/2021
			SDG Ref	210603-83	210603-83	210603-83	210603-83	210603-83
			Lab Sample No.(s)	24385205	24385213	24385161	24385179	24385189
			AGS Reference	ES1	ES2	ES2	ES1	ES2
PCB congener 52	<0.003 mg/kg	TM168						<0.003 M
PCB congener 101	<0.003 mg/kg	TM168						<0.003 M
PCB congener 118	<0.003 mg/kg	TM168						<0.003 M
PCB congener 138	<0.003 mg/kg	TM168						<0.003 M
PCB congener 153	<0.003 mg/kg	TM168						<0.003 M
PCB congener 180	<0.003 mg/kg	TM168						<0.003 M
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168						<0.021
Arsenic	<0.6 mg/kg	TM181		0.719 #	9.86 M	7.05 M	7.54 M	
Cadmium	<0.02 mg/kg	TM181		0.471 #	0.44 M	0.261 M	0.393 M	
Chromium	<0.9 mg/kg	TM181		1.25 #	2.65 M	4.82 M	9.79 M	
Copper	<1.4 mg/kg	TM181		2.17 #	5.11 M	10.5 M	16.9 M	
Iron	<1000 mg/kg	TM181		2400 #	15600 #	17900 #	17600 #	
Lead	<0.7 mg/kg	TM181		7.83 #	14.9 M	21.9 M	39.6 M	
Mercury	<0.1 mg/kg	TM181		<0.1 #	<0.1 M	<0.1 M	<0.1 M	
Nickel	<0.2 mg/kg	TM181		2.32 #	10.3 M	14.1 M	14.3 M	
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #	
Vanadium	<0.2 mg/kg	TM181		1.19 #	12.8 #	15.8 #	18.3 #	
Zinc	<1.9 mg/kg	TM181		62.5 #	53.8 M	56.5 M	71.8 M	
Boron, water soluble	<1 mg/kg	TM222		<1 #	<1 M	<1 M	<1 M	
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.0158 #	0.0202 M	<0.004 M	<0.004 M	
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248		5.35	4.89	2.84	2.88	
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410						<10
Coronene	<0.2 mg/kg	TM410						<0.2
EPH (C5-C40)	<35 mg/kg	TM415		<35	<35	<35	<35	
EPH Surrogate % recovery**	%	TM415		98.3	97.1	91.9	91.3	95.1
EPH >C10-C40	<35 mg/kg	TM415		<35 #	<35 M	<35 M	<35 M	
Mineral Oil >C10-C40	<5 mg/kg	TM415						5.39

CERTIFICATE OF ANALYSIS

SDG:	210603-83	**Client Reference:**	784-B026948	**Report Number:**	602218
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

OC OP Pesticides and Triazine Herb

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH63	BH65				
			Depth (m)	0.40	0.10				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	26/05/2021	26/05/2021				
			Sample Time	.	.				
			Date Received	28/05/2021	28/05/2021				
			SDG Ref	210603-83	210603-83				
			Lab Sample No.(s)	24385161	24385179				
			AGS Reference	ES2	ES1				
Dichlorvos	<0.05 mg/kg	TM073		<0.05	<0.05				
Mevinphos	<0.05 mg/kg	TM073		<0.05	<0.05				
Phorate	<0.05 mg/kg	TM073		<0.05	<0.05				
alpha-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073		<0.05	<0.05				
Diazinon	<0.05 mg/kg	TM073		<0.05	<0.05				
gamma-Hexachlorocyclohexane (HCH / Lindane)	<0.05 mg/kg	TM073		<0.05	<0.05				
Disulfoton	<0.05 mg/kg	TM073		<0.05	<0.05				
Heptachlor	<0.05 mg/kg	TM073		<0.05	<0.05				
Aldrin	<0.05 mg/kg	TM073		<0.05	<0.05				
beta-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073		<0.05	<0.05				
Methyl parathion	<0.05 mg/kg	TM073		<0.05	<0.05				
Malathion	<0.05 mg/kg	TM073		<0.05	<0.05				
Fenitrothion	<0.05 mg/kg	TM073		<0.05	<0.05				
Heptachlor epoxide	<0.05 mg/kg	TM073		<0.05	<0.05				
Parathion	<0.05 mg/kg	TM073		<0.05	<0.05				
Endosulphan I	<0.05 mg/kg	TM073		<0.05	<0.05				
p,p-DDE	<0.05 mg/kg	TM073		<0.05	<0.05				
Dieldrin	<0.05 mg/kg	TM073		<0.05	<0.05				
Endrin	<0.05 mg/kg	TM073		<0.05	<0.05				
p,p-TDE (DDD)	<0.05 mg/kg	TM073		<0.05	<0.05				
Ethion	<0.05 mg/kg	TM073		<0.05	<0.05				
Endosulphan II	<0.05 mg/kg	TM073		<0.05	<0.05				
p,p-DDT	<0.05 mg/kg	TM073		<0.1	<0.1				
p,p-Methoxychlor	<0.05 mg/kg	TM073		<0.05	<0.05				
Endosulphan sulphate	<0.05 mg/kg	TM073		<0.05	<0.05				
Azinphos-methyl	<0.05 mg/kg	TM073		<0.05	<0.05				

CERTIFICATE OF ANALYSIS

SDG:	210603-83	**Client Reference:**	784-B026948	**Report Number:**	602218
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH34	BH34	BH63	BH65		
			Depth (m)	0.40	0.90	0.40	0.10		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	26/05/2021	26/05/2021	26/05/2021	26/05/2021		
			Sample Time	.	.	.	.		
			Date Received	28/05/2021	28/05/2021	28/05/2021	28/05/2021		
			SDG Ref	210603-83	210603-83	210603-83	210603-83		
			Lab Sample No.(s)	24385205	24385213	24385161	24385179		
			AGS Reference	ES1	ES2	ES2	ES1		
Naphthalene-d8 % recovery**	%	TM218		86.2	88.6	85.2	86.6		
Acenaphthene-d10 % recovery**	%	TM218		86.4	86.7	86.1	87		
Phenanthrene-d10 % recovery**	%	TM218		86.3	88.4	86.8	90.5		
Chrysene-d12 % recovery**	%	TM218		78.4	81.4	79	91.7		
Perylene-d12 % recovery**	%	TM218		76.3	77.7	74.6	95.7		
Naphthalene	<0.009 mg/kg	TM218		<0.018 #	<0.009 M	<0.009 M	<0.009 M		
Acenaphthylene	<0.012 mg/kg	TM218		<0.024 #	<0.012 M	0.0172 M	<0.012 M		
Acenaphthene	<0.008 mg/kg	TM218		<0.016 #	<0.008 M	<0.008 M	<0.008 M		
Fluorene	<0.01 mg/kg	TM218		<0.02 #	<0.01 M	<0.01 M	<0.01 M		
Phenanthrene	<0.015 mg/kg	TM218		<0.03 #	<0.015 M	0.119 M	0.0378 M		
Anthracene	<0.016 mg/kg	TM218		<0.032 #	<0.016 M	0.0254 M	<0.016 M		
Fluoranthene	<0.017 mg/kg	TM218		<0.034 #	<0.017 M	0.253 M	0.116 M		
Pyrene	<0.015 mg/kg	TM218		<0.03 #	0.017 M	0.217 M	0.1 M		
Benz(a)anthracene	<0.014 mg/kg	TM218		<0.028 #	<0.014 M	0.119 M	0.0705 M		
Chrysene	<0.01 mg/kg	TM218		<0.02 #	0.0128 M	0.119 M	0.0705 M		
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		<0.03 #	0.0161 M	0.123 M	0.115 M		
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		<0.028 #	<0.014 M	0.0492 M	0.0406 M		
Benzo(a)pyrene	<0.015 mg/kg	TM218		<0.03 #	<0.015 M	0.0966 M	0.0717 M		
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		<0.036 #	<0.018 M	0.0683 M	0.0663 M		
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.046 #	<0.023 M	<0.023 M	<0.023 M		
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		<0.048 #	<0.024 M	0.0611 M	0.0548 M		
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		<0.236	<0.118	1.27	0.744		

CERTIFICATE OF ANALYSIS

SDG:	210603-83	**Client Reference:**	784-B026948	**Report Number:**	602218
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.				
			BH34	BH34			
			Depth (m)	0.40	0.90		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	26/05/2021	26/05/2021		
			Sample Time	.	.		
			Date Received	28/05/2021	28/05/2021		
			SDG Ref	210603-83	210603-83		
			Lab Sample No.(s)	24385205	24385213		
			AGS Reference	ES1	ES2		
Phenol	<0.1 mg/kg	TM157	<0.2	<0.1			
Pentachlorophenol	<0.1 mg/kg	TM157	<0.2	<0.1			
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157	<0.2	<0.1			
Nitrobenzene	<0.1 mg/kg	TM157	<0.2	<0.1			
Isophorone	<0.1 mg/kg	TM157	<0.2	<0.1			
Hexachloroethane	<0.1 mg/kg	TM157	<0.2	<0.1			
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157	<0.2	<0.1			
Hexachlorobutadiene	<0.1 mg/kg	TM157	<0.2	<0.1			
Hexachlorobenzene	<0.1 mg/kg	TM157	<0.2	<0.1			
n-Dioctyl phthalate	<0.1 mg/kg	TM157	<0.2	<0.1			
Dimethyl phthalate	<0.1 mg/kg	TM157	<0.2	<0.1			
Diethyl phthalate	<0.1 mg/kg	TM157	<0.2	<0.1			
n-Dibutyl phthalate	<0.1 mg/kg	TM157	<0.2	<0.1			
Dibenzofuran	<0.1 mg/kg	TM157	<0.2	<0.1			
Carbazole	<0.1 mg/kg	TM157	<0.2	<0.1			
Butylbenzyl phthalate	<0.1 mg/kg	TM157	<0.2	<0.1			
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157	<0.2	<0.1			
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157	<0.2	<0.1			
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157	<0.2	<0.1			
Azobenzene	<0.1 mg/kg	TM157	<0.2	<0.1			
4-Nitrophenol	<0.1 mg/kg	TM157	<1	<0.5			
4-Nitroaniline	<0.1 mg/kg	TM157	<1	<0.5			
4-Methylphenol	<0.1 mg/kg	TM157	<0.2	<0.1			
4-Chlorophenylphenylether	<0.1 mg/kg	TM157	<0.2	<0.1			
4-Chloroaniline	<0.1 mg/kg	TM157	<0.2	<0.1			
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157	<0.2	<0.1			
4-Bromophenylphenylether	<0.1 mg/kg	TM157	<0.2	<0.1			
3-Nitroaniline	<0.1 mg/kg	TM157	<0.2	<0.1			
2-Nitrophenol	<0.1 mg/kg	TM157	<0.2	<0.1			
2-Nitroaniline	<0.1 mg/kg	TM157	<0.2	<0.1			
2-Methylphenol	<0.1 mg/kg	TM157	<0.2	<0.1			
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157	<0.2	<0.1			
2-Chlorophenol	<0.1 mg/kg	TM157	<0.2	<0.1			

CERTIFICATE OF ANALYSIS

SDG:	210603-83	**Client Reference:**	784-B026948	**Report Number:**	602218
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH34	BH34				
			Depth (m)	0.40	0.90				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	26/05/2021	26/05/2021				
			Sample Time	.	.				
			Date Received	28/05/2021	28/05/2021				
			SDG Ref	210603-83	210603-83				
			Lab Sample No.(s)	24385205	24385213				
			AGS Reference	ES1	ES2				
2,6-Dinitrotoluene	<0.1 mg/kg	TM157		<0.2	<0.1				
2,4-Dinitrotoluene	<0.1 mg/kg	TM157		<0.2	<0.1				
2,4-Dimethylphenol	<0.1 mg/kg	TM157		<0.2	<0.1				
2,4-Dichlorophenol	<0.1 mg/kg	TM157		<0.2	<0.1				
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157		<0.2	<0.1				
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157		<0.2	<0.1				
1,4-Dichlorobenzene	<0.1 mg/kg	TM157		<0.2	<0.1				
1,3-Dichlorobenzene	<0.1 mg/kg	TM157		<0.2	<0.1				
1,2-Dichlorobenzene	<0.1 mg/kg	TM157		<0.2	<0.1				
2-Chloronaphthalene	<0.1 mg/kg	TM157		<0.2	<0.1				
2-Methylnaphthalene	<0.1 mg/kg	TM157		<0.2	<0.1				
Acenaphthylene	<0.1 mg/kg	TM157		<0.2	<0.1				
Acenaphthene	<0.1 mg/kg	TM157		<0.2	<0.1				
Anthracene	<0.1 mg/kg	TM157		<0.2	<0.1				
Benzo(a)anthracene	<0.1 mg/kg	TM157		<0.2	<0.1				
Benzo(b)fluoranthene	<0.1 mg/kg	TM157		<0.2	<0.1				
Benzo(k)fluoranthene	<0.1 mg/kg	TM157		<0.2	<0.1				
Benzo(a)pyrene	<0.1 mg/kg	TM157		<0.2	<0.1				
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157		<0.2	<0.1				
Chrysene	<0.1 mg/kg	TM157		<0.2	<0.1				
Fluoranthene	<0.1 mg/kg	TM157		<0.2	<0.1				
Fluorene	<0.1 mg/kg	TM157		<0.2	<0.1				
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157		<0.2	<0.1				
Phenanthrene	<0.1 mg/kg	TM157		<0.2	<0.1				
Pyrene	<0.1 mg/kg	TM157		<0.2	<0.1				
Naphthalene	<0.1 mg/kg	TM157		<0.2	<0.1				
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157		<0.2	<0.1				
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157		<0.2	<0.1				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210603-83	**Client Reference:**	784-B026948	**Report Number:**	602218
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH34	BH34	BH63	BH65		
			Depth (m)	0.40	0.90	0.40	0.10		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	26/05/2021	26/05/2021	26/05/2021	26/05/2021		
			Sample Time	.	.	.	.		
			Date Received	28/05/2021	28/05/2021	28/05/2021	28/05/2021		
			SDG Ref	210603-83	210603-83	210603-83	210603-83		
			Lab Sample No.(s)	24385205	24385213	24385161	24385179		
			AGS Reference	ES1	ES2	ES2	ES1		
GRO Surrogate % recovery**	%	TM089		104	105	143 4	89.4		
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01 4	<0.01		
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01 4	<0.01		
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01 4	<0.01		
Aliphatics >C10-C12	<1 mg/kg	TM414		<1	<1	<1	<1		
Aliphatics >C12-C16	<1 mg/kg	TM414		<1	<1	<1	<1		
Aliphatics >C16-C21	<1 mg/kg	TM414		<1	<1	<1	<1		
Aliphatics >C21-C35	<1 mg/kg	TM414		5.55	<1	1.15	9.4		
Aliphatics >C35-C44	<1 mg/kg	TM414		2.02	<1	<1	<1		
Total Aliphatics >C10-C44	<5 mg/kg	TM414		7.57	<5	<5	9.95		
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		23.9	<10	<10	19		
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01 4	<0.01		
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01 4	<0.01		
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01 4	<0.01		
Aromatics > EC10-EC12	<1 mg/kg	TM414		<1	<1	<1	<1		
Aromatics > EC12-EC16	<1 mg/kg	TM414		<1	<1	<1	<1		
Aromatics > EC16-EC21	<1 mg/kg	TM414		<1	<1	<1	<1		
Aromatics > EC21-EC35	<1 mg/kg	TM414		14	<1	1.04	2.92		
Aromatics >EC35-EC44	<1 mg/kg	TM414		2.25	<1	<1	5.88		
Aromatics > EC40-EC44	<1 mg/kg	TM414		<1	<1	<1	<1		
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		16.3	<5	<5	9.03		
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		23.9	<10	<10	19		
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		<0.05	<0.05	<0.05 4	<0.05		
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		<0.05	<0.05	<0.05 4	<0.05		
GRO >C5-C10	<0.02 mg/kg	TM089		<0.02	<0.02	<0.02 4	<0.02		

Validated

CERTIFICATE OF ANALYSIS

SDG:	210603-83	**Client Reference:**	784-B026948	**Report Number:**	602218
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH34	BH34	BH63	BH65	BH65
			Depth (m)	0.40	0.90	0.40	0.10	0.40
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	26/05/2021	26/05/2021	26/05/2021	26/05/2021	26/05/2021
			Sample Time	.	.	.	.	.
			Date Received	28/05/2021	28/05/2021	28/05/2021	28/05/2021	28/05/2021
			SDG Ref	210603-83	210603-83	210603-83	210603-83	210603-83
			Lab Sample No.(s)	24385205	24385213	24385161	24385179	24385189
			AGS Reference	ES1	ES2	ES2	ES1	ES2
Dibromofluoromethane**	%	TM116		122	108	110	108	108
Toluene-d8**	%	TM116		106	95.5	98.3	104	98.1
4-Bromofluorobenzene**	%	TM116		98.3	94.5	97.1	92.5	98
Dichlorodifluoromethane	<0.006 mg/kg	TM116		<0.12 #	<0.12 M			
Chloromethane	<0.007 mg/kg	TM116		<0.14 #	<0.14 #			
Vinyl Chloride	<0.006 mg/kg	TM116		<0.12 @ #	<0.12 @ M			
Bromomethane	<0.01 mg/kg	TM116		<0.2 #	<0.2 M			
Chloroethane	<0.01 mg/kg	TM116		<0.2 #	<0.2 M			
Trichlorofluorormethane	<0.006 mg/kg	TM116		<0.12 #	<0.12 M			
1,1-Dichloroethene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #			
Carbon Disulphide	<0.007 mg/kg	TM116		<0.14 #	<0.14 M			
Dichloromethane	<0.01 mg/kg	TM116		<0.2 #	<0.2 #			
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 #	<0.2 M	<0.2 M	<0.2 M	<0.2 M
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116		<0.2 #	<0.2 M			
1,1-Dichloroethane	<0.008 mg/kg	TM116		<0.16 #	<0.16 M			
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116		<0.12 #	<0.12 M			
2,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2	<0.2			
Bromochloromethane	<0.01 mg/kg	TM116		<0.2 #	<0.2 M			
Chloroform	<0.008 mg/kg	TM116		<0.16 #	<0.16 M			
1,1,1-Trichloroethane	<0.007 mg/kg	TM116		<0.14 #	<0.14 M			
1,1-Dichloropropene	<0.01 mg/kg	TM116		<0.2 #	<0.2 M			
Carbontetrachloride	<0.01 mg/kg	TM116		<0.2 #	<0.2 M			
1,2-Dichloroethane	<0.005 mg/kg	TM116		<0.1 #	<0.1 M			
Benzene	<0.009 mg/kg	TM116		<0.18 #	<0.18 M	<0.18 M	<0.18 M	<0.18 M
Trichloroethene	<0.009 mg/kg	TM116		<0.18 #	<0.18 #			
1,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2 #	<0.2 M			
Dibromomethane	<0.009 mg/kg	TM116		<0.18 #	<0.18 M			
Bromodichloromethane	<0.007 mg/kg	TM116		<0.14 #	<0.14 M			
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2 #	<0.2 M			
Toluene	<0.007 mg/kg	TM116		<0.14 #	<0.14 M	<0.14 M	<0.14 M	<0.14 M
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2	<0.2			
1,1,2-Trichloroethane	<0.01 mg/kg	TM116		<0.2 #	<0.2 M			
1,3-Dichloropropane	<0.007 mg/kg	TM116		<0.14 #	<0.14 M			

CERTIFICATE OF ANALYSIS

SDG:	210603-83	**Client Reference:**	784-B026948	**Report Number:**	602218
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH34	BH34	BH63	BH65	BH65
			Depth (m)	0.40	0.90	0.40	0.10	0.40
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	26/05/2021	26/05/2021	26/05/2021	26/05/2021	26/05/2021
			Sample Time	.	.	.	.	.
			Date Received	28/05/2021	28/05/2021	28/05/2021	28/05/2021	28/05/2021
			SDG Ref	210603-83	210603-83	210603-83	210603-83	210603-83
			Lab Sample No.(s)	24385205	24385213	24385161	24385179	24385189
			AGS Reference	ES1	ES2	ES2	ES1	ES2
Tetrachloroethene	<0.005 mg/kg	TM116		<0.1 #	<0.1 M			
Dibromochloromethane	<0.01 mg/kg	TM116		<0.2 #	<0.2 M			
1,2-Dibromoethane	<0.01 mg/kg	TM116		<0.2 #	<0.2 M			
Chlorobenzene	<0.005 mg/kg	TM116		<0.1 #	<0.1 M			
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 #	<0.2 M			
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 #	<0.08 M	<0.08 M	<0.08 M	<0.08 M
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #	<0.2 #	<0.2 #	<0.2 #
o-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 M	<0.2 M	<0.2 M	<0.2 M
Styrene	<0.01 mg/kg	TM116		<0.2 @ #	<0.2 @ #			
Bromoform	<0.01 mg/kg	TM116		<0.2 #	<0.2 M			
Isopropylbenzene	<0.005 mg/kg	TM116		<0.1 #	<0.1 #			
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 #	<0.2 #			
1,2,3-Trichloropropane	<0.016 mg/kg	TM116		<0.32 #	<0.32 M			
Bromobenzene	<0.01 mg/kg	TM116		<0.2 #	<0.2 M			
Propylbenzene	<0.01 mg/kg	TM116		<0.2 #	<0.2 M			
2-Chlorotoluene	<0.009 mg/kg	TM116		<0.18 #	<0.18 M			
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116		<0.16 #	<0.16 M			
4-Chlorotoluene	<0.01 mg/kg	TM116		<0.2 #	<0.2 M			
tert-Butylbenzene	<0.014 mg/kg	TM116		<0.28 #	<0.28 M			
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116		<0.18 #	<0.18 #			
sec-Butylbenzene	<0.01 mg/kg	TM116		<0.2	<0.2			
4-Isopropyltoluene	<0.01 mg/kg	TM116		<0.2 #	<0.2 M			
1,3-Dichlorobenzene	<0.008 mg/kg	TM116		<0.16 #	<0.16 M			
1,4-Dichlorobenzene	<0.005 mg/kg	TM116		<0.1 #	<0.1 M			
n-Butylbenzene	<0.011 mg/kg	TM116		<0.22	<0.22			
1,2-Dichlorobenzene	<0.01 mg/kg	TM116		<0.2 #	<0.2 M			
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116		<0.28 #	<0.28 M			
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.2 #	<0.2 #			
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4	<0.4			
Hexachlorobutadiene	<0.02 mg/kg	TM116		<0.4	<0.4			
Naphthalene	<0.013 mg/kg	TM116		<0.26 #	<0.26 M			
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4 #	<0.4 #			
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4	<0.4			

Validated

CERTIFICATE OF ANALYSIS

SDG:	210603-83	**Client Reference:**	784-B026948	**Report Number:**	602218
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH34	BH34	BH63	BH65	BH65
			Depth (m)	0.40	0.90	0.40	0.10	0.40
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	26/05/2021	26/05/2021	26/05/2021	26/05/2021	26/05/2021
			Sample Time	.	.	.	.	.
			Date Received	28/05/2021	28/05/2021	28/05/2021	28/05/2021	28/05/2021
			SDG Ref	210603-83	210603-83	210603-83	210603-83	210603-83
			Lab Sample No.(s)	24385205	24385213	24385161	24385179	24385189
			AGS Reference	ES1	ES2	ES2	ES1	ES2
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4	<0.4	<0.4	<0.4	
Sum of BTEX	<0.04 mg/kg	TM116		<0.8	<0.8	<0.8	<0.8	

CERTIFICATE OF ANALYSIS

SDG:	210603-83	**Client Reference:**	784-B026948	**Report Number:**	602218
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&+$@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH34ES1 0.40 SOLID 26/05/2021 00:00:00 28/05/2021 05:00:00 210603-83 24385205 TM048	04/06/2021	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH34ES2 0.90 SOLID 26/05/2021 00:00:00 28/05/2021 05:00:00 210603-83 24385213 TM048	07/06/2021	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH63ES2 0.40 SOLID 26/05/2021 00:00:00 28/05/2021 05:00:00 210603-83 24385161 TM048	04.06.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH65ES1 0.10 SOLID 26/05/2021 00:00:00 28/05/2021 05:00:00 210603-83 24385179 TM048	04.06.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG:	210603-83	**Client Reference:**	784-B026948	**Report Number:**	602218
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.099	**Natural Moisture Content (%)**	9.41
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	91.4
Particle Size <4mm	>95%		

Case	
SDG	210603-83
Lab Sample Number(s)	24385189
Sampled Date	26-May-2021
Customer Sample Ref.	BH65 ES2
Depth (m)	0.40

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.628	3	5	6
Loss on Ignition (%)	-	-	-	-
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	5.39	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	-	-	-	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	**C_2 Conc^n in 10:1 eluate (mg/l)**		**A_2 10:1 conc^n leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.000969	<0.0005	0.00969	<0.005	0.5	2	25
Barium	0.114	<0.0002	1.14	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00149	<0.0003	0.0149	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000631	<0.0004	0.00631	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00615	<0.001	0.0615	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	0.832	<0.5	8.32	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	86.3	<5	863	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.88	<3	38.8	<30	500	800	1000

Leach Test Information

Date Prepared	04-Jun-2021
pH (pH Units)	8.19
Conductivity (µS/cm)	109.00
Temperature (°C)	20.20
Volume Leachant (Litres)	0.892

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation

16/06/2021 12:27:30

12:27:11 16/06/2021

CERTIFICATE OF ANALYSIS

SDG:	210603-83	**Client Reference:**	784-B026948	**Report Number:**	602218
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.100	**Natural Moisture Content (%)**	10.6
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	90.4
Particle Size <4mm	>95%		

Case	
SDG	210603-83
Lab Sample Number(s)	24385205
Sampled Date	26-May-2021
Customer Sample Ref.	BH34 ES1
Depth (m)	0.40

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.000615	<0.0005	0.00615	<0.005	-	-	-
Boron	<0.01	<0.01	<0.1	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.19	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00887	<0.001	0.0887	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	04-Jun-2021
pH (pH Units)	9.67
Conductivity (µS/cm)	170.00
Temperature (°C)	20.50
Volume Leachant (Litres)	0.890

CERTIFICATE OF ANALYSIS

SDG:	210603-83	**Client Reference:**	784-B026948	**Report Number:**	602218
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.092	**Natural Moisture Content (%)**	2.44
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	97.6
Particle Size <4mm	>95%		

Case	
SDG	210603-83
Lab Sample Number(s)	24385213
Sampled Date	26-May-2021
Customer Sample Ref.	BH34 ES2
Depth (m)	0.90

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.00328	<0.0005	0.0328	<0.005	-	-	-
Boron	0.067	<0.01	0.67	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.245	<0.019	2.45	<0.19	-	-	-
Lead	0.000241	<0.0002	0.00241	<0.002	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	0.00167	<0.001	0.0167	<0.01	-	-	-
Vanadium	0.00228	<0.001	0.0228	<0.01	-	-	-
Zinc	0.0017	<0.001	0.017	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	03-Jun-2021
pH (pH Units)	9.42
Conductivity (µS/cm)	112.00
Temperature (°C)	17.40
Volume Leachant (Litres)	0.898

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210603-83	**Client Reference:**	784-B026948	**Report Number:**	602218
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24385205	24385213	24385161	24385179	24385189
Customer Sample Ref.	BH34	BH34	BH63	BH65	BH65
AGS Ref.	ES1	ES2	ES2	ES1	ES2
Depth	0.40	0.90	0.40	0.10	0.40
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Acid herbicides*			16-Jun-2021	16-Jun-2021	
Ammoniacal N as NH4 in 2:1 extract	09-Jun-2021	07-Jun-2021	09-Jun-2021	09-Jun-2021	
Ammoniacal Nitrogen	08-Jun-2021	08-Jun-2021			
Ammonium Soil by Titration	08-Jun-2021	08-Jun-2021	08-Jun-2021	08-Jun-2021	
Anions by Kone (soil)	09-Jun-2021	08-Jun-2021	08-Jun-2021	08-Jun-2021	
Anions by Kone (w)					07-Jun-2021
Asbestos ID in Solid Samples	04-Jun-2021	07-Jun-2021	04-Jun-2021	04-Jun-2021	
Boron Water Soluble	08-Jun-2021	08-Jun-2021	08-Jun-2021	08-Jun-2021	
CEN 10:1 Leachate (1 Stage)	04-Jun-2021	04-Jun-2021			04-Jun-2021
CEN Readings	05-Jun-2021	05-Jun-2021			05-Jun-2021
Coronene					08-Jun-2021
Cyanide Comp/Free/Total/Thiocyanate	09-Jun-2021	08-Jun-2021	07-Jun-2021	07-Jun-2021	
Dissolved Metals by ICP-MS	07-Jun-2021	07-Jun-2021			07-Jun-2021
Dissolved Organic/Inorganic Carbon					12-Jun-2021
EPH	08-Jun-2021	07-Jun-2021	08-Jun-2021	07-Jun-2021	
EPH by GCxGC-FID	07-Jun-2021	07-Jun-2021	07-Jun-2021	07-Jun-2021	07-Jun-2021
EPH CWG GC (S)	07-Jun-2021	07-Jun-2021	07-Jun-2021	07-Jun-2021	
Fluoride					07-Jun-2021
GRO by GC-FID (S)	08-Jun-2021	07-Jun-2021	08-Jun-2021	07-Jun-2021	
Hexavalent Chromium (s)	08-Jun-2021	08-Jun-2021	08-Jun-2021	08-Jun-2021	
Hexavalent Chromium (w)	08-Jun-2021	08-Jun-2021			
Mercury Dissolved	10-Jun-2021	09-Jun-2021			09-Jun-2021
Metals in solid samples by OES	08-Jun-2021	08-Jun-2021	08-Jun-2021	08-Jun-2021	
Moisture at 105C	04-Jun-2021	03-Jun-2021			04-Jun-2021
OC OP Pesticides and Triazine Herb			10-Jun-2021	10-Jun-2021	
PAH 16 & 17 Calc					08-Jun-2021
PAH by GCMS	07-Jun-2021	07-Jun-2021	07-Jun-2021	07-Jun-2021	07-Jun-2021
PCBs by GCMS					07-Jun-2021
pH	04-Jun-2021	09-Jun-2021	09-Jun-2021	09-Jun-2021	
pH Value of Filtered Water	07-Jun-2021	07-Jun-2021			
Phenols by HPLC (S)	10-Jun-2021	10-Jun-2021	10-Jun-2021	08-Jun-2021	
Phenols by HPLC (W)					08-Jun-2021
Sample description	03-Jun-2021	03-Jun-2021	03-Jun-2021	03-Jun-2021	03-Jun-2021
Semi Volatile Organic Compounds	07-Jun-2021	07-Jun-2021			
Sulphide	08-Jun-2021	08-Jun-2021			
Total Dissolved Solids					09-Jun-2021
Total Organic Carbon	08-Jun-2021	07-Jun-2021	08-Jun-2021	08-Jun-2021	07-Jun-2021
TPH CWG GC (S)	08-Jun-2021	07-Jun-2021	08-Jun-2021	07-Jun-2021	
VOC MS (S)	07-Jun-2021	07-Jun-2021	07-Jun-2021	07-Jun-2021	07-Jun-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2474
Ammoniacal Nitrogen as N	TM099	**100.4** 88.02 : 104.70

Ammonium Soil by Titration

Component	Method Code	QC 2487
Exchangeable Ammonium as NH4	TM024	**90.05** 74.04 : 103.44

Anions by Kone (soil)

Component	Method Code	QC 2408
Chloride (soluble)	TM243	**143.01** 80.93 : 111.66
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**159.35** 70.00 : 130.00

Anions by Kone (w)

Component	Method Code	QC 2468
Chloride	TM184	**101.0** 91.40 : 109.10
Sulphate (soluble)	TM184	**98.0** 91.99 : 109.30

Boron Water Soluble

Component	Method Code	QC 2463	QC 2457
Water Soluble Boron	TM222	**98.5** 84.00 : 111.00	**94.0** 84.00 : 111.00

Coronene

Component	Method Code	QC 2415
Coronene RAW	TM410	**126.0** 79.43 : 137.78

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2460	QC 2466	QC 2440
Free Cyanide	TM153	**92.87** 78.00 : 114.00		
Free Cyanide (W)	TM227		**83.0** 90.67 : 122.67	**83.25** 90.67 : 122.67
Thiocyanate	TM153	**94.23** 94.53 : 113.33		
Thiocyanate (W)	TM227		**111.75** 92.25 : 117.75	**108.0** 92.25 : 117.75
Total Cyanide	TM153	**100.7** 77.13 : 111.53		
Total Cyanide (W)	TM227		**105.75** 88.75 : 111.25	**102.5** 88.75 : 111.25

Dissolved Metals by ICP-MS

Component	Method Code	QC 2458
Aluminium	TM152	**105.0** 94.21 : 111.52
Antimony	TM152	**102.17** 88.37 : 130.57
Arsenic	TM152	**101.5** 92.62 : 113.52
Barium	TM152	**100.83** 88.62 : 113.14
Beryllium	TM152	**103.17** 87.08 : 111.38
Bismuth	TM152	**101.33** 92.62 : 115.02
Boron	TM152	**109.0** 86.31 : 120.88
Cadmium	TM152	**104.0** 93.85 : 111.65
Calcium	TM152	**102.67** 89.20 : 126.91
Chromium	TM152	**102.0** 92.50 : 113.03
Cobalt	TM152	**102.0** 85.01 : 114.87
Copper	TM152	**102.67** 89.87 : 119.73
Iron	TM152	**103.33** 93.02 : 113.86
Lead	TM152	**101.0** 91.11 : 116.98
Lithium	TM152	**104.83** 87.70 : 115.90
Magnesium	TM152	**102.67** 89.60 : 116.61
Manganese	TM152	**104.67** 93.97 : 112.46
Molybdenum	TM152	**100.33** 89.07 : 110.96
Nickel	TM152	**102.67** 93.70 : 112.15

Dissolved Metals by ICP-MS

		QC 2458
Phosphorus	TM152	**103.67** 89.24 : 114.18
Potassium	TM152	**103.33** 93.20 : 115.55
Selenium	TM152	**106.0** 91.69 : 117.12
Silver	TM152	**101.17** 90.93 : 121.73
Sodium	TM152	**102.0** 92.42 : 113.24
Strontium	TM152	**103.67** 92.14 : 116.24
Tellurium	TM152	**102.17** 89.88 : 111.78
Thallium	TM152	**91.33** 82.43 : 113.83
Tin	TM152	**103.17** 94.62 : 107.79
Titanium	TM152	**101.17** 90.29 : 115.23
Tungsten	TM152	**101.17** 77.61 : 132.31
Uranium	TM152	**99.33** 86.97 : 115.76
Vanadium	TM152	**100.5** 89.61 : 115.48
Zinc	TM152	**103.33** 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2421
Dissolved Inorganic Carbon	TM090	**109.0** 93.58 : 112.28
Dissolved Organic Carbon	TM090	**102.0** 96.13 : 109.53

Fluoride

Component	Method Code	QC 2404
Fluoride	TM104	**102.0** 96.67 : 108.67

GRO by GC-FID (S)

GRO by GC-FID (S)

Component	Method Code	QC 2468	QC 2498
QC	TM089	**84.88** 68.78 : 110.61	**85.05** 68.78 : 110.61

Hexavalent Chromium (s)

Component	Method Code	QC 2449	QC 2484
Hexavalent Chromium	TM151	**96.0** 91.40 : 115.40	**106.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2460	QC 2465
Hexavalent Chromium	TM241	**103.8** 94.17 : 106.17	**102.8** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2474	QC 2458
Mercury Dissolved (CVAF)	TM183	**89.4** 69.30 : 128.70	**94.8** 69.30 : 128.70

Metals in solid samples by OES

Component	Method Code	QC 2474	QC 2499
Aluminium	TM181	**95.58** 73.56 : 108.85	**90.27** 73.56 : 108.85
Antimony	TM181	**97.56** 76.89 : 111.24	**97.56** 76.89 : 111.24
Arsenic	TM181	**103.2** 88.53 : 111.01	**99.42** 88.53 : 111.01
Barium	TM181	**100.0** 77.67 : 105.35	**97.25** 77.67 : 105.35
Beryllium	TM181	**102.99** 85.44 : 109.61	**98.88** 85.44 : 109.61
Boron	TM181	**96.56** 73.51 : 104.66	**93.12** 73.51 : 104.66
Cadmium	TM181	**97.53** 77.67 : 104.12	**94.65** 77.67 : 104.12
Chromium	TM181	**92.29** 79.64 : 105.83	**89.86** 79.64 : 105.83

Metals in solid samples by OES

		QC 2474	QC 2499
Cobalt	TM181	**93.71** 84.60 : 104.13	**91.19** 84.60 : 104.13
Copper	TM181	**100.7** 82.40 : 105.45	**97.71** 82.40 : 105.45
Iron	TM181	**96.83** 82.95 : 110.58	**92.86** 82.95 : 110.58
Lead	TM181	**96.17** 78.24 : 104.05	**99.32** 78.24 : 104.05
Manganese	TM181	**110.0** 94.29 : 119.51	**106.11** 94.29 : 119.51
Mercury	TM181	**96.86** 83.16 : 107.81	**94.2** 83.16 : 107.81
Molybdenum	TM181	**100.0** 87.11 : 106.87	**97.12** 87.11 : 106.87
Nickel	TM181	**95.35** 80.26 : 102.28	**93.15** 80.26 : 102.28
Phosphorus	TM181	**109.09** 94.56 : 124.28	**105.25** 94.56 : 124.28
Selenium	TM181	**103.14** 82.28 : 110.48	**100.39** 82.28 : 110.48
Strontium	TM181	**95.55** 79.13 : 102.79	**92.43** 79.13 : 102.79
Thallium	TM181	**94.25** 82.94 : 111.86	**92.92** 82.94 : 111.86
Tin	TM181	**104.56** 86.72 : 110.03	**101.9** 86.72 : 110.03
Titanium	TM181	**91.6** 66.23 : 102.06	**90.84** 66.23 : 102.06
Vanadium	TM181	**98.53** 86.19 : 109.45	**95.24** 86.19 : 109.45
Zinc	TM181	**103.49** 84.68 : 113.99	**101.64** 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2499	QC 2400	QC 2481
Acenaphthene	TM218	**93.0** 76.79 : 103.90	**92.5** 73.47 : 109.80	**95.0** 73.47 : 109.80
Acenaphthylene	TM218	**90.5** 74.19 : 106.17	**91.5** 70.00 : 130.00	**93.0** 70.00 : 130.00
Anthracene	TM218	**89.5** 70.90 : 109.22	**91.0** 68.68 : 111.89	**93.5** 68.68 : 111.89
Benz(a)anthracene	TM218	**89.5** 73.77 : 119.26	**87.0** 68.12 : 118.39	**93.5** 68.12 : 118.39
Benzo(a)pyrene	TM218	**91.0** 73.20 : 114.18	**88.5** 71.72 : 115.31	**90.5** 71.72 : 115.31
Benzo(b)fluoranthene	TM218	**84.0** 75.36 : 117.58	**81.0** 66.89 : 120.40	**84.5** 66.89 : 120.40
Benzo(ghi)perylene	TM218	**92.0** 70.73 : 116.12	**90.0** 67.82 : 118.49	**86.5** 67.82 : 118.49
Benzo(k)fluoranthene	TM218	**88.5** 75.98 : 116.59	**91.5** 73.10 : 117.03	**92.5** 73.10 : 117.03
Chrysene	TM218	**88.5** 74.82 : 114.18	**90.0** 69.58 : 115.47	**91.5** 69.58 : 115.47

PAH by GCMS

		QC 2499	QC 2400	QC 2481
Dibenzo(ah)anthracene	TM218	**88.0** 69.17 : 115.30	**89.0** 67.32 : 121.35	**89.0** 67.32 : 121.35
Fluoranthene	TM218	**89.5** 66.06 : 114.63	**93.0** 75.16 : 117.28	**99.5** 75.16 : 117.28
Fluorene	TM218	**92.5** 76.66 : 107.56	**94.5** 73.81 : 108.66	**95.0** 73.81 : 108.66
Indeno(123cd)pyrene	TM218	**90.0** 70.26 : 117.95	**91.0** 68.91 : 117.62	**89.5** 68.91 : 117.62
Naphthalene	TM218	**89.5** 74.70 : 101.83	**91.0** 72.12 : 106.18	**91.0** 72.12 : 106.18
Phenanthrene	TM218	**91.5** 73.62 : 109.34	**94.5** 69.01 : 113.72	**97.5** 69.01 : 113.72
Pyrene	TM218	**89.0** 71.46 : 117.00	**93.0** 64.28 : 115.75	**98.5** 64.28 : 115.75

PCBs by GCMS

Component	Method Code	QC 2428
PCB congener 101	TM168	**80.6** 65.66 : 110.06
PCB congener 105	TM168	**76.9** 58.10 : 106.34
PCB congener 114	TM168	**76.1** 59.38 : 106.48
PCB congener 118	TM168	**77.2** 60.02 : 106.23
PCB congener 123	TM168	**82.6** 65.01 : 99.81
PCB congener 126	TM168	**79.3** 59.31 : 109.23
PCB congener 138	TM168	**81.0** 63.95 : 107.63
PCB congener 153	TM168	**85.0** 62.65 : 108.85
PCB congener 156	TM168	**78.7** 61.69 : 112.27
PCB congener 157	TM168	**72.7** 55.37 : 104.81
PCB congener 167	TM168	**77.7** 65.58 : 109.14
PCB congener 169	TM168	**77.0** 56.84 : 112.10
PCB congener 180	TM168	**82.2** 66.99 : 111.63
PCB congener 189	TM168	**75.9** 57.75 : 112.59
PCB congener 28	TM168	**84.7** 73.68 : 105.96
PCB congener 52	TM168	**83.8** 67.24 : 107.62
PCB congener 77	TM168	**82.3** 64.87 : 108.49
PCB congener 81	TM168	**80.8** 70.78 : 110.80

pH

Component	Method Code	QC 2497	QC 2415
pH	TM133	**99.56** 98.09 : 101.62	**99.71** 98.09 : 101.62

pH Value of Filtered Water

Component	Method Code	QC 2453	QC 2467
pH	TM256	**100.94** 99.33 : 102.54	**101.47** 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2443	QC 2453	QC 2473
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**58.44** 69.38 : 125.27	**55.19** 69.38 : 125.27	**57.14** 69.38 : 125.27
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**50.88** 69.79 : 122.84	**47.95** 69.79 : 122.84	**50.29** 69.79 : 122.84
Cresols by HPLC (S)	TM062 (S)	**56.37** 77.98 : 111.41	**51.98** 77.98 : 111.41	**53.86** 77.98 : 111.41
Phenol by HPLC (S)	TM062 (S)	**58.28** 67.94 : 117.69	**53.64** 67.94 : 117.69	**55.63** 67.94 : 117.69
Xylenols by HPLC (S)	TM062 (S)	**56.67** 88.23 : 104.42	**52.71** 88.23 : 104.42	**53.85** 88.23 : 104.42

Phenols by HPLC (W)

Component	Method Code	QC 2460
2.3.5 Trimethyl-Phenol by HPLC (W)	TM259	**107.42** 77.41 : 127.55
2-Isopropyl Phenol by HPLC (W)	TM259	**101.34** 82.77 : 126.51
Cresols by HPLC (W)	TM259	**109.87** 76.60 : 126.28
Napthol by HPLC (W)	TM259	**103.52** 75.40 : 129.40
Phenol by HPLC (W)	TM259	**103.97** 85.77 : 125.91
Xylenols by HPLC (W)	TM259	**106.33** 79.09 : 131.82

Semi Volatile Organic Compounds

Component	Method Code	QC 2417
4-Bromophenylphenylether (Soil)	TM157	**92.0** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**96.0** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**93.5** 68.25 : 126.75

Semi Volatile Organic Compounds

		QC 2417
Naphthalene (Soil)	TM157	**92.0** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**87.5** 66.50 : 123.50
Phenol (Soil)	TM157	**94.5** 69.92 : 114.02

Sulphide

Component	Method Code	QC 2411	QC 2421
Sulphide	TM101	**98.0** 88.90 : 112.50	**100.0** 88.90 : 112.50

Total Dissolved Solids

Component	Method Code	QC 2482
Total Dissolved Solids	TM123	**97.9** 97.30 : 100.92

Total Organic Carbon

Component	Method Code	QC 2470	QC 2472	QC 2485
Total Organic Carbon	TM132	**98.05** 87.02 : 113.45	**109.77** 87.02 : 113.45	**104.3** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2427
1,1,1,2-tetrachloroethane	TM116	**111.4** 88.29 : 116.31
1,1,1-Trichloroethane	TM116	**111.4** 88.34 : 114.50
1,1,2-Trichloroethane	TM116	**95.0** 81.29 : 113.79
1,1-Dichloroethane	TM116	**108.2** 86.77 : 122.11
1,2-Dichloroethane	TM116	**115.4** 90.04 : 132.28
1,4-Dichlorobenzene	TM116	**106.8** 80.81 : 125.07
2-Chlorotoluene	TM116	**96.6** 73.13 : 114.13
4-Chlorotoluene	TM116	**93.6** 68.66 : 109.13

VOC MS (S)

		QC 2427
Benzene	TM116	**102.4** 84.29 : 112.22
Carbon Disulphide	TM116	**97.4** 75.11 : 124.81
Carbontetrachloride	TM116	**103.2** 82.35 : 126.46
Chlorobenzene	TM116	**105.0** 82.88 : 122.42
Chloroform	TM116	**106.8** 90.35 : 120.38
Chloromethane	TM116	**91.8** 67.89 : 143.51
Cis-1,2-Dichloroethene	TM116	**103.8** 78.27 : 128.90
Dibromomethane	TM116	**97.4** 76.00 : 120.73
Dichloromethane	TM116	**116.0** 92.27 : 134.36
Ethylbenzene	TM116	**93.0** 70.95 : 113.07
Hexachlorobutadiene	TM116	**90.0** 14.55 : 147.92
Isopropylbenzene	TM116	**83.2** 52.00 : 108.19
Naphthalene	TM116	**109.4** 80.29 : 135.77
o-Xylene	TM116	**87.6** 68.34 : 101.99
p/m-Xylene	TM116	**88.6** 69.47 : 97.31
Sec-Butylbenzene	TM116	**78.6** 27.03 : 135.73
Tetrachloroethene	TM116	**113.4** 81.43 : 126.65
Toluene	TM116	**87.2** 82.44 : 103.50
Trichloroethene	TM116	**96.6** 79.80 : 112.33
Trichlorofluoromethane	TM116	**105.0** 83.13 : 123.97
Vinyl Chloride	TM116	**96.2** 69.66 : 136.55

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

Work Order	: **PR2152263**	Issue Date	: 16-Jun-2021
Customer	: **ALS Life Sciences Ltd**	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: [redacted]	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 210603-83	Page	: 1 of 2
Order number	: ----	Date Samples Received	: 07-Jun-2021
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 07-Jun-2021 - 16-Jun-2021
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories		*Position*
Zdeněk Jirák	[redacted]	Environmental Business Unit Manager

The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)

Analytical Results

Sub-Matrix: **SOIL**	*Client sample ID*	**24387133 BH63**		**24387357 BH65**		**----**	
	Laboratory sample ID	*PR2152263-001*		*PR2152263-002*		----	
	Client sampling date / time	03-Jun-2021 13:08		03-Jun-2021 13:28		----	
Parameter	*Method*	*LOR*	*Unit*	**Result**	**MU**	**Result**	**MU**	**Result**	**MU**
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	**92.6**	± 6.0%	**85.9**	± 6.0%	**----**	----
Pesticides									
2.4.5-T	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
2.4.5-TP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
2.4-D	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
2.4-DB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
2.4-DP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
4-CPP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Bentazone	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Dinoseb	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Fluroxypyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
MCPA	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
MCPB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
MCPP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Acifluorfen	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Bromoxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
DNOC	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Dicamba	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Diclofop	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Ioxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Propoxycarbazone-sodium	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Triclopyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----
Triclosan	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	<0.0100	----	**----**	----

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.
Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	*Method Descriptions*
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PESLMSA1	CZ_SOP_D06_03_182.B (CSN EN 15637, US EPA 1694) Determination of acidic herbicides and drug residues by liquid chromatography method with MS/MS detection.

A "*" symbol preceding any method indicates laboratory or subcontractor non-accredited test. If the UNICO-SUB code is stated in the method table, this only informs that the tests have been performed by a subcontractor and the results are given in an annex to the test report, including information on test accreditation. In the case when a procedure specified in an accredited method was used for non-accredited matrix, the reported results are non-accredited; please refer to information in General Comment section on the front page. If the report contains subcontracted analyses, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.
The calculation methods of summation parameters are available on request in the client service.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	12 June 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210603-84
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	601692

We received 19 samples on Saturday May 29, 2021 and 5 of these samples were scheduled for analysis which was completed on Saturday June 12, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Son

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210603-84	**Client Reference:**	784-B026948	**Report Number:**	601692
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24385322	BH33	ES1	0.40	27/05/2021
24385333	BH33	ES2	1.00	27/05/2021
24385347	BH33	ES1	1.50 - 1.60	27/05/2021
24385351	BH33	ES2	2.20 - 2.30	27/05/2021
24385359	BH33	ES3	2.80 - 2.90	27/05/2021
24385251	BH33	ES4	4.30 - 4.40	27/05/2021
24385258	BH33	ES5	5.00 - 5.10	27/05/2021
24385264	BH33	ES6	6.90 - 7.00	27/05/2021
24385271	BH33	ES7	8.20 - 8.30	27/05/2021
24385281	BH34	ES2	2.40 - 2.50	26/05/2021
24385286	BH34	ES3	3.70 - 3.80	26/05/2021
24385293	BH34	ES4	4.20 - 4.30	26/05/2021
24385297	BH34	ES5	4.70 - 4.80	26/05/2021
24385276	BH34	ES1	5.20 - 5.30	26/05/2021
24385232	BH45	ES1	0.10	27/05/2021
24385305	BH45	ES2	0.55	27/05/2021
24385314	BH45	ES3	1.20	27/05/2021
24385340	BH45	ES1	1.50 - 1.60	27/05/2021
24385365	BH47	ES	3.20 - 3.30	27/05/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210603-84	**Client Reference:**	784-B026948	**Report Number:**	601692
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24385333			24385351			24385264			24385276			24385305						
Customer Sample Reference			BH33			BH33			BH33			BH34			BH45						
AGS Reference			ES2			ES2			ES6			ES1			ES2						
Depth (m)			1.00			2.20 - 2.30			6.90 - 7.00			5.20 - 5.30			0.55						
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)				
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S				
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 4		X			X			X			X								
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 4	X			X			X			X									
Ammonium Soil by Titration	All	NDPs: 0 Tests: 4		X			X			X			X								
Anions by Kone (soil)	All	NDPs: 0 Tests: 4		X			X			X			X								
Anions by Kone (w)	All	NDPs: 0 Tests: 1													X						
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 4	X			X			X			X									
Boron Water Soluble	All	NDPs: 0 Tests: 4		X			X			X			X								
CEN Readings	All	NDPs: 0 Tests: 5	X			X			X			X			X						
Coronene	All	NDPs: 0 Tests: 1														X					
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 8	X	X		X	X		X	X		X	X								
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 5	X			X			X			X			X						
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1													X						
EPH	All	NDPs: 0 Tests: 4		X			X			X			X								
EPH by GCxGC-FID	All	NDPs: 0 Tests: 5		X			X			X			X			X						
EPH CWG GC (S)	All	NDPs: 0 Tests: 4		X			X			X			X								

Validated

CERTIFICATE OF ANALYSIS

SDG:	210603-84	**Client Reference:**	784-B026948	**Report Number:**	601692
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24385333			24385351			24385264			24385276			24385305	
Customer Sample Reference			BH33			BH33			BH33			BH34			BH45	
AGS Reference			ES2			ES2			ES6			ES1			ES2	
Depth (m)			1.00			2.20 - 2.30			6.90 - 7.00			5.20 - 5.30			0.55	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Fluoride	All	NDPs: 0 Tests: 1													X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 4			X			X			X			X			
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 4		X			X			X			X				
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 4	X			X			X			X					
Mercury Dissolved	All	NDPs: 0 Tests: 5	X			X			X			X			X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 4		X			X			X			X				
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1														X	
PAH by GCMS	All	NDPs: 0 Tests: 5		X			X			X			X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 1														X	
pH	All	NDPs: 0 Tests: 4		X			X			X			X				
pH Value of Filtered Water	All	NDPs: 0 Tests: 4	X			X			X			X					
Phenols by HPLC (S)	All	NDPs: 0 Tests: 4		X			X			X			X				
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1													X		
Sample description	All	NDPs: 0 Tests: 5		X			X			X			X			X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 3		X			X			X							

Validated

CERTIFICATE OF ANALYSIS

SDG:	210603-84	**Client Reference:**	784-B026948	**Report Number:**	601692
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24385333			24385351			24385264			24385276			24385305					
Customer Sample Reference			BH33			BH33			BH33			BH34			BH45					
AGS Reference			ES2			ES2			ES6			ES1			ES2					
Depth (m)			1.00			2.20 - 2.30			6.90 - 7.00			5.20 - 5.30			0.55					
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)			
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S	S	S	S			
Sulphide	All	NDPs: 0 Tests: 4	X			X			X			X								
Total Dissolved Solids	All	NDPs: 0 Tests: 1													X					
Total Organic Carbon	All	NDPs: 0 Tests: 5		X			X			X			X			X				
TPH CWG GC (S)	All	NDPs: 0 Tests: 4		X			X			X			X							
VOC MS (S)	All	NDPs: 0 Tests: 5			X			X			X			X			X			

CERTIFICATE OF ANALYSIS

SDG:	210603-84	**Client Reference:**	784-B026948	**Report Number:**	601692
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24385264	BH33	6.90 - 7.00	Dark Brown	Sandy Clay Loam	Stones	None
24385333	BH33	1.00	Dark Brown	Sand	Stones	None
24385351	BH33	2.20 - 2.30	Dark Brown	Silty Sand	Stones	None
24385276	BH34	5.20 - 5.30	Light Brown	Sandy Clay Loam	Stones	None
24385305	BH45	0.55	Light Brown	Sandy Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210603-84	**Client Reference:**	784-B026948	**Report Number:**	601692
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH33	BH33	BH33	BH34	BH45
			Depth (m)	1.00	2.20 - 2.30	6.90 - 7.00	5.20 - 5.30	0.55
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	27/05/2021	27/05/2021	27/05/2021	26/05/2021	27/05/2021
			Sample Time	.	.	.	.	.
			Date Received	29/05/2021	29/05/2021	29/05/2021	29/05/2021	29/05/2021
			SDG Ref	210603-84	210603-84	210603-84	210603-84	210603-84
			Lab Sample No.(s)	24385333	24385351	24385264	24385276	24385305
			AGS Reference	ES2	ES2	ES6	ES1	ES2
Moisture Content Ratio (% of as received sample)	%	PM024		2.3	6.1	17	14	6.1
Exchangeable Ammonia as N	<12 mg/kg	TM024		<12 M	<12 M	142 M	172 M	
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 @ M	<0.01 @ M	<0.01 @ M	<0.01 @ M	
Cresols	<0.01 mg/kg	TM062 (S)		<0.01 @ M	<0.01 @ M	<0.01 @ M	0.0117 @ M	
Xylenols	<0.015 mg/kg	TM062 (S)		<0.015 @ M	<0.015 @ M	<0.015 @ M	<0.015 @ M	
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 @ M	<0.035 @ M	<0.035 @ M	<0.035 @ M	
Organic Carbon, Total	<0.2 %	TM132						0.389 M
Soil Organic Matter (SOM)	<0.35 %	TM132		<0.35 #	<0.35 #	3.07 #	4.91 #	
pH	1 pH Units	TM133		9.16 M	8.7 M	7.03 M	7.07 M	
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	
PCB congener 28	<0.003 mg/kg	TM168						<0.06 M
PCB congener 52	<0.003 mg/kg	TM168						<0.06 M
PCB congener 101	<0.003 mg/kg	TM168						<0.06 M
PCB congener 118	<0.003 mg/kg	TM168						<0.06 M
PCB congener 138	<0.003 mg/kg	TM168						<0.06 M
PCB congener 153	<0.003 mg/kg	TM168						<0.06 M
PCB congener 180	<0.003 mg/kg	TM168						<0.06 M
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168						<0.42
Arsenic	<0.6 mg/kg	TM181		3.01 M	6.3 M	9.61 M	13.2 M	
Cadmium	<0.02 mg/kg	TM181		0.113 M	0.254 M	1.1 M	1.56 M	
Chromium	<0.9 mg/kg	TM181		2.44 M	2.88 M	11.1 M	21.1 M	
Copper	<1.4 mg/kg	TM181		1.95 M	4.66 M	18.5 M	27.4 M	
Iron	<1000 mg/kg	TM181		4820 #	15400 #	23400 #	26900 #	
Lead	<0.7 mg/kg	TM181		11.6 M	6.61 M	90.9 M	112 M	
Mercury	<0.1 mg/kg	TM181		<0.1 M	<0.1 M	0.17 M	0.17 M	
Nickel	<0.2 mg/kg	TM181		2.94 M	6.89 M	20.7 M	30.3 M	
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #	
Vanadium	<0.2 mg/kg	TM181		7 #	7.8 #	24.2 #	40.3 #	
Zinc	<1.9 mg/kg	TM181		14.1 M	35.3 M	144 M	214 M	
Boron, water soluble	<1 mg/kg	TM222		<1 M	<1 M	1.33 M	1.47 M	
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.0066 M	0.0125 M	0.0165 M	<0.004 M	
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248		5.5	6.74	25.4	23.6	

CERTIFICATE OF ANALYSIS

SDG:	210603-84	**Client Reference:**	784-B026948	**Report Number:**	601692
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH33	BH33	BH33	BH34	BH45	
			Depth (m)	1.00	2.20 - 2.30	6.90 - 7.00	5.20 - 5.30	0.55	
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	
			Date Sampled	27/05/2021	27/05/2021	27/05/2021	26/05/2021	27/05/2021	
			Sample Time	.	.	.	.	.	
			Date Received	29/05/2021	29/05/2021	29/05/2021	29/05/2021	29/05/2021	
			SDG Ref	210603-84	210603-84	210603-84	210603-84	210603-84	
			Lab Sample No.(s)	24385333	24385351	24385264	24385276	24385305	
			AGS Reference	ES2	ES2	ES6	ES1	ES2	
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410						<10	
Coronene	<0.2 mg/kg	TM410						<0.2	
EPH (C5-C40)	<35 mg/kg	TM415		<35	<35	<35	50.8		
EPH Surrogate % recovery**	%	TM415		96.3	89	94	92.3	94.6	
EPH >C10-C40	<35 mg/kg	TM415		<35 M	<35 M	<35 M	50.8 M		
Mineral Oil >C10-C40	<5 mg/kg	TM415						44.3	

Validated

CERTIFICATE OF ANALYSIS

SDG:	210603-84	**Client Reference:**	784-B026948	**Report Number:**	601692
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH33	BH33	BH33	BH34		
			Depth (m)	1.00	2.20 - 2.30	6.90 - 7.00	5.20 - 5.30		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	27/05/2021	27/05/2021	27/05/2021	26/05/2021		
			Sample Time	.	.	.	.		
			Date Received	29/05/2021	29/05/2021	29/05/2021	29/05/2021		
			SDG Ref	210603-84	210603-84	210603-84	210603-84		
			Lab Sample No.(s)	24385333	24385351	24385264	24385276		
			AGS Reference	ES2	ES2	ES6	ES1		
Naphthalene-d8 % recovery**	%	TM218		87.2	89.1	86.2	83.2		
Acenaphthene-d10 % recovery**	%	TM218		89.2	88	87.8	82.9		
Phenanthrene-d10 % recovery**	%	TM218		91.8	88.2	89.2	85.1		
Chrysene-d12 % recovery**	%	TM218		93	80.4	80.2	77.1		
Perylene-d12 % recovery**	%	TM218		99.4	79.7	77.1	74.4		
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	<0.009 M	<0.009 M	<0.009 M		
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 M	<0.012 M	<0.012 M	<0.012 M		
Acenaphthene	<0.008 mg/kg	TM218		<0.008 M	<0.008 M	0.0131 M	<0.008 M		
Fluorene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M	0.0167 M	<0.01 M		
Phenanthrene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M	0.0891 M	<0.015 M		
Anthracene	<0.016 mg/kg	TM218		<0.016 M	<0.016 M	<0.016 M	<0.016 M		
Fluoranthene	<0.017 mg/kg	TM218		<0.017 M	<0.017 M	0.0867 M	0.0394 M		
Pyrene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M	0.0763 M	0.0346 M		
Benz(a)anthracene	<0.014 mg/kg	TM218		<0.014 M	<0.014 M	0.0327 M	0.0179 M		
Chrysene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M	0.04 M	0.0227 M		
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M	0.0502 M	0.0297 M		
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		<0.014 M	<0.014 M	<0.014 M	<0.014 M		
Benzo(a)pyrene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M	0.0296 M	<0.015 M		
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		<0.018 M	<0.018 M	0.0268 M	<0.018 M		
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	<0.023 M	<0.023 M	<0.023 M		
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		<0.024 M	<0.024 M	<0.024 M	<0.024 M		
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		<0.118	<0.118	0.461	0.144		

CERTIFICATE OF ANALYSIS

SDG:	210603-84	**Client Reference:**	784-B026948	**Report Number:**	601692
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH33	BH33	BH33			
			Depth (m)	1.00	2.20 - 2.30	6.90 - 7.00			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	27/05/2021	27/05/2021	27/05/2021			
			Sample Time	.	.	.			
			Date Received	29/05/2021	29/05/2021	29/05/2021			
			SDG Ref	210603-84	210603-84	210603-84			
			Lab Sample No.(s)	24385333	24385351	24385264			
			AGS Reference	ES2	ES2	ES6			
Phenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Pentachlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Nitrobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Isophorone	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Hexachloroethane	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Hexachlorobutadiene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Hexachlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
n-Dioctyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Dimethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Diethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
n-Dibutyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Dibenzofuran	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Carbazole	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Butylbenzyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Azobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Nitrophenol	<0.1 mg/kg	TM157		<0.5	<0.5	<0.5			
4-Nitroaniline	<0.1 mg/kg	TM157		<0.5	<0.5	<0.5			
4-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Chlorophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Chloroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Bromophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
3-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2-Chlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			

CERTIFICATE OF ANALYSIS

SDG:	210603-84	**Client Reference:**	784-B026948	**Report Number:**	601692
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH33	BH33	BH33			
			Depth (m)	1.00	2.20 - 2.30	6.90 - 7.00			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	27/05/2021	27/05/2021	27/05/2021			
			Sample Time	.	.	.			
			Date Received	29/05/2021	29/05/2021	29/05/2021			
			SDG Ref	210603-84	210603-84	210603-84			
			Lab Sample No.(s)	24385333	24385351	24385264			
			AGS Reference	ES2	ES2	ES6			
2,6-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2,4-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2,4-Dimethylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2,4-Dichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
1,4-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
1,3-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
1,2-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2-Chloronaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2-Methylnaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Acenaphthylene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Acenaphthene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Anthracene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Benzo(a)anthracene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Benzo(b)fluoranthene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Benzo(k)fluoranthene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Benzo(a)pyrene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Chrysene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Fluoranthene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Fluorene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Phenanthrene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Pyrene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Naphthalene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			

Validated

CERTIFICATE OF ANALYSIS

SDG:	210603-84	**Client Reference:**	784-B026948	**Report Number:**	601692
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH33	BH33	BH33	BH34		
			Depth (m)	1.00	2.20 - 2.30	6.90 - 7.00	5.20 - 5.30		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	27/05/2021	27/05/2021	27/05/2021	26/05/2021		
			Sample Time	.	.	.	.		
			Date Received	29/05/2021	29/05/2021	29/05/2021	29/05/2021		
			SDG Ref	210603-84	210603-84	210603-84	210603-84		
			Lab Sample No.(s)	24385333	24385351	24385264	24385276		
			AGS Reference	ES2	ES2	ES6	ES1		
GRO Surrogate % recovery**	%	TM089		100	117	95.6	91		
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	0.0128	<0.01	<0.01		
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	0.0277	<0.01	<0.01		
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	0.066	<0.01	<0.01		
Aliphatics >C10-C12	<1 mg/kg	TM414		<1	<1	<1	<1		
Aliphatics >C12-C16	<1 mg/kg	TM414		<1	<1	<1	<1		
Aliphatics >C16-C21	<1 mg/kg	TM414		<1	<1	1.33	3.03		
Aliphatics >C21-C35	<1 mg/kg	TM414		8.18	3.03	10.1	9.24		
Aliphatics >C35-C44	<1 mg/kg	TM414		<1	<1	<1	1.06		
Total Aliphatics >C10-C44	<5 mg/kg	TM414		8.57	<5	12.5	13.3		
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		24.2	<10	16	17.6		
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01		
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01		
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	0.0437	<0.01	<0.01		
Aromatics > EC10-EC12	<1 mg/kg	TM414		<1	<1	<1	<1		
Aromatics > EC12-EC16	<1 mg/kg	TM414		<1	<1	<1	<1		
Aromatics > EC16-EC21	<1 mg/kg	TM414		<1	<1	<1	<1		
Aromatics > EC21-EC35	<1 mg/kg	TM414		14.5	<1	2.16	3.02		
Aromatics >EC35-EC44	<1 mg/kg	TM414		<1	<1	<1	<1		
Aromatics > EC40-EC44	<1 mg/kg	TM414		<1	<1	<1	<1		
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		15.6	<5	<5	<5		
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		24.2	<10	12.5	13.3		
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		<0.05	0.107	<0.05	<0.05		
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		<0.05	<0.05	<0.05	<0.05		
GRO >C5-C10	<0.02 mg/kg	TM089		<0.02	0.107	<0.02	<0.02		

CERTIFICATE OF ANALYSIS

SDG:	210603-84	**Client Reference:**	784-B026948	**Report Number:**	601692
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH33	BH33	BH33	BH34	BH45
			Depth (m)	1.00	2.20 - 2.30	6.90 - 7.00	5.20 - 5.30	0.55
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	27/05/2021	27/05/2021	27/05/2021	26/05/2021	27/05/2021
			Sample Time	.	.	.	.	.
			Date Received	29/05/2021	29/05/2021	29/05/2021	29/05/2021	29/05/2021
			SDG Ref	210603-84	210603-84	210603-84	210603-84	210603-84
			Lab Sample No.(s)	24385333	24385351	24385264	24385276	24385305
			AGS Reference	ES2	ES2	ES6	ES1	ES2
Dibromofluoromethane**	%	TM116		108	110	111	111	122
Toluene-d8**	%	TM116		105	99.5	98	100	93.4
4-Bromofluorobenzene**	%	TM116		101	98.5	97.8	86.5	89.6
Dichlorodifluoromethane	<0.006 mg/kg	TM116		<0.12 M	<0.12 M	<0.12 M		
Chloromethane	<0.007 mg/kg	TM116		<0.14 #	<0.14 #	<0.14 #		
Vinyl Chloride	<0.006 mg/kg	TM116		<0.12 @ M	<0.12 @ M	<0.12 @ M		
Bromomethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M		
Chloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M		
Trichlorofluorormethane	<0.006 mg/kg	TM116		<0.12 M	<0.12 M	<0.12 M		
1,1-Dichloroethene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #	<0.2 #		
Carbon Disulphide	<0.007 mg/kg	TM116		<0.14 M	<0.14 M	<0.14 M		
Dichloromethane	<0.01 mg/kg	TM116		<0.2 #	<0.2 #	<0.2 #		
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M	<0.2 M	<0.2 M
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M		
1,1-Dichloroethane	<0.008 mg/kg	TM116		<0.16 M	<0.16 M	<0.16 M		
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116		<0.12 M	<0.12 M	<0.12 M		
2,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2	<0.2	<0.2		
Bromochloromethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M		
Chloroform	<0.008 mg/kg	TM116		<0.16 M	<0.16 M	<0.16 M		
1,1,1-Trichloroethane	<0.007 mg/kg	TM116		<0.14 M	<0.14 M	<0.14 M		
1,1-Dichloropropene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M		
Carbontetrachloride	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M		
1,2-Dichloroethane	<0.005 mg/kg	TM116		<0.1 M	<0.1 M	<0.1 M		
Benzene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M	<0.18 M	<0.18 M	<0.18 M
Trichloroethene	<0.009 mg/kg	TM116		<0.18 #	<0.18 #	<0.18 #		
1,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M		
Dibromomethane	<0.009 mg/kg	TM116		<0.18 M	<0.18 M	<0.18 M		
Bromodichloromethane	<0.007 mg/kg	TM116		<0.14 M	<0.14 M	<0.14 M		
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M		
Toluene	<0.007 mg/kg	TM116		<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2	<0.2	<0.2		
1,1,2-Trichloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M		
1,3-Dichloropropane	<0.007 mg/kg	TM116		<0.14 M	<0.14 M	<0.14 M		

CERTIFICATE OF ANALYSIS

SDG:	210603-84	**Client Reference:**	784-B026948	**Report Number:**	601692
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH33	BH33	BH33	BH34	BH45
			Depth (m)	1.00	2.20 - 2.30	6.90 - 7.00	5.20 - 5.30	0.55
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	27/05/2021	27/05/2021	27/05/2021	26/05/2021	27/05/2021
			Sample Time	.	.	.	.	.
			Date Received	29/05/2021	29/05/2021	29/05/2021	29/05/2021	29/05/2021
			SDG Ref	210603-84	210603-84	210603-84	210603-84	210603-84
			Lab Sample No.(s)	24385333	24385351	24385264	24385276	24385305
			AGS Reference	ES2	ES2	ES6	ES1	ES2
Tetrachloroethene	<0.005 mg/kg	TM116		<0.1 M	<0.1 M	<0.1 M		
Dibromochloromethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M		
1,2-Dibromoethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M		
Chlorobenzene	<0.005 mg/kg	TM116		<0.1 M	<0.1 M	<0.1 M		
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M		
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 M	<0.08 M	<0.08 M	<0.08 M	<0.08 M
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #	<0.2 #	<0.2 #	<0.2 #
o-Xylene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M	<0.2 M	<0.2 M
Styrene	<0.01 mg/kg	TM116		<0.2 @ #	<0.2 @ #	<0.2 @ #		
Bromoform	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M		
Isopropylbenzene	<0.005 mg/kg	TM116		<0.1 #	<0.1 #	<0.1 #		
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 #	<0.2 #	<0.2 #		
1,2,3-Trichloropropane	<0.016 mg/kg	TM116		<0.32 M	<0.32 M	<0.32 M		
Bromobenzene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M		
Propylbenzene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M		
2-Chlorotoluene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M	<0.18 M		
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116		<0.16 M	<0.16 M	<0.16 M		
4-Chlorotoluene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M		
tert-Butylbenzene	<0.014 mg/kg	TM116		<0.28 M	<0.28 M	<0.28 M		
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116		<0.18 #	<0.18 #	<0.18 #		
sec-Butylbenzene	<0.01 mg/kg	TM116		<0.2	<0.2	<0.2		
4-Isopropyltoluene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M		
1,3-Dichlorobenzene	<0.008 mg/kg	TM116		<0.16 M	<0.16 M	<0.16 M		
1,4-Dichlorobenzene	<0.005 mg/kg	TM116		<0.1 M	<0.1 M	<0.1 M		
n-Butylbenzene	<0.011 mg/kg	TM116		<0.22	<0.22	<0.22		
1,2-Dichlorobenzene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M		
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116		<0.28 M	<0.28 M	<0.28 M		
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.2 #	<0.2 #	<0.2 #		
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4	<0.4	<0.4		
Hexachlorobutadiene	<0.02 mg/kg	TM116		<0.4	<0.4	<0.4		
Naphthalene	<0.013 mg/kg	TM116		<0.26 M	<0.26 M	<0.26 M		
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4 #	<0.4 #	<0.4 #		
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4	<0.4	<0.4		

Validated

CERTIFICATE OF ANALYSIS

SDG:	210603-84	**Client Reference:**	784-B026948	**Report Number:**	601692
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH33	BH33	BH33	BH34	BH45	
			Depth (m)	1.00	2.20 - 2.30	6.90 - 7.00	5.20 - 5.30	0.55	
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	
			Date Sampled	27/05/2021	27/05/2021	27/05/2021	26/05/2021	27/05/2021	
			Sample Time	.	.	.	.	.	
			Date Received	29/05/2021	29/05/2021	29/05/2021	29/05/2021	29/05/2021	
			SDG Ref	210603-84	210603-84	210603-84	210603-84	210603-84	
			Lab Sample No.(s)	24385333	24385351	24385264	24385276	24385305	
			AGS Reference	ES2	ES2	ES6	ES1	ES2	
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4	<0.4	<0.4	<0.4		
Sum of BTEX	<0.04 mg/kg	TM116		<0.8	<0.8	<0.8	<0.8		

CERTIFICATE OF ANALYSIS

SDG:	210603-84	**Client Reference:**	784-B026948	**Report Number:**	601692
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH33ES2 1.00 SOLID 27/05/2021 00:00:00 29/05/2021 05:00:00 210603-84 24385333 TM048	04.06.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH33ES2 2.20 - 2.30 SOLID 27/05/2021 00:00:00 29/05/2021 05:00:00 210603-84 24385351 TM048	04/06/2021	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH33ES6 6.90 - 7.00 SOLID 27/05/2021 00:00:00 29/05/2021 05:00:00 210603-84 24385264 TM048	04.06.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH34ES1 5.20 - 5.30 SOLID 26/05/2021 00:00:00 29/05/2021 05:00:00 210603-84 24385276 TM048	04.06.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG:	210603-84	**Client Reference:**	784-B026948	**Report Number:**	601692
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.095	**Natural Moisture Content (%)**	5.62
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	94.7
Particle Size <4mm	>95%		

Case	
SDG	210603-84
Lab Sample Number(s)	24385305
Sampled Date	27-May-2021
Customer Sample Ref.	BH45 ES2
Depth (m)	0.55

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.389	3	5	6
Loss on Ignition (%)	-	-	-	-
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.42	1	-	-
Mineral Oil (mg/kg)	44.3	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	-	-	-	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00743	<0.0005	0.0743	<0.005	0.5	2	25
Barium	0.0315	<0.0002	0.315	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00197	<0.0003	0.0197	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	<0.0004	<0.0004	<0.004	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	5.9	<2	59	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	71.6	<5	716	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.37	<3	33.7	<30	500	800	1000

Leach Test Information

Date Prepared	04-Jun-2021
pH (pH Units)	9.45
Conductivity (µS/cm)	94.10
Temperature (°C)	20.00
Volume Leachant (Litres)	0.895

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation

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11:11:46 12/06/2021

CERTIFICATE OF ANALYSIS

SDG:	210603-84	**Client Reference:**	784-B026948	**Report Number:**	601692
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.120	**Natural Moisture Content (%)**	33.1
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	75.1
Particle Size <4mm	>95%		

Case	
SDG	210603-84
Lab Sample Number(s)	24385264
Sampled Date	27-May-2021
Customer Sample Ref.	BH33 ES6
Depth (m)	6.90 - 7.00

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	4.58	<0.2	45.8	<2	-	-	-
Total Ammonium as NH4	5.89	<0.3	58.9	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	0.0000425	<0.00001	0.000425	<0.0001	-	-	-
Arsenic	0.00854	<0.0005	0.0854	<0.005	-	-	-
Boron	0.198	<0.01	1.98	<0.1	-	-	-
Cadmium	0.000105	<0.00008	0.00105	<0.0008	-	-	-
Chromium	0.00318	<0.001	0.0318	<0.01	-	-	-
Copper	0.00343	<0.0003	0.0343	<0.003	-	-	-
Iron (Dis.Filt) mg/l	1.29	<0.019	12.9	<0.19	-	-	-
Lead	0.00677	<0.0002	0.0677	<0.002	-	-	-
Nickel	0.0128	<0.0004	0.128	<0.004	-	-	-
Selenium	0.00187	<0.001	0.0187	<0.01	-	-	-
Vanadium	0.00563	<0.001	0.0563	<0.01	-	-	-
Zinc	0.125	<0.001	1.25	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	04-Jun-2021
pH (pH Units)	7.41
Conductivity (µS/cm)	227.00
Temperature (°C)	19.80
Volume Leachant (Litres)	0.870

CERTIFICATE OF ANALYSIS

SDG:	210603-84	**Client Reference:**	784-B026948	**Report Number:**	601692
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.123	**Natural Moisture Content (%)**	37.9
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	72.5
Particle Size <4mm	>95%		

Case	
SDG	210603-84
Lab Sample Number(s)	24385276
Sampled Date	26-May-2021
Customer Sample Ref.	BH34 ES1
Depth (m)	5.20 - 5.30

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	6.62	<0.2	66.2	<2	-	-	-
Total Ammonium as NH4	8.51	<0.3	85.1	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	0.0000272	<0.00001	0.000272	<0.0001	-	-	-
Arsenic	0.0223	<0.0005	0.223	<0.005	-	-	-
Boron	0.0799	<0.01	0.799	<0.1	-	-	-
Cadmium	0.000148	<0.00008	0.00148	<0.0008	-	-	-
Chromium	0.00414	<0.001	0.0414	<0.01	-	-	-
Copper	0.0134	<0.0003	0.134	<0.003	-	-	-
Iron (Dis.Filt) mg/l	4.44	<0.019	44.4	<0.19	-	-	-
Lead	0.0338	<0.0002	0.338	<0.002	-	-	-
Nickel	0.0145	<0.0004	0.145	<0.004	-	-	-
Selenium	0.00239	<0.001	0.0239	<0.01	-	-	-
Vanadium	0.00919	<0.001	0.0919	<0.01	-	-	-
Zinc	0.0103	<0.001	0.103	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	04-Jun-2021
pH (pH Units)	7.87
Conductivity (µS/cm)	387.00
Temperature (°C)	20.20
Volume Leachant (Litres)	0.867

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11:11:46 12/06/2021

CERTIFICATE OF ANALYSIS

SDG:	210603-84	**Client Reference:**	784-B026948	**Report Number:**	601692
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.093	**Natural Moisture Content (%)**	3.54
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	96.6
Particle Size <4mm	>95%		

Case	
SDG	210603-84
Lab Sample Number(s)	24385333
Sampled Date	27-May-2021
Customer Sample Ref.	BH33 ES2
Depth (m)	1.00

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.00226	<0.0005	0.0226	<0.005	-	-	-
Boron	<0.01	<0.01	<0.1	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.308	<0.019	3.08	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	0.00188	<0.001	0.0188	<0.01	-	-	-
Vanadium	0.00126	<0.001	0.0126	<0.01	-	-	-
Zinc	0.00177	<0.001	0.0177	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	04-Jun-2021
pH (pH Units)	9.28
Conductivity (µS/cm)	88.40
Temperature (°C)	19.80
Volume Leachant (Litres)	0.897

CERTIFICATE OF ANALYSIS

SDG:	210603-84	**Client Reference:**	784-B026948	**Report Number:**	601692
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.099	**Natural Moisture Content (%)**	9.44
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	91.4
Particle Size <4mm	>95%		

Case	
SDG	210603-84
Lab Sample Number(s)	24385351
Sampled Date	27-May-2021
Customer Sample Ref.	BH33 ES2
Depth (m)	2.20 - 2.30

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.000709	<0.0005	0.00709	<0.005	-	-	-
Boron	<0.01	<0.01	<0.1	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.19	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.007	<0.001	0.07	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	04-Jun-2021
pH (pH Units)	8.94
Conductivity (µS/cm)	70.40
Temperature (°C)	20.50
Volume Leachant (Litres)	0.892

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210603-84	**Client Reference:**	784-B026948	**Report Number:**	601692
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24385264	24385333	24385351	24385276	24385305
Customer Sample Ref.	BH33	BH33	BH33	BH34	BH45
AGS Ref.	ES6	ES2	ES2	ES1	ES2
Depth	6.90 - 7.00	1.00	2.20 - 2.30	5.20 - 5.30	0.55
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	07-Jun-2021	09-Jun-2021	07-Jun-2021	07-Jun-2021	
Ammoniacal Nitrogen	09-Jun-2021	08-Jun-2021	09-Jun-2021	09-Jun-2021	
Ammonium Soil by Titration	08-Jun-2021	08-Jun-2021	08-Jun-2021	08-Jun-2021	
Anions by Kone (soil)	08-Jun-2021	08-Jun-2021	09-Jun-2021	08-Jun-2021	
Anions by Kone (w)					07-Jun-2021
Asbestos ID in Solid Samples	04-Jun-2021	04-Jun-2021	04-Jun-2021	04-Jun-2021	
Boron Water Soluble	08-Jun-2021	08-Jun-2021	08-Jun-2021	08-Jun-2021	
CEN 10:1 Leachate (1 Stage)	04-Jun-2021	04-Jun-2021	04-Jun-2021	04-Jun-2021	04-Jun-2021
CEN Readings	07-Jun-2021	05-Jun-2021	05-Jun-2021	07-Jun-2021	05-Jun-2021
Coronene					08-Jun-2021
Cyanide Comp/Free/Total/Thiocyanate	09-Jun-2021	09-Jun-2021	09-Jun-2021	09-Jun-2021	
Dissolved Metals by ICP-MS	07-Jun-2021	07-Jun-2021	07-Jun-2021	07-Jun-2021	07-Jun-2021
Dissolved Organic/Inorganic Carbon					12-Jun-2021
EPH	07-Jun-2021	07-Jun-2021	07-Jun-2021	08-Jun-2021	
EPH by GCxGC-FID	07-Jun-2021	07-Jun-2021	07-Jun-2021	07-Jun-2021	07-Jun-2021
EPH CWG GC (S)	07-Jun-2021	07-Jun-2021	07-Jun-2021	07-Jun-2021	
Fluoride					07-Jun-2021
GRO by GC-FID (S)	07-Jun-2021	07-Jun-2021	07-Jun-2021	08-Jun-2021	
Hexavalent Chromium (s)	08-Jun-2021	08-Jun-2021	08-Jun-2021	08-Jun-2021	
Hexavalent Chromium (w)	08-Jun-2021	08-Jun-2021	08-Jun-2021	08-Jun-2021	
Mercury Dissolved	09-Jun-2021	09-Jun-2021	10-Jun-2021	10-Jun-2021	09-Jun-2021
Metals in solid samples by OES	08-Jun-2021	09-Jun-2021	09-Jun-2021	08-Jun-2021	
Moisture at 105C	04-Jun-2021	04-Jun-2021	04-Jun-2021	04-Jun-2021	04-Jun-2021
PAH 16 & 17 Calc					08-Jun-2021
PAH by GCMS	07-Jun-2021	07-Jun-2021	07-Jun-2021	07-Jun-2021	07-Jun-2021
PCBs by GCMS					07-Jun-2021
pH	09-Jun-2021	09-Jun-2021	04-Jun-2021	04-Jun-2021	
pH Value of Filtered Water	07-Jun-2021	07-Jun-2021	07-Jun-2021	07-Jun-2021	
Phenols by HPLC (S)	10-Jun-2021	10-Jun-2021	10-Jun-2021	10-Jun-2021	
Phenols by HPLC (W)					08-Jun-2021
Sample description	03-Jun-2021	03-Jun-2021	03-Jun-2021	03-Jun-2021	03-Jun-2021
Semi Volatile Organic Compounds	07-Jun-2021	07-Jun-2021	07-Jun-2021		
Sulphide	08-Jun-2021	08-Jun-2021	08-Jun-2021	08-Jun-2021	
Total Dissolved Solids					09-Jun-2021
Total Organic Carbon	08-Jun-2021	07-Jun-2021	07-Jun-2021	08-Jun-2021	07-Jun-2021
TPH CWG GC (S)	07-Jun-2021	07-Jun-2021	07-Jun-2021	08-Jun-2021	
VOC MS (S)	07-Jun-2021	07-Jun-2021	07-Jun-2021	07-Jun-2021	07-Jun-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2474	QC 2495
Ammoniacal Nitrogen as N	TM099	**100.4** 88.02 : 104.70	**101.2** 88.02 : 104.70

Ammonium Soil by Titration

Component	Method Code	QC 2487
Exchangeable Ammonium as NH4	TM024	**90.05** 74.04 : 103.44

Anions by Kone (w)

Component	Method Code	QC 2468
Chloride	TM184	**101.0** 91.40 : 109.10
Sulphate (soluble)	TM184	**98.0** 91.99 : 109.30

Boron Water Soluble

Component	Method Code	QC 2463	QC 2457
Water Soluble Boron	TM222	**98.5** 84.00 : 111.00	**94.0** 84.00 : 111.00

Coronene

Component	Method Code	QC 2415
Coronene RAW	TM410	**126.0** 79.43 : 137.78

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2460	QC 2440
Free Cyanide	TM153	**92.87** 78.00 : 114.00	
Free Cyanide (W)	TM227		**83.25** 90.67 : 122.67
Thiocyanate	TM153	**94.23** 94.53 : 113.33	

Cyanide Comp/Free/Total/Thiocyanate

		QC 2460	QC 2440
Thiocyanate (W)	TM227		**108.0** 92.25 : 117.75
Total Cyanide	TM153	**100.7** 77.13 : 111.53	
Total Cyanide (W)	TM227		**102.5** 88.75 : 111.25

Dissolved Metals by ICP-MS

Component	Method Code	QC 2458
Aluminium	TM152	**105.0** 94.21 : 111.52
Antimony	TM152	**102.17** 88.37 : 130.57
Arsenic	TM152	**101.5** 92.62 : 113.52
Barium	TM152	**100.83** 88.62 : 113.14
Beryllium	TM152	**103.17** 87.08 : 111.38
Bismuth	TM152	**101.33** 92.62 : 115.02
Boron	TM152	**109.0** 86.31 : 120.88
Cadmium	TM152	**104.0** 93.85 : 111.65
Calcium	TM152	**102.67** 89.20 : 126.91
Chromium	TM152	**102.0** 92.50 : 113.03
Cobalt	TM152	**102.0** 85.01 : 114.87
Copper	TM152	**102.67** 89.87 : 119.73
Iron	TM152	**103.33** 93.02 : 113.86
Lead	TM152	**101.0** 91.11 : 116.98
Lithium	TM152	**104.83** 87.70 : 115.90
Magnesium	TM152	**102.67** 89.60 : 116.61
Manganese	TM152	**104.67** 93.97 : 112.46
Molybdenum	TM152	**100.33** 89.07 : 110.96
Nickel	TM152	**102.67** 93.70 : 112.15
Phosphorus	TM152	**103.67** 89.24 : 114.18
Potassium	TM152	**103.33** 93.20 : 115.55
Selenium	TM152	**106.0** 91.69 : 117.12

Dissolved Metals by ICP-MS

		QC 2458
Silver	TM152	**101.17** 90.93 : 121.73
Sodium	TM152	**102.0** 92.42 : 113.24
Strontium	TM152	**103.67** 92.14 : 116.24
Tellurium	TM152	**102.17** 89.88 : 111.78
Thallium	TM152	**91.33** 82.43 : 113.83
Tin	TM152	**103.17** 94.62 : 107.79
Titanium	TM152	**101.17** 90.29 : 115.23
Tungsten	TM152	**101.17** 77.61 : 132.31
Uranium	TM152	**99.33** 86.97 : 115.76
Vanadium	TM152	**100.5** 89.61 : 115.48
Zinc	TM152	**103.33** 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2421
Dissolved Inorganic Carbon	TM090	**109.0** 93.58 : 112.28
Dissolved Organic Carbon	TM090	**102.0** 96.13 : 109.53

Fluoride

Component	Method Code	QC 2404
Fluoride	TM104	**102.0** 96.67 : 108.67

GRO by GC-FID (S)

Component	Method Code	QC 2468	QC 2498
QC	TM089	**84.88** 68.78 : 110.61	**85.05** 68.78 : 110.61

Hexavalent Chromium (s)

Hexavalent Chromium (s)

Component	Method Code	QC 2449
Hexavalent Chromium	TM151	**96.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2454
Hexavalent Chromium	TM241	**102.0** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2453	QC 2474	QC 2462	QC 2458	QC 2485
Mercury Dissolved (CVAF)	TM183	**91.2** 69.30 : 128.70	**89.4** 69.30 : 128.70	**94.2** 69.30 : 128.70	**94.8** 69.30 : 128.70	**87.7** 69.30 : 128.70

Metals in solid samples by OES

Component	Method Code	QC 2474	QC 2426
Aluminium	TM181	**95.58** 73.56 : 108.85	**96.46** 73.56 : 108.85
Antimony	TM181	**97.56** 76.89 : 111.24	**94.31** 76.89 : 111.24
Arsenic	TM181	**103.2** 88.53 : 111.01	**97.67** 88.53 : 111.01
Barium	TM181	**100.0** 77.67 : 105.35	**97.25** 77.67 : 105.35
Beryllium	TM181	**102.99** 85.44 : 109.61	**98.51** 85.44 : 109.61
Boron	TM181	**96.56** 73.51 : 104.66	**91.12** 73.51 : 104.66
Cadmium	TM181	**97.53** 77.67 : 104.12	**90.95** 77.67 : 104.12
Chromium	TM181	**92.29** 79.64 : 105.83	**87.83** 79.64 : 105.83
Cobalt	TM181	**93.71** 84.60 : 104.13	**88.68** 84.60 : 104.13
Copper	TM181	**100.7** 82.40 : 105.45	**95.6** 82.40 : 105.45
Iron	TM181	**96.83** 82.95 : 110.58	**91.27** 82.95 : 110.58
Lead	TM181	**96.17** 78.24 : 104.05	**91.22** 78.24 : 104.05
Manganese	TM181	**110.0** 94.29 : 119.51	**104.17** 94.29 : 119.51

Metals in solid samples by OES

		QC 2474	QC 2426
Mercury	TM181	**96.86** 83.16 : 107.81	**93.0** 83.16 : 107.81
Molybdenum	TM181	**100.0** 87.11 : 106.87	**95.88** 87.11 : 106.87
Nickel	TM181	**95.35** 80.26 : 102.28	**90.71** 80.26 : 102.28
Phosphorus	TM181	**109.09** 94.56 : 124.28	**103.43** 94.56 : 124.28
Selenium	TM181	**103.14** 82.28 : 110.48	**98.82** 82.28 : 110.48
Strontium	TM181	**95.55** 79.13 : 102.79	**92.43** 79.13 : 102.79
Thallium	TM181	**94.25** 82.94 : 111.86	**92.04** 82.94 : 111.86
Tin	TM181	**104.56** 86.72 : 110.03	**98.86** 86.72 : 110.03
Titanium	TM181	**91.6** 66.23 : 102.06	**86.26** 66.23 : 102.06
Vanadium	TM181	**98.53** 86.19 : 109.45	**94.51** 86.19 : 109.45
Zinc	TM181	**103.49** 84.68 : 113.99	**98.97** 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2499	QC 2400	QC 2481
Acenaphthene	TM218	**93.0** 76.79 : 103.90	**92.5** 73.47 : 109.80	**95.0** 73.47 : 109.80
Acenaphthylene	TM218	**90.5** 74.19 : 106.17	**91.5** 70.00 : 130.00	**93.0** 70.00 : 130.00
Anthracene	TM218	**89.5** 70.90 : 109.22	**91.0** 68.68 : 111.89	**93.5** 68.68 : 111.89
Benz(a)anthracene	TM218	**89.5** 73.77 : 119.26	**87.0** 68.12 : 118.39	**93.5** 68.12 : 118.39
Benzo(a)pyrene	TM218	**91.0** 73.20 : 114.18	**88.5** 71.72 : 115.31	**90.5** 71.72 : 115.31
Benzo(b)fluoranthene	TM218	**84.0** 75.36 : 117.58	**81.0** 66.89 : 120.40	**84.5** 66.89 : 120.40
Benzo(ghi)perylene	TM218	**92.0** 70.73 : 116.12	**90.0** 67.82 : 118.49	**86.5** 67.82 : 118.49
Benzo(k)fluoranthene	TM218	**88.5** 75.98 : 116.59	**91.5** 73.10 : 117.03	**92.5** 73.10 : 117.03
Chrysene	TM218	**88.5** 74.82 : 114.18	**90.0** 69.58 : 115.47	**91.5** 69.58 : 115.47
Dibenzo(ah)anthracene	TM218	**88.0** 69.17 : 115.30	**89.0** 67.32 : 121.35	**89.0** 67.32 : 121.35
Fluoranthene	TM218	**89.5** 66.06 : 114.63	**93.0** 75.16 : 117.28	**99.5** 75.16 : 117.28
Fluorene	TM218	**92.5** 76.66 : 107.56	**94.5** 73.81 : 108.66	**95.0** 73.81 : 108.66
Indeno(123cd)pyrene	TM218	**90.0** 70.26 : 117.95	**91.0** 68.91 : 117.62	**89.5** 68.91 : 117.62
Naphthalene	TM218	**89.5** 74.70 : 101.83	**91.0** 72.12 : 106.18	**91.0** 72.12 : 106.18

PAH by GCMS

		QC 2499	QC 2400	QC 2481
Phenanthrene	TM218	**91.5** 73.62 : 109.34	**94.5** 69.01 : 113.72	**97.5** 69.01 : 113.72
Pyrene	TM218	**89.0** 71.46 : 117.00	**93.0** 64.28 : 115.75	**98.5** 64.28 : 115.75

PCBs by GCMS

Component	Method Code	QC 2428
PCB congener 101	TM168	**80.6** 65.66 : 110.06
PCB congener 105	TM168	**76.9** 58.10 : 106.34
PCB congener 114	TM168	**76.1** 59.38 : 106.48
PCB congener 118	TM168	**77.2** 60.02 : 106.23
PCB congener 123	TM168	**82.6** 65.01 : 99.81
PCB congener 126	TM168	**79.3** 59.31 : 109.23
PCB congener 138	TM168	**81.0** 63.95 : 107.63
PCB congener 153	TM168	**85.0** 62.65 : 108.85
PCB congener 156	TM168	**78.7** 61.69 : 112.27
PCB congener 157	TM168	**72.7** 55.37 : 104.81
PCB congener 167	TM168	**77.7** 65.58 : 109.14
PCB congener 169	TM168	**77.0** 56.84 : 112.10
PCB congener 180	TM168	**82.2** 66.99 : 111.63
PCB congener 189	TM168	**75.9** 57.75 : 112.59
PCB congener 28	TM168	**84.7** 73.68 : 105.96
PCB congener 52	TM168	**83.8** 67.24 : 107.62
PCB congener 77	TM168	**82.3** 64.87 : 108.49
PCB congener 81	TM168	**80.8** 70.78 : 110.80

pH

Component	Method Code	QC 2497	QC 2415
pH	TM133	**99.56** 98.09 : 101.62	**99.71** 98.09 : 101.62

pH Value of Filtered Water

Component	Method Code	QC 2453
pH	TM256	**100.94** 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2443	QC 2453	QC 2473
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**58.44** 69.38 : 125.27	**55.19** 69.38 : 125.27	**57.14** 69.38 : 125.27
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**50.88** 69.79 : 122.84	**47.95** 69.79 : 122.84	**50.29** 69.79 : 122.84
Cresols by HPLC (S)	TM062 (S)	**56.37** 77.98 : 111.41	**51.98** 77.98 : 111.41	**53.86** 77.98 : 111.41
Phenol by HPLC (S)	TM062 (S)	**58.28** 67.94 : 117.69	**53.64** 67.94 : 117.69	**55.63** 67.94 : 117.69
Xylenols by HPLC (S)	TM062 (S)	**56.67** 88.23 : 104.42	**52.71** 88.23 : 104.42	**53.85** 88.23 : 104.42

Phenols by HPLC (W)

Component	Method Code	QC 2460
2.3.5 Trimethyl-Phenol by HPLC (W)	TM259	**107.42** 77.41 : 127.55
2-Isopropyl Phenol by HPLC (W)	TM259	**101.34** 82.77 : 126.51
Cresols by HPLC (W)	TM259	**109.87** 76.60 : 126.28
Napthol by HPLC (W)	TM259	**103.52** 75.40 : 129.40
Phenol by HPLC (W)	TM259	**103.97** 85.77 : 125.91
Xylenols by HPLC (W)	TM259	**106.33** 79.09 : 131.82

Semi Volatile Organic Compounds

Component	Method Code	QC 2417
4-Bromophenylphenylether (Soil)	TM157	**92.0** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**96.0** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**93.5** 68.25 : 126.75
Naphthalene (Soil)	TM157	**92.0** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**87.5** 66.50 : 123.50
Phenol (Soil)	TM157	**94.5** 69.92 : 114.02

Sulphide

Sulphide

Component	Method Code	QC 2411	QC 2410
Sulphide	TM101	**98.0** 88.90 : 112.50	**100.0** 88.90 : 112.50

Total Dissolved Solids

Component	Method Code	QC 2482
Total Dissolved Solids	TM123	**97.9** 97.30 : 100.92

Total Organic Carbon

Component	Method Code	QC 2470	QC 2472
Total Organic Carbon	TM132	**98.05** 87.02 : 113.45	**109.77** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2427
1,1,1,2-tetrachloroethane	TM116	**111.4** 88.29 : 116.31
1,1,1-Trichloroethane	TM116	**111.4** 88.34 : 114.50
1,1,2-Trichloroethane	TM116	**95.0** 81.29 : 113.79
1,1-Dichloroethane	TM116	**108.2** 86.77 : 122.11
1,2-Dichloroethane	TM116	**115.4** 90.04 : 132.28
1,4-Dichlorobenzene	TM116	**106.8** 80.81 : 125.07
2-Chlorotoluene	TM116	**96.6** 73.13 : 114.13
4-Chlorotoluene	TM116	**93.6** 68.66 : 109.13
Benzene	TM116	**102.4** 84.29 : 112.22
Carbon Disulphide	TM116	**97.4** 75.11 : 124.81
Carbontetrachloride	TM116	**103.2** 82.35 : 126.46
Chlorobenzene	TM116	**105.0** 82.88 : 122.42
Chloroform	TM116	**106.8** 90.35 : 120.38

VOC MS (S)

		QC 2427
Chloromethane	TM116	**91.8** 67.89 : 143.51
Cis-1,2-Dichloroethene	TM116	**103.8** 78.27 : 128.90
Dibromomethane	TM116	**97.4** 76.00 : 120.73
Dichloromethane	TM116	**116.0** 92.27 : 134.36
Ethylbenzene	TM116	**93.0** 70.95 : 113.07
Hexachlorobutadiene	TM116	**90.0** 14.55 : 147.92
Isopropylbenzene	TM116	**83.2** 52.00 : 108.19
Naphthalene	TM116	**109.4** 80.29 : 135.77
o-Xylene	TM116	**87.6** 68.34 : 101.99
p/m-Xylene	TM116	**88.6** 69.47 : 97.31
Sec-Butylbenzene	TM116	**78.6** 27.03 : 135.73
Tetrachloroethene	TM116	**113.4** 81.43 : 126.65
Toluene	TM116	**87.2** 82.44 : 103.50
Trichloroethene	TM116	**96.6** 79.80 : 112.33
Trichlorofluoromethane	TM116	**105.0** 83.13 : 123.97
Vinyl Chloride	TM116	**96.2** 69.66 : 136.55

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

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Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	17 June 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210607-34
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	602395

This report has been revised and directly supersedes 601998 in its entirety.

We received 11 samples on Friday June 04, 2021 and 4 of these samples were scheduled for analysis which was completed on Thursday June 17, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Soni

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210607-34	**Client Reference:**	784-B026948	**Report Number:**	602395
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601998

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24406590	BH31	ES1	0.40	02/06/2021
24406598	BH31	ES4	1.00	02/06/2021
24406535	BH54	ES1	0.40	02/06/2021
24406529	BH62	ES`1	0.30	02/06/2021
24406521	TP09	ES1	0.10	02/06/2021
24406541	TP09	ES2	0.60	02/06/2021
24406549	TP09	ES3	1.70	02/06/2021
24406579	TP10	EW1	0.00 - 0.00	02/06/2021
24406558	TP10	ES1	0.20	02/06/2021
24406565	TP10	ES2	1.00	02/06/2021
24406572	TP10	ES3	1.70	02/06/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210607-34	**Client Reference:**	784-B026948	**Report Number:**	602395
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601998

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24406535			24406529			24406558			24406565												
Customer Sample Reference			BH54			BH62			TP10			TP10												
AGS Reference			ES1			ES1			ES1			ES2												
Depth (m)			0.40			0.30			0.20			1.00												
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)										
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S										
Acid herbicides*	All	NDPs: 0 Tests: 2					X			X														
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 3		X			X			X														
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 2	X			X																		
Ammonium Soil by Titration	All	NDPs: 0 Tests: 3		X			X			X														
Anions by Kone (soil)	All	NDPs: 0 Tests: 3		X			X			X														
Anions by Kone (w)	All	NDPs: 0 Tests: 1											X											
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 3	X			X			X															
Boron Water Soluble	All	NDPs: 0 Tests: 3		X			X			X														
CEN Readings	All	NDPs: 0 Tests: 3	X			X						X												
Coronene	All	NDPs: 0 Tests: 1												X										
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 5	X	X		X	X			X														
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 3	X			X						X												
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1										X												
EPH	All	NDPs: 0 Tests: 3		X			X			X														
EPH by GCxGC-FID	All	NDPs: 0 Tests: 4		X			X			X			X											

Validated

CERTIFICATE OF ANALYSIS

SDG:	210607-34	**Client Reference:**	784-B026948	**Report Number:**	602395
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601998

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24406535			24406529				24406558				24406565									
Customer Sample Reference			BH54			BH62				TP10				TP10									
AGS Reference			ES1			ES1				ES1				ES2									
Depth (m)			0.40			0.30				0.20				1.00									
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)									
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S									
EPH CWG GC (S)	All	NDPs: 0 Tests: 3		X			X			X													
Fluoride	All	NDPs: 0 Tests: 1										X											
GRO by GC-FID (S)	All	NDPs: 0 Tests: 3			X			X			X												
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 3		X			X			X													
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 2	X			X																	
Mercury Dissolved	All	NDPs: 0 Tests: 3	X			X						X											
Metals in solid samples by OES	All	NDPs: 0 Tests: 3		X			X			X													
OC OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 2					X			X													
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1											X										
PAH by GCMS	All	NDPs: 0 Tests: 4		X			X			X			X										
PCBs by GCMS	All	NDPs: 0 Tests: 1											X										
pH	All	NDPs: 0 Tests: 3		X			X			X													
pH Value of Filtered Water	All	NDPs: 0 Tests: 2	X			X																	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 3		X			X			X													
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1										X											

Validated

CERTIFICATE OF ANALYSIS

SDG:	210607-34	**Client Reference:**	784-B026948	**Report Number:**	602395
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601998

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24406535			24406529			24406558			24406565		
Customer Sample Reference			BH54			BH62			TP10			TP10		
AGS Reference			ES1			ES1			ES1			ES2		
Depth (m)			0.40			0.30			0.20			1.00		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S
Sample description	All	NDPs: 0 Tests: 4		X			X			X			X	
Sulphide	All	NDPs: 0 Tests: 2	X			X								
Total Dissolved Solids	All	NDPs: 0 Tests: 1										X		
Total Organic Carbon	All	NDPs: 0 Tests: 4		X			X			X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 3		X			X			X				
VOC MS (S)	All	NDPs: 0 Tests: 4			X			X			X			X

CERTIFICATE OF ANALYSIS

SDG:	210607-34	**Client Reference:**	784-B026948	**Report Number:**	602395
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601998

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24406535	BH54	0.40	Dark Brown	Sandy Loam	Stones	Vegetation
24406529	BH62	0.30	Dark Brown	Sandy Loam	Stones	Vegetation
24406558	TP10	0.20	Dark Brown	Sandy Clay Loam	Stones	Vegetation
24406565	TP10	1.00	Light Brown	Clay Loam	None	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210607-34	**Client Reference:**	784-B026948	**Report Number:**	602395
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601998

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH54	BH62	TP10	TP10		
			Depth (m)	0.40	0.30	0.20	1.00		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	02/06/2021	02/06/2021	02/06/2021	02/06/2021		
			Sample Time	.	.	.	.		
			Date Received	04/06/2021	04/06/2021	04/06/2021	04/06/2021		
			SDG Ref	210607-34	210607-34	210607-34	210607-34		
			Lab Sample No.(s)	24406535	24406529	24406558	24406565		
			AGS Reference	ES1	ES`1	ES1	ES2		
Moisture Content Ratio (% of as received sample)	%	PM024		18	12	18	22		
2,4,5-T*	<0.01 mg/kg	SUB			<0.01	<0.01			
2,4,5-TP (Fenoprop)*	<0.01 mg/kg	SUB			<0.01	<0.01			
2,4-D*	<0.01 mg/kg	SUB			<0.01	<0.01			
2,4-DB*	<0.01 mg/kg	SUB			<0.01	<0.01			
2,4-Dichloroprop (2,4 DP)*	<0.01 mg/kg	SUB			<0.01	<0.01			
4-Chlorophenoxyacetic acid (4-CPA)*	<0.01 mg/kg	SUB			<0.01	<0.01			
Acifluorfen*	<0.01 mg/kg	SUB			<0.01	<0.01			
Bentazone*	<0.01 mg/kg	SUB			<0.01	<0.01			
Bromoxynil*	<0.01 mg/kg	SUB			<0.01	<0.01			
Dicamba*	<0.01 mg/kg	SUB			<0.01	<0.01			
Diclofop*	<0.01 mg/kg	SUB			<0.01	<0.01			
Dinoseb*	<0.01 mg/kg	SUB			<0.01	<0.01			
DNOC*	<0.01 mg/kg	SUB			<0.01	<0.01			
Fluroxypyr*	<0.01 mg/kg	SUB			<0.01	<0.01			
Ioxynil*	<0.01 mg/kg	SUB			<0.01	<0.01			
2-methyl-4-Chlorophenoxyacetic acid (MCPA)*	<0.01 mg/kg	SUB			<0.01	<0.01			
4-(4-Chloro-o-tolyloxy) butyric acid (MCPB)*	<0.01 mg/kg	SUB			<0.01	<0.01			
Mecoprop (MCPP)*	<0.01 mg/kg	SUB			<0.01	<0.01			
Propoxycarbazone-sodium*	<0.01 mg/kg	SUB			<0.01	<0.01			
Triclopyr*	<0.01 mg/kg	SUB			<0.01	<0.01			
Triclosan*	<0.01 mg/kg	SUB			<0.01	<0.01			
Exchangeable Ammonia as N	<12 mg/kg	TM024		<12 M	<12 M	<12 M			
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 M	<0.01 M	<0.01 M			
Cresols	<0.01 mg/kg	TM062 (S)		<0.01 M	<0.01 M	<0.01 M			
Xylenols	<0.015 mg/kg	TM062 (S)		<0.015 M	<0.015 M	<0.015 M			
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 M	<0.035 M	<0.035 M			
Organic Carbon, Total	<0.2 %	TM132					0.758 M		
Soil Organic Matter (SOM)	<0.35 %	TM132		4.28 #	3.81 #	4.12 #			
pH	1 pH Units	TM133		7.51 M	7.46 M	7.59 M			
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #			
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M	<1 M			
PCB congener 28	<0.003 mg/kg	TM168					<0.003 M		

CERTIFICATE OF ANALYSIS

SDG:	210607-34	**Client Reference:**	784-B026948	**Report Number:**	602395
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601998

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH54	BH62	TP10	TP10		
			Depth (m)	0.40	0.30	0.20	1.00		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	02/06/2021	02/06/2021	02/06/2021	02/06/2021		
			Sample Time	.	.	.	.		
			Date Received	04/06/2021	04/06/2021	04/06/2021	04/06/2021		
			SDG Ref	210607-34	210607-34	210607-34	210607-34		
			Lab Sample No.(s)	24406535	24406529	24406558	24406565		
			AGS Reference	ES1	ES`1	ES1	ES2		
PCB congener 52	<0.003 mg/kg	TM168					<0.003 M		
PCB congener 101	<0.003 mg/kg	TM168					<0.003 M		
PCB congener 118	<0.003 mg/kg	TM168					<0.003 M		
PCB congener 138	<0.003 mg/kg	TM168					<0.003 M		
PCB congener 153	<0.003 mg/kg	TM168					<0.003 M		
PCB congener 180	<0.003 mg/kg	TM168					<0.003 M		
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168					<0.021		
Arsenic	<0.6 mg/kg	TM181		10.9 M	10.3 M	15.6 M			
Cadmium	<0.02 mg/kg	TM181		1.35 M	0.823 M	1.88 M			
Chromium	<0.9 mg/kg	TM181		18.6 M	22.6 M	24 M			
Copper	<1.4 mg/kg	TM181		24.8 M	37 M	33.3 M			
Iron	<1000 mg/kg	TM181		23000 #	25200 #	35400 #			
Lead	<0.7 mg/kg	TM181		128 M	72.9 M	174 M			
Mercury	<0.1 mg/kg	TM181		<0.1 M	0.166 M	<0.1 M			
Nickel	<0.2 mg/kg	TM181		28.1 M	30.7 M	35.2 M			
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #			
Vanadium	<0.2 mg/kg	TM181		35.7 #	33.6 #	47.8 #			
Zinc	<1.9 mg/kg	TM181		163 M	124 M	255 M			
Boron, water soluble	<1 mg/kg	TM222		<1 M	1.14 M	1.25 M			
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.0703 M	0.0146 M	<0.004 M			
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248		3.01	1.79	1.97			
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410					<10		
Coronene	<0.2 mg/kg	TM410					<0.2		
EPH (C5-C40)	<35 mg/kg	TM415		<35	<35	48			
EPH Surrogate % recovery**	%	TM415		95.6	99	90.6	92.5		
EPH >C10-C40	<35 mg/kg	TM415		<35 M	<35 M	48 M			
Mineral Oil >C10-C40	<5 mg/kg	TM415					<5		

CERTIFICATE OF ANALYSIS

SDG:	210607-34	**Client Reference:**	784-B026948	**Report Number:**	602395
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601998

OC OP Pesticides and Triazine Herb

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH62	TP10				
			Depth (m)	0.30	0.20				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	02/06/2021	02/06/2021				
			Sample Time	.	.				
			Date Received	04/06/2021	04/06/2021				
			SDG Ref	210607-34	210607-34				
			Lab Sample No.(s)	24406529	24406558				
			AGS Reference	ES`1	ES1				
Dichlorvos	<0.05 mg/kg	TM073		<0.05	<0.05				
Mevinphos	<0.05 mg/kg	TM073		<0.05	<0.05				
Phorate	<0.05 mg/kg	TM073		<0.05	<0.05				
alpha-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073		<0.05	<0.05				
Diazinon	<0.05 mg/kg	TM073		<0.05	<0.05				
gamma-Hexachlorocyclohexane (HCH / Lindane)	<0.05 mg/kg	TM073		<0.05	<0.05				
Disulfoton	<0.05 mg/kg	TM073		<0.05	<0.05				
Heptachlor	<0.05 mg/kg	TM073		<0.05	<0.05				
Aldrin	<0.05 mg/kg	TM073		<0.05	<0.05				
beta-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073		<0.05	<0.05				
Methyl parathion	<0.05 mg/kg	TM073		<0.05	<0.05				
Malathion	<0.05 mg/kg	TM073		<0.05	<0.05				
Fenitrothion	<0.05 mg/kg	TM073		<0.05	<0.05				
Heptachlor epoxide	<0.05 mg/kg	TM073		<0.05	<0.05				
Parathion	<0.05 mg/kg	TM073		<0.05	<0.05				
Endosulphan I	<0.05 mg/kg	TM073		<0.05	<0.05				
p,p-DDE	<0.05 mg/kg	TM073		<0.05	<0.05				
Dieldrin	<0.05 mg/kg	TM073		<0.05	<0.05				
Endrin	<0.05 mg/kg	TM073		<0.05	<0.05				
p,p-TDE (DDD)	<0.05 mg/kg	TM073		<0.05	<0.05				
Ethion	<0.05 mg/kg	TM073		<0.05	<0.05				
Endosulphan II	<0.05 mg/kg	TM073		<0.05	<0.05				
p,p-DDT	<0.05 mg/kg	TM073		<0.1	<0.1				
p,p-Methoxychlor	<0.05 mg/kg	TM073		<0.05	<0.05				
Endosulphan sulphate	<0.05 mg/kg	TM073		<0.05	<0.05				
Azinphos-methyl	<0.05 mg/kg	TM073		<0.05	<0.05				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210607-34	**Client Reference:**	784-B026948	**Report Number:**	602395
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601998

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH54	BH62	TP10			
			Depth (m)	0.40	0.30	0.20			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	02/06/2021	02/06/2021	02/06/2021			
			Sample Time	.	.	.			
			Date Received	04/06/2021	04/06/2021	04/06/2021			
			SDG Ref	210607-34	210607-34	210607-34			
			Lab Sample No.(s)	24406535	24406529	24406558			
			AGS Reference	ES1	ES`1	ES1			
Naphthalene-d8 % recovery**	%	TM218		73.2	83.6	83.2			
Acenaphthene-d10 % recovery**	%	TM218		74.6	82.1	81.2			
Phenanthrene-d10 % recovery**	%	TM218		76.2	83.9	84			
Chrysene-d12 % recovery**	%	TM218		72.4	76	78.9			
Perylene-d12 % recovery**	%	TM218		71.4	72	74.9			
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	0.0125 M	<0.009 M			
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 M	0.0238 M	0.032 M			
Acenaphthene	<0.008 mg/kg	TM218		<0.008 M	<0.008 M	0.0257 M			
Fluorene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M	0.0254 M			
Phenanthrene	<0.015 mg/kg	TM218		0.0236 M	0.0594 M	0.508 M			
Anthracene	<0.016 mg/kg	TM218		<0.016 M	<0.016 M	0.178 M			
Fluoranthene	<0.017 mg/kg	TM218		0.0575 M	0.172 M	1.67 M			
Pyrene	<0.015 mg/kg	TM218		0.051 M	0.156 M	1.5 M			
Benz(a)anthracene	<0.014 mg/kg	TM218		0.0324 M	0.098 M	0.802 M			
Chrysene	<0.01 mg/kg	TM218		0.033 M	0.115 M	0.811 M			
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		0.0502 M	0.172 M	1.11 M			
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.0199 M	0.053 M	0.39 M			
Benzo(a)pyrene	<0.015 mg/kg	TM218		0.0284 M	0.109 M	0.759 M			
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.0236 M	0.0861 M	0.51 M			
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	<0.023 M	0.0992 M			
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		<0.024 M	0.0969 M	0.504 M			
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		0.32	1.15	8.92			

CERTIFICATE OF ANALYSIS

SDG:	210607-34	**Client Reference:**	784-B026948	**Report Number:**	602395
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601998

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	BH54	BH62	TP10			
Customer Sample Ref.								
Depth (m)			0.40	0.30	0.20			
Sample Type			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
Date Sampled			02/06/2021	02/06/2021	02/06/2021			
Sample Time			.	.	.			
Date Received			04/06/2021	04/06/2021	04/06/2021			
SDG Ref			210607-34	210607-34	210607-34			
Lab Sample No.(s)			24406535	24406529	24406558			
AGS Reference			ES1	ES`1	ES1			
GRO Surrogate % recovery**	%	TM089	87.2	71.8	89.8			
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01			
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01			
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01			
Aliphatics >C10-C12	<1 mg/kg	TM414	<1 #	<1 #	<1 #			
Aliphatics >C12-C16	<1 mg/kg	TM414	<1 #	<1 #	<1 #			
Aliphatics >C16-C21	<1 mg/kg	TM414	<1 #	<1 #	<1 #			
Aliphatics >C21-C35	<1 mg/kg	TM414	10.8 #	5.15 #	6.81 #			
Aliphatics >C35-C44	<1 mg/kg	TM414	<1	<1	<1			
Total Aliphatics >C10-C44	<5 mg/kg	TM414	11.6	5.27	7.07			
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414	15.6	10.5	32.5			
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01			
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01			
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01			
Aromatics > EC10-EC12	<1 mg/kg	TM414	<1 #	<1 #	<1 #			
Aromatics > EC12-EC16	<1 mg/kg	TM414	<1 #	<1 #	<1 #			
Aromatics > EC16-EC21	<1 mg/kg	TM414	<1 #	1.19 #	4.44 #			
Aromatics > EC21-EC35	<1 mg/kg	TM414	2.54 #	3.07 #	19 #			
Aromatics >EC35-EC44	<1 mg/kg	TM414	1.31	1	2.02			
Aromatics > EC40-EC44	<1 mg/kg	TM414	<1	<1	<1			
Total Aromatics > EC10-EC44	<5 mg/kg	TM414	<5	5.26	25.5			
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414	11.6	10.5	32.5			
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089	<0.05	<0.05	<0.05			
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089	<0.05	<0.05	<0.05			
GRO >C5-C10	<0.02 mg/kg	TM089	<0.02	<0.02	<0.02			

CERTIFICATE OF ANALYSIS

SDG:	210607-34	**Client Reference:**	784-B026948	**Report Number:**	602395
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601998

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH54	BH62	TP10	TP10		
			Depth (m)	0.40	0.30	0.20	1.00		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	02/06/2021	02/06/2021	02/06/2021	02/06/2021		
			Sample Time	.	.	.	.		
			Date Received	04/06/2021	04/06/2021	04/06/2021	04/06/2021		
			SDG Ref	210607-34	210607-34	210607-34	210607-34		
			Lab Sample No.(s)	24406535	24406529	24406558	24406565		
			AGS Reference	ES1	ES`1	ES1	ES2		
Dibromofluoromethane**	%	TM116		115	107	106	107		
Toluene-d8**	%	TM116		99	97.2	94.9	100		
4-Bromofluorobenzene**	%	TM116		101	95.3	102	99.9		
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.01 M	<0.01 M	<0.01 M	<0.01 M		
Benzene	<0.009 mg/kg	TM116		<0.009 M	<0.009 M	<0.009 M	<0.009 M		
Toluene	<0.007 mg/kg	TM116		<0.007 M	<0.007 M	<0.007 M	<0.007 M		
Ethylbenzene	<0.004 mg/kg	TM116		<0.004 M	<0.004 M	<0.004 M	<0.004 M		
p/m-Xylene	<0.01 mg/kg	TM116		<0.01 #	<0.01 #	<0.01 #	<0.01 #		
o-Xylene	<0.01 mg/kg	TM116		<0.01 M	<0.01 M	<0.01 M	<0.01 M		
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.02	<0.02	<0.02			
Sum of BTEX	<0.04 mg/kg	TM116		<0.04	<0.04	<0.04			

CERTIFICATE OF ANALYSIS

SDG:	210607-34	**Client Reference:**	784-B026948	**Report Number:**	602395
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601998

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&+$@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	BH54ES1 0.40 SOLID 02/06/2021 00:00:00 04/06/2021 05:00:00 210607-34 24406535 TM048	09.06.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	BH62ES`1 0.30 SOLID 02/06/2021 00:00:00 04/06/2021 05:00:00 210607-34 24406529 TM048	09.06.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP10ES1 0.20 SOLID 02/06/2021 00:00:00 04/06/2021 05:00:00 210607-34 24406558 TM048	09.06.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG:	210607-34	**Client Reference:**	784-B026948	**Report Number:**	602395
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601998

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.118	**Natural Moisture Content (%)**	31
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	76.3
Particle Size <4mm	>95%		

Case	
SDG	210607-34
Lab Sample Number(s)	24406565
Sampled Date	02-Jun-2021
Customer Sample Ref.	TP10 ES2
Depth (m)	1.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.758	3	5	6
Loss on Ignition (%)	-	-	-	-
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	-	-	-	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.000545	<0.0005	0.00545	<0.005	0.5	2	25
Barium	0.0124	<0.0002	0.124	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00277	<0.0003	0.0277	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000603	<0.0004	0.00603	<0.004	0.4	10	40
Lead	0.0011	<0.0002	0.011	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00249	<0.001	0.0249	<0.01	4	50	200
Chloride	<2	<2	<20	<20	800	15000	25000
Fluoride	0.718	<0.5	7.18	<5	10	150	500
Sulphate (soluble)	3.4	<2	34	<20	1000	20000	50000
Total Dissolved Solids	48.6	<5	486	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	6	<3	60	<30	500	800	1000

Leach Test Information

Date Prepared	09-Jun-2021
pH (pH Units)	8.29
Conductivity (µS/cm)	60.00
Temperature (°C)	19.10
Volume Leachant (Litres)	0.872

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation

17/06/2021 14:16:49

14:16:31 17/06/2021

CERTIFICATE OF ANALYSIS

SDG:	210607-34	**Client Reference:**	784-B026948	**Report Number:**	602395
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601998

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.106	**Natural Moisture Content (%)**	18
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	84.7
Particle Size <4mm	>95%		

Case	
SDG	210607-34
Lab Sample Number(s)	24406529
Sampled Date	02-Jun-2021
Customer Sample Ref.	BH62 ES`1
Depth (m)	0.30

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	0.0000154	<0.00001	0.000154	<0.0001	-	-	-
Arsenic	0.00155	<0.0005	0.0155	<0.005	-	-	-
Boron	0.0511	<0.01	0.511	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.00161	<0.001	0.0161	<0.01	-	-	-
Copper	0.00298	<0.0003	0.0298	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.391	<0.019	3.91	<0.19	-	-	-
Lead	0.00118	<0.0002	0.0118	<0.002	-	-	-
Nickel	0.00148	<0.0004	0.0148	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	0.00285	<0.001	0.0285	<0.01	-	-	-
Zinc	0.00786	<0.001	0.0786	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	07-Jun-2021
pH (pH Units)	8.03
Conductivity (µS/cm)	48.40
Temperature (°C)	21.50
Volume Leachant (Litres)	0.884

CERTIFICATE OF ANALYSIS

SDG:	210607-34	**Client Reference:**	784-B026948	**Report Number:**	602395
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601998

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.122	**Natural Moisture Content (%)**	35.6
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	73.7
Particle Size <4mm	>95%		

Case	
SDG	210607-34
Lab Sample Number(s)	24406535
Sampled Date	02-Jun-2021
Customer Sample Ref.	BH54 ES1
Depth (m)	0.40

Eluate Analysis	**C_2 Conc^n in 10:1 eluate (mg/l)**		**A_2 10:1 conc^n leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	0.0000159	<0.00001	0.000159	<0.0001	-	-	-
Arsenic	0.000542	<0.0005	0.00542	<0.005	-	-	-
Boron	0.177	<0.01	1.77	<0.1	-	-	-
Cadmium	0.000117	<0.00008	0.00117	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00625	<0.0003	0.0625	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.341	<0.019	3.41	<0.19	-	-	-
Lead	0.00169	<0.0002	0.0169	<0.002	-	-	-
Nickel	0.00329	<0.0004	0.0329	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0882	<0.001	0.882	<0.01	-	-	-
Sulphide	0.0688	<0.01	0.688	<0.1	-	-	-

Leach Test Information

Date Prepared	07-Jun-2021
pH (pH Units)	7.64
Conductivity (µS/cm)	84.90
Temperature (°C)	21.30
Volume Leachant (Litres)	0.868

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210607-34	**Client Reference:**	784-B026948	**Report Number:**	602395
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601998

Test Completion Dates

Lab Sample No(s)	24406535	24406529	24406558	24406565
Customer Sample Ref.	BH54	BH62	TP10	TP10
AGS Ref.	ES1	ES`1	ES1	ES2
Depth	0.40	0.30	0.20	1.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Acid herbicides*		17-Jun-2021	17-Jun-2021	
Ammoniacal N as NH4 in 2:1 extract	09-Jun-2021	09-Jun-2021	14-Jun-2021	
Ammoniacal Nitrogen	11-Jun-2021	11-Jun-2021		
Ammonium Soil by Titration	08-Jun-2021	08-Jun-2021	10-Jun-2021	
Anions by Kone (soil)	09-Jun-2021	09-Jun-2021	11-Jun-2021	
Anions by Kone (w)				10-Jun-2021
Asbestos ID in Solid Samples	09-Jun-2021	09-Jun-2021	09-Jun-2021	
Boron Water Soluble	08-Jun-2021	08-Jun-2021	10-Jun-2021	
CEN 10:1 Leachate (1 Stage)	08-Jun-2021	08-Jun-2021		09-Jun-2021
CEN Readings	10-Jun-2021	10-Jun-2021		10-Jun-2021
Coronene				14-Jun-2021
Cyanide Comp/Free/Total/Thiocyanate	11-Jun-2021	11-Jun-2021	10-Jun-2021	
Dissolved Metals by ICP-MS	10-Jun-2021	10-Jun-2021		11-Jun-2021
Dissolved Organic/Inorganic Carbon				15-Jun-2021
EPH	10-Jun-2021	10-Jun-2021	10-Jun-2021	
EPH by GCxGC-FID	09-Jun-2021	09-Jun-2021	10-Jun-2021	10-Jun-2021
EPH CWG GC (S)	09-Jun-2021	09-Jun-2021	10-Jun-2021	
Fluoride				11-Jun-2021
GRO by GC-FID (S)	09-Jun-2021	09-Jun-2021	09-Jun-2021	
Hexavalent Chromium (s)	09-Jun-2021	09-Jun-2021	11-Jun-2021	
Hexavalent Chromium (w)	11-Jun-2021	11-Jun-2021		
Mercury Dissolved	10-Jun-2021	10-Jun-2021		11-Jun-2021
Metals in solid samples by OES	10-Jun-2021	14-Jun-2021	14-Jun-2021	
Moisture at 105C	07-Jun-2021	07-Jun-2021		09-Jun-2021
OC OP Pesticides and Triazine Herb		10-Jun-2021	10-Jun-2021	
PAH 16 & 17 Calc				10-Jun-2021
PAH by GCMS	09-Jun-2021	09-Jun-2021	09-Jun-2021	10-Jun-2021
PCBs by GCMS				10-Jun-2021
pH	10-Jun-2021	09-Jun-2021	10-Jun-2021	
pH Value of Filtered Water	11-Jun-2021	11-Jun-2021		
Phenols by HPLC (S)	09-Jun-2021	09-Jun-2021	14-Jun-2021	
Phenols by HPLC (W)				14-Jun-2021
Sample description	07-Jun-2021	07-Jun-2021	08-Jun-2021	08-Jun-2021
Sulphide	14-Jun-2021	14-Jun-2021		
Total Dissolved Solids				14-Jun-2021
Total Organic Carbon	10-Jun-2021	10-Jun-2021	10-Jun-2021	14-Jun-2021
TPH CWG GC (S)	09-Jun-2021	09-Jun-2021	10-Jun-2021	
VOC MS (S)	09-Jun-2021	09-Jun-2021	09-Jun-2021	10-Jun-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2413
Ammoniacal Nitrogen as N	TM099	**94.4** 88.02 : 104.70

Ammonium Soil by Titration

Component	Method Code	QC 2487	QC 2405
Exchangeable Ammonium as NH4	TM024	**90.05** 74.04 : 103.44	**96.02** 74.04 : 103.44

Anions by Kone (soil)

Component	Method Code	QC 2420
Chloride (soluble)	TM243	**144.04** 80.93 : 111.66
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**155.14** 70.00 : 130.00

Anions by Kone (w)

Component	Method Code	QC 2465
Chloride	TM184	**104.0** 92.93 : 115.43
Sulphate (soluble)	TM184	**104.4** 90.53 : 113.03

Boron Water Soluble

Component	Method Code	QC 2447	QC 2426
Water Soluble Boron	TM222	**99.0** 84.00 : 111.00	**102.5** 84.00 : 111.00

Coronene

Component	Method Code	QC 2440
Coronene RAW	TM410	**102.5** 79.43 : 137.78

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2485	QC 2417	QC 2499
Free Cyanide	TM153	**95.74** 78.00 : 114.00	**97.23** 78.00 : 114.00	
Free Cyanide (W)	TM227			**79.25** 90.67 : 122.67
Thiocyanate	TM153	**98.08** 94.53 : 113.33	**100.64** 94.53 : 113.33	
Thiocyanate (W)	TM227			**107.0** 92.25 : 117.75
Total Cyanide	TM153	**99.3** 77.13 : 111.53	**97.9** 77.13 : 111.53	
Total Cyanide (W)	TM227			**97.5** 88.75 : 111.25

Dissolved Metals by ICP-MS

Component	Method Code	QC 2487	QC 2425
Aluminium	TM152	**100.0** 94.21 : 111.52	**104.0** 94.21 : 111.52
Antimony	TM152	**106.67** 88.37 : 130.57	**106.5** 88.37 : 130.57
Arsenic	TM152	**99.83** 92.62 : 113.52	**103.17** 92.62 : 113.52
Barium	TM152	**98.83** 88.62 : 113.14	**100.67** 88.62 : 113.14
Beryllium	TM152	**101.83** 87.08 : 111.38	**102.67** 87.08 : 111.38
Bismuth	TM152	**100.67** 92.62 : 115.02	**101.67** 92.62 : 115.02
Boron	TM152	**98.33** 86.31 : 120.88	**107.33** 86.31 : 120.88
Cadmium	TM152	**98.83** 93.85 : 111.65	**103.67** 93.85 : 111.65
Calcium	TM152	**98.67** 89.20 : 126.91	**100.67** 89.20 : 126.91
Chromium	TM152	**97.83** 92.50 : 113.03	**101.0** 92.50 : 113.03
Cobalt	TM152	**98.33** 85.01 : 114.87	**101.17** 85.01 : 114.87
Copper	TM152	**97.17** 89.87 : 119.73	**101.0** 89.87 : 119.73
Iron	TM152	**98.67** 93.02 : 113.86	**102.0** 93.02 : 113.86
Lead	TM152	**97.5** 91.11 : 116.98	**101.17** 91.11 : 116.98
Lithium	TM152	**102.0** 87.70 : 115.90	**101.17** 87.70 : 115.90
Magnesium	TM152	**103.33** 89.60 : 116.61	**103.33** 89.60 : 116.61
Manganese	TM152	**96.5** 93.97 : 112.46	**101.83** 93.97 : 112.46
Molybdenum	TM152	**99.17** 89.07 : 110.96	**99.33** 89.07 : 110.96
Nickel	TM152	**98.5** 93.70 : 112.15	**101.0** 93.70 : 112.15

Dissolved Metals by ICP-MS

		QC 2487	QC 2425
Phosphorus	TM152	**97.17** 89.24 : 114.18	**100.83** 89.24 : 114.18
Potassium	TM152	**99.33** 93.20 : 115.55	**104.0** 93.20 : 115.55
Selenium	TM152	**100.67** 91.69 : 117.12	**102.33** 91.69 : 117.12
Silver	TM152	**98.83** 90.93 : 121.73	**99.83** 90.93 : 121.73
Sodium	TM152	**100.67** 92.42 : 113.24	**104.67** 92.42 : 113.24
Strontium	TM152	**99.0** 92.14 : 116.24	**103.0** 92.14 : 116.24
Tellurium	TM152	**101.67** 89.88 : 111.78	**103.17** 89.88 : 111.78
Thallium	TM152	**96.5** 82.43 : 113.83	**100.17** 82.43 : 113.83
Tin	TM152	**100.0** 94.62 : 107.79	**102.5** 94.62 : 107.79
Titanium	TM152	**98.17** 90.29 : 115.23	**103.17** 90.29 : 115.23
Tungsten	TM152	**100.5** 77.61 : 132.31	**101.83** 77.61 : 132.31
Uranium	TM152	**99.67** 86.97 : 115.76	**100.5** 86.97 : 115.76
Vanadium	TM152	**97.67** 89.61 : 115.48	**101.67** 89.61 : 115.48
Zinc	TM152	**98.67** 87.51 : 116.26	**101.67** 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2468
Dissolved Inorganic Carbon	TM090	**113.17** 93.58 : 112.28
Dissolved Organic Carbon	TM090	**102.83** 96.13 : 109.53

EPH by GCxGC-FID

Component	Method Code	QC 2473
EPH >C10-C40 Raw	TM415	**92.44** 63.71 : 122.01

EPH CWG GC (S)

EPH CWG GC (S)

Component	Method Code	QC 2406
EPH >C8-C40 Raw	TM414	**102.65** 67.87 : 120.05
Total Aliphatics Raw	TM414	**108.91** 66.68 : 120.89
Total Aromatics Raw	TM414	**115.64** 61.16 : 129.42

Fluoride

Component	Method Code	QC 2427
Fluoride	TM104	**105.33** 96.67 : 108.67

GRO by GC-FID (S)

Component	Method Code	QC 2435
QC	TM089	**77.75** 68.78 : 110.61

Hexavalent Chromium (s)

Component	Method Code	QC 2408	QC 2485
Hexavalent Chromium	TM151	**104.0** 91.40 : 115.40	**102.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2437
Hexavalent Chromium	TM241	**99.4** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2469	QC 2464
Mercury Dissolved (CVAF)	TM183	**118.0** 69.30 : 128.70	**106.0** 69.30 : 128.70

Metals in solid samples by OES

CERTIFICATE OF ANALYSIS

SDG:	210607-34	**Client Reference:**	784-B026948	**Report Number:**	602395
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	601998

Metals in solid samples by OES

Component	Method Code	QC 2448	QC 2419	QC 2494
Aluminium	TM181	**84.42** 73.56 : 108.85		
Antimony	TM181	**100.0** 76.89 : 111.24	**90.65** 76.89 : 111.24	**96.34** 76.89 : 111.24
Arsenic	TM181	**101.45** 88.53 : 111.01	**100.0** 88.53 : 111.01	**99.71** 88.53 : 111.01
Barium	TM181	**94.5** 77.67 : 105.35	**96.33** 77.67 : 105.35	**95.41** 77.67 : 105.35
Beryllium	TM181	**98.51** 85.44 : 109.61	**100.75** 85.44 : 109.61	**101.49** 85.44 : 109.61
Boron	TM181	**93.7** 73.51 : 104.66	**93.98** 73.51 : 104.66	**89.11** 73.51 : 104.66
Cadmium	TM181	**94.24** 77.67 : 104.12	**93.0** 77.67 : 104.12	**95.47** 77.67 : 104.12
Chromium	TM181	**87.83** 79.64 : 105.83	**88.03** 79.64 : 105.83	**87.83** 79.64 : 105.83
Cobalt	TM181	**92.77** 84.60 : 104.13	**91.82** 84.60 : 104.13	**92.45** 84.60 : 104.13
Copper	TM181	**96.13** 82.40 : 105.45	**95.42** 82.40 : 105.45	**96.83** 82.40 : 105.45
Iron	TM181	**97.62** 82.95 : 110.58	**96.83** 82.95 : 110.58	**98.41** 82.95 : 110.58
Lead	TM181	**96.62** 78.24 : 104.05	**95.05** 78.24 : 104.05	**96.62** 78.24 : 104.05
Manganese	TM181	**106.39** 94.29 : 119.51	**100.0** 94.29 : 119.51	**100.83** 94.29 : 119.51
Mercury	TM181	**95.65** 83.16 : 107.81	**95.89** 83.16 : 107.81	**95.65** 83.16 : 107.81
Molybdenum	TM181	**99.59** 87.11 : 106.87	**97.53** 87.11 : 106.87	**99.18** 87.11 : 106.87
Nickel	TM181	**93.4** 80.26 : 102.28	**92.91** 80.26 : 102.28	**92.67** 80.26 : 102.28
Phosphorus	TM181	**104.04** 94.56 : 124.28	**104.04** 94.56 : 124.28	**102.63** 94.56 : 124.28
Selenium	TM181	**101.57** 82.28 : 110.48	**100.39** 82.28 : 110.48	**99.22** 82.28 : 110.48
Strontium	TM181	**91.31** 79.13 : 102.79	**92.65** 79.13 : 102.79	**92.2** 79.13 : 102.79
Thallium	TM181	**93.36** 82.94 : 111.86	**92.04** 82.94 : 111.86	**95.13** 82.94 : 111.86
Tin	TM181	**103.04** 86.72 : 110.03	**101.14** 86.72 : 110.03	**101.52** 86.72 : 110.03
Titanium	TM181	**84.73** 66.23 : 102.06	**89.31** 66.23 : 102.06	**75.57** 66.23 : 102.06
Vanadium	TM181	**95.6** 86.19 : 109.45	**95.97** 86.19 : 109.45	**95.24** 86.19 : 109.45
Zinc	TM181	**102.46** 84.68 : 113.99	**100.62** 84.68 : 113.99	**100.0** 84.68 : 113.99

PAH by GCMS

PAH by GCMS

Component	Method Code	QC 2453	QC 2486	QC 2434
Acenaphthene	TM218	**81.0** 76.79 : 103.90	**88.5** 73.47 : 109.80	**90.0** 76.79 : 103.90
Acenaphthylene	TM218	**77.0** 74.19 : 106.17	**91.0** 70.00 : 130.00	**87.5** 74.19 : 106.17
Anthracene	TM218	**75.5** 70.90 : 109.22	**91.5** 68.68 : 111.89	**86.0** 70.90 : 109.22
Benz(a)anthracene	TM218	**77.0** 73.77 : 119.26	**99.0** 68.12 : 118.39	**90.5** 73.77 : 119.26
Benzo(a)pyrene	TM218	**76.5** 73.20 : 114.18	**94.0** 71.72 : 115.31	**93.0** 73.20 : 114.18
Benzo(b)fluoranthene	TM218	**76.5** 75.36 : 117.58	**100.5** 66.89 : 120.40	**95.5** 75.36 : 117.58
Benzo(ghi)perylene	TM218	**71.5** 70.73 : 116.12	**94.0** 67.82 : 118.49	**93.0** 70.73 : 116.12
Benzo(k)fluoranthene	TM218	**76.5** 75.98 : 116.59	**93.5** 73.10 : 117.03	**96.5** 75.98 : 116.59
Chrysene	TM218	**76.0** 74.82 : 114.18	**97.0** 69.58 : 115.47	**91.0** 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	**70.0** 69.17 : 115.30	**89.5** 67.32 : 121.35	**93.5** 69.17 : 115.30
Fluoranthene	TM218	**77.5** 66.06 : 114.63	**117.0** 75.16 : 117.28	**86.5** 66.06 : 114.63
Fluorene	TM218	**79.5** 76.66 : 107.56	**87.5** 73.81 : 108.66	**88.5** 76.66 : 107.56
Indeno(123cd)pyrene	TM218	**74.5** 70.26 : 117.95	**88.5** 68.91 : 117.62	**93.5** 70.26 : 117.95
Naphthalene	TM218	**79.5** 74.70 : 101.83	**90.5** 72.12 : 106.18	**86.5** 74.70 : 101.83
Phenanthrene	TM218	**79.5** 73.62 : 109.34	**101.5** 69.01 : 113.72	**88.0** 73.62 : 109.34
Pyrene	TM218	**76.5** 71.46 : 117.00	**110.5** 64.28 : 115.75	**85.5** 71.46 : 117.00

PCBs by GCMS

Component	Method Code	QC 2461
PCB congener 101	TM168	**92.2** 65.66 : 110.06
PCB congener 105	TM168	**86.4** 58.10 : 106.34
PCB congener 114	TM168	**90.2** 59.38 : 106.48
PCB congener 118	TM168	**89.0** 60.02 : 106.23
PCB congener 123	TM168	**96.2** 65.01 : 99.81
PCB congener 126	TM168	**88.5** 59.31 : 109.23
PCB congener 138	TM168	**93.4** 63.95 : 107.63
PCB congener 153	TM168	**96.3** 62.65 : 108.85
PCB congener 156	TM168	**91.5** 61.69 : 112.27

PCBs by GCMS

		QC 2461
PCB congener 157	TM168	**90.0** 55.37 : 104.81
PCB congener 167	TM168	**90.7** 65.58 : 109.14
PCB congener 169	TM168	**91.0** 56.84 : 112.10
PCB congener 180	TM168	**96.8** 66.99 : 111.63
PCB congener 189	TM168	**91.3** 57.75 : 112.59
PCB congener 28	TM168	**94.0** 73.68 : 105.96
PCB congener 52	TM168	**93.5** 67.24 : 107.62
PCB congener 77	TM168	**91.6** 64.87 : 108.49
PCB congener 81	TM168	**91.3** 70.78 : 110.80

pH

Component	Method Code	QC 2476	QC 2420
pH	TM133	**100.0** 98.09 : 101.62	**98.38** 97.51 : 101.32

pH Value of Filtered Water

Component	Method Code	QC 2417	QC 2419
pH	TM256	**101.07** 99.33 : 102.54	**101.07** 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2455	QC 2409
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**53.25** 69.38 : 125.27	**51.95** 69.38 : 125.27
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**50.88** 69.79 : 122.84	**45.61** 69.79 : 122.84
Cresols by HPLC (S)	TM062 (S)	**52.82** 77.98 : 111.41	**49.9** 77.98 : 111.41
Phenol by HPLC (S)	TM062 (S)	**52.32** 67.94 : 117.69	**50.99** 67.94 : 117.69
Xylenols by HPLC (S)	TM062 (S)	**53.02** 88.23 : 104.42	**50.31** 88.23 : 104.42

Sulphide

Sulphide

Component	Method Code	QC 2474
Sulphide	TM101	**94.0** 88.90 : 112.50

Total Dissolved Solids

Component	Method Code	QC 2453
Total Dissolved Solids	TM123	**99.1** 97.30 : 100.92

Total Organic Carbon

Component	Method Code	QC 2441	QC 2493	QC 2449
Total Organic Carbon	TM132	**98.44** 87.02 : 113.45	**103.52** 87.02 : 113.45	**99.61** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2429
1,1,1,2-tetrachloroethane	TM116	**108.4** 86.59 : 118.97
1,1,1-Trichloroethane	TM116	**105.4** 86.26 : 117.53
1,1,2-Trichloroethane	TM116	**95.0** 75.16 : 112.70
1,1-Dichloroethane	TM116	**100.4** 83.27 : 122.16
1,2-Dichloroethane	TM116	**116.2** 89.30 : 133.10
1,4-Dichlorobenzene	TM116	**107.0** 82.59 : 123.23
2-Chlorotoluene	TM116	**96.2** 66.81 : 118.43
4-Chlorotoluene	TM116	**94.0** 65.88 : 114.76
Benzene	TM116	**91.4** 93.16 : 123.63
Carbon Disulphide	TM116	**95.4** 75.11 : 124.81
Carbontetrachloride	TM116	**114.8** 82.35 : 126.46
Chlorobenzene	TM116	**100.0** 85.07 : 118.13
Chloroform	TM116	**107.8** 88.13 : 122.71

		QC 2429
Chloromethane	TM116	**113.8** 61.62 : 145.66
Cis-1,2-Dichloroethene	TM116	**103.4** 88.41 : 121.33
Dibromomethane	TM116	**99.4** 77.47 : 121.29
Dichloromethane	TM116	**106.2** 87.89 : 134.72
Ethylbenzene	TM116	**92.0** 76.29 : 106.31
Hexachlorobutadiene	TM116	**106.0** 16.78 : 153.29
Isopropylbenzene	TM116	**83.2** 59.16 : 110.07
Naphthalene	TM116	**105.0** 79.29 : 125.59
o-Xylene	TM116	**83.2** 72.86 : 102.10
p/m-Xylene	TM116	**88.1** 68.99 : 102.40
Sec-Butylbenzene	TM116	**93.8** 44.71 : 117.87
Tetrachloroethene	TM116	**105.6** 77.82 : 125.00
Toluene	TM116	**90.6** 87.82 : 116.21
Trichloroethene	TM116	**95.6** 79.80 : 112.33
Trichlorofluoromethane	TM116	**115.8** 80.52 : 132.12
Vinyl Chloride	TM116	**89.6** 74.57 : 146.88

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

Work Order	: **PR2154250**	Issue Date	: 17-Jun-2021
Customer	: **ALS Life Sciences Ltd**	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: [redacted]	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 210607-34	Page	: 1 of 2
Order number	: ----	Date Samples Received	: 10-Jun-2021
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 11-Jun-2021 - 17-Jun-2021
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories		*Position*
Zdeněk Jirák	[redacted]	Environmental Business Unit Manager

The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)

Analytical Results

Sub-Matrix: **SOIL**			Client sample ID	**24407717 BH62**		----		----	
			Laboratory sample ID	*PR2154250-001*		----		----	
			Client sampling date / time	07-Jun-2021 15:59		----		----	
Parameter	*Method*	*LOR*	*Unit*	**Result**	**MU**	**Result**	**MU**	**Result**	**MU**
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	**87.6**	± 6.0%	**----**	----	**----**	----
Pesticides									
2.4.5-T	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4.5-TP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-D	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
4-CPP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bentazone	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dinoseb	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Fluroxypyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPA	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Acifluorfen	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bromoxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
DNOC	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dicamba	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Diclofop	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Ioxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Propoxycarbazone-sodium	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclopyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclosan	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.
Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	*Method Descriptions*
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PESLMSA1	CZ_SOP_D06_03_182.B (CSN EN 15637, US EPA 1694) Determination of acidic herbicides and drug residues by liquid chromatography method with MS/MS detection.

A "*" symbol preceding any method indicates laboratory or subcontractor non-accredited test. If the UNICO-SUB code is stated in the method table, this only informs that the tests have been performed by a subcontractor and the results are given in an annex to the test report, including information on test accreditation. In the case when a procedure specified in an accredited method was used for non-accredited matrix, the reported results are non-accredited; please refer to information in General Comment section on the front page. If the report contains subcontracted analyses, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.
The calculation methods of summation parameters are available on request in the client service.

CERTIFICATE OF ANALYSIS

Work Order	: **PR2154251**	Issue Date	: 17-Jun-2021
Customer	: **ALS Life Sciences Ltd**	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: euhdnsubconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 210607-34	Page	: 1 of 2
Order number	: ----	Date Samples Received	: 10-Jun-2021
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 11-Jun-2021 - 17-Jun-2021
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories		*Position*
Zdeněk Jirák	[redacted]	Environmental Business Unit Manager

The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)

Analytical Results

Sub-Matrix: **SOIL**			Client sample ID	**24409702 TP10**		**----**		**----**	
			Laboratory sample ID	*PR2154251-001*		----		----	
			Client sampling date / time	08-Jun-2021 08:50		----		----	
Parameter	*Method*	*LOR*	*Unit*	**Result**	**MU**	**Result**	**MU**	**Result**	**MU**
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	**80.8**	± 6.0%	**----**	----	**----**	----
Pesticides									
2.4.5-T	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4.5-TP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-D	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
4-CPP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bentazone	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dinoseb	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Fluroxypyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPA	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Acifluorfen	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bromoxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
DNOC	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dicamba	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Diclofop	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Ioxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Propoxycarbazone-sodium	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclopyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclosan	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.
Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	*Method Descriptions*
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PESLMSA1	CZ_SOP_D06_03_182.B (CSN EN 15637, US EPA 1694) Determination of acidic herbicides and drug residues by liquid chromatography method with MS/MS detection.

A "*" symbol preceding any method indicates laboratory or subcontractor non-accredited test. If the UNICO-SUB code is stated in the method table, this only informs that the tests have been performed by a subcontractor and the results are given in an annex to the test report, including information on test accreditation. In the case when a procedure specified in an accredited method was used for non-accredited matrix, the reported results are non-accredited; please refer to information in General Comment section on the front page. If the report contains subcontracted analyses, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.
The calculation methods of summation parameters are available on request in the client service.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	16 June 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210609-43
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	602199

We received 3 samples on Tuesday June 08, 2021 and 1 of these samples were scheduled for analysis which was completed on Wednesday June 16, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210609-43	**Client Reference:**	784-B026948	**Report Number:**	602199
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24415643	BH61	ES1	0.30	04/06/2021
24415650	BH61	ES2	1.30	04/06/2021
24415656	BH61	ES3	2.30	04/06/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	210609-43	**Client Reference:**	784-B026948	**Report Number:**	602199
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24415650			
Customer Sample Reference			BH61			
AGS Reference			ES2			
Depth (m)			1.30			
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 1		X		
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1	X			
Ammonium Soil by Titration	All	NDPs: 0 Tests: 1		X		
Anions by Kone (soil)	All	NDPs: 0 Tests: 1		X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1	X			
Boron Water Soluble	All	NDPs: 0 Tests: 1		X		
CEN Readings	All	NDPs: 0 Tests: 1	X			
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2	X	X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1	X			
EPH	All	NDPs: 0 Tests: 1		X		
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1		X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 1		X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1			X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1		X		
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1	X			

Validated

CERTIFICATE OF ANALYSIS

SDG:	210609-43	**Client Reference:**	784-B026948	**Report Number:**	602199
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24415650			
Customer Sample Reference			BH61			
AGS Reference			ES2			
Depth (m)			1.30			
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	
Mercury Dissolved	All	NDPs: 0 Tests: 1	X			
Metals in solid samples by OES	All	NDPs: 0 Tests: 1		X		
PAH by GCMS	All	NDPs: 0 Tests: 1		X		
pH	All	NDPs: 0 Tests: 1		X		
pH Value of Filtered Water	All	NDPs: 0 Tests: 1	X			
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1		X		
Sample description	All	NDPs: 0 Tests: 1		X		
Sulphide	All	NDPs: 0 Tests: 1	X			
Total Organic Carbon	All	NDPs: 0 Tests: 1		X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 1		X		
VOC MS (S)	All	NDPs: 0 Tests: 1			X	

CERTIFICATE OF ANALYSIS

SDG:	210609-43	**Client Reference:**	784-B026948	**Report Number:**	602199
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24415650	BH61	1.30	Dark Brown	Sandy Clay Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210609-43	**Client Reference:**	784-B026948	**Report Number:**	602199
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BH61	1.30	Soil/Solid (S)	04/06/2021	.	08/06/2021	210609-43	24415650	ES2
Moisture Content Ratio (% of as received sample)	%	PM024	25								
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12 M								
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M								
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M								
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M								
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M								
Soil Organic Matter (SOM)	<0.35 %	TM132	1.14 #								
pH	1 pH Units	TM133	7.86 M								
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #								
Cyanide, Total	<1 mg/kg	TM153	<1 M								
Arsenic	<0.6 mg/kg	TM181	16.6 M								
Cadmium	<0.02 mg/kg	TM181	2.17 M								
Chromium	<0.9 mg/kg	TM181	24.3 M								
Copper	<1.4 mg/kg	TM181	25.8 M								
Iron	<1000 mg/kg	TM181	20800 #								
Lead	<0.7 mg/kg	TM181	46.1 M								
Mercury	<0.1 mg/kg	TM181	<0.1 M								
Nickel	<0.2 mg/kg	TM181	40.6 M								
Selenium	<1 mg/kg	TM181	<1 #								
Vanadium	<0.2 mg/kg	TM181	51 #								
Zinc	<1.9 mg/kg	TM181	347 M								
Boron, water soluble	<1 mg/kg	TM222	<1 M								
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0495 M								
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248	2.88								
EPH (C5-C40)	<35 mg/kg	TM415	<35								
EPH Surrogate % recovery**	%	TM415	98.3								
EPH >C10-C40	<35 mg/kg	TM415	<35 M								

Validated

CERTIFICATE OF ANALYSIS

SDG:	210609-43	**Client Reference:**	784-B026948	**Report Number:**	602199
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH61
Depth (m)	1.30
Sample Type	Soil/Solid (S)
Date Sampled	04/06/2021
Sample Time	.
Date Received	08/06/2021
SDG Ref	210609-43
Lab Sample No.(s)	24415650
AGS Reference	ES2

Component	LOD/Units	Method	
Naphthalene-d8 % recovery**	%	TM218	77.3
Acenaphthene-d10 % recovery**	%	TM218	70.4
Phenanthrene-d10 % recovery**	%	TM218	79.1
Chrysene-d12 % recovery**	%	TM218	77.1
Perylene-d12 % recovery**	%	TM218	77.3
Naphthalene	<0.009 mg/kg	TM218	<0.009 M
Acenaphthylene	<0.012 mg/kg	TM218	<0.012 M
Acenaphthene	<0.008 mg/kg	TM218	<0.008 M
Fluorene	<0.01 mg/kg	TM218	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218	<0.015 M
Anthracene	<0.016 mg/kg	TM218	<0.016 M
Fluoranthene	<0.017 mg/kg	TM218	<0.017 M
Pyrene	<0.015 mg/kg	TM218	<0.015 M
Benz(a)anthracene	<0.014 mg/kg	TM218	<0.014 M
Chrysene	<0.01 mg/kg	TM218	<0.01 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	<0.015 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	<0.014 M
Benzo(a)pyrene	<0.015 mg/kg	TM218	<0.015 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	<0.018 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	<0.023 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	<0.024 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	<0.118

CERTIFICATE OF ANALYSIS

SDG:	210609-43	**Client Reference:**	784-B026948	**Report Number:**	602199
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH61
Depth (m)	1.30
Sample Type	Soil/Solid (S)
Date Sampled	04/06/2021
Sample Time	.
Date Received	08/06/2021
SDG Ref	210609-43
Lab Sample No.(s)	24415650
AGS Reference	ES2

Component	LOD/Units	Method	
GRO Surrogate % recovery**	%	TM089	98
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089	0.0322
Aliphatics >C8-C10	<0.01 mg/kg	TM089	0.0616
Aliphatics >C10-C12	<1 mg/kg	TM414	<1 #
Aliphatics >C12-C16	<1 mg/kg	TM414	<1 #
Aliphatics >C16-C21	<1 mg/kg	TM414	<1 #
Aliphatics >C21-C35	<1 mg/kg	TM414	1.44 #
Aliphatics >C35-C44	<1 mg/kg	TM414	<1
Total Aliphatics >C10-C44	<5 mg/kg	TM414	<5
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414	<10
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	0.0402
Aromatics > EC10-EC12	<1 mg/kg	TM414	<1 #
Aromatics > EC12-EC16	<1 mg/kg	TM414	<1 #
Aromatics > EC16-EC21	<1 mg/kg	TM414	<1 #
Aromatics > EC21-EC35	<1 mg/kg	TM414	1.33 #
Aromatics >EC35-EC44	<1 mg/kg	TM414	<1
Aromatics > EC40-EC44	<1 mg/kg	TM414	<1
Total Aromatics > EC10-EC44	<5 mg/kg	TM414	<5
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414	<10
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089	0.0938
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089	<0.05
GRO >C5-C10	<0.02 mg/kg	TM089	0.0938

Validated

CERTIFICATE OF ANALYSIS

SDG:	210609-43	**Client Reference:**	784-B026948	**Report Number:**	602199
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH61
Depth (m)	1.30
Sample Type	Soil/Solid (S)
Date Sampled	04/06/2021
Sample Time	.
Date Received	08/06/2021
SDG Ref	210609-43
Lab Sample No.(s)	24415650
AGS Reference	ES2

Component	LOD/Units	Method	
Dibromofluoromethane**	%	TM116	108
Toluene-d8**	%	TM116	96.8
4-Bromofluorobenzene**	%	TM116	101
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.2 M
Benzene	<0.009 mg/kg	TM116	<0.18 M
Toluene	<0.007 mg/kg	TM116	<0.14 M
Ethylbenzene	<0.004 mg/kg	TM116	<0.08 M
p/m-Xylene	<0.01 mg/kg	TM116	<0.2 #
o-Xylene	<0.01 mg/kg	TM116	<0.2 M
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4
Sum of BTEX	<0.04 mg/kg	TM116	<0.8

CERTIFICATE OF ANALYSIS

SDG:	210609-43	**Client Reference:**	784-B026948	**Report Number:**	602199
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref.	BH61ES2	14/06/2021	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	1.30										
Sample Type	SOLID										
Date Sampled	04/06/2021 00:00:00										
Date Receieved	08/06/2021 05:00:00										
SDG	210609-43										
Original Sample	24415650										
Method Number	TM048										

CERTIFICATE OF ANALYSIS

SDG:	210609-43	**Client Reference:**	784-B026948	**Report Number:**	602199
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.127	**Natural Moisture Content (%)**	41.1
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	70.9
Particle Size <4mm	>95%		

Case	
SDG	210609-43
Lab Sample Number(s)	24415650
Sampled Date	04-Jun-2021
Customer Sample Ref.	BH61 ES2
Depth (m)	1.30

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Boron	0.129	<0.01	1.29	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.418	<0.019	4.18	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	0.00135	<0.001	0.0135	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0125	<0.001	0.125	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	10-Jun-2021
pH (pH Units)	6.98
Conductivity (µS/cm)	86.20
Temperature (°C)	20.70
Volume Leachant (Litres)	0.863

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

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Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24415650
Customer Sample Ref.	BH61
AGS Ref.	ES2
Depth	1.30
Type	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	14-Jun-2021
Ammoniacal Nitrogen	14-Jun-2021
Ammonium Soil by Titration	15-Jun-2021
Anions by Kone (soil)	15-Jun-2021
Asbestos ID in Solid Samples	14-Jun-2021
Boron Water Soluble	14-Jun-2021
CEN 10:1 Leachate (1 Stage)	10-Jun-2021
CEN Readings	14-Jun-2021
Cyanide Comp/Free/Total/Thiocyanate	15-Jun-2021
Dissolved Metals by ICP-MS	14-Jun-2021
EPH	15-Jun-2021
EPH by GCxGC-FID	11-Jun-2021
EPH CWG GC (S)	15-Jun-2021
GRO by GC-FID (S)	15-Jun-2021
Hexavalent Chromium (s)	11-Jun-2021
Hexavalent Chromium (w)	16-Jun-2021
Mercury Dissolved	15-Jun-2021
Metals in solid samples by OES	14-Jun-2021
Moisture at 105C	10-Jun-2021
PAH by GCMS	14-Jun-2021
pH	10-Jun-2021
pH Value of Filtered Water	14-Jun-2021
Phenols by HPLC (S)	16-Jun-2021
Sample description	09-Jun-2021
Sulphide	16-Jun-2021
Total Organic Carbon	15-Jun-2021
TPH CWG GC (S)	15-Jun-2021
VOC MS (S)	14-Jun-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2431
Ammoniacal Nitrogen as N	TM099	**94.8** 88.02 : 104.70

Ammonium Soil by Titration

Component	Method Code	QC 2405
Exchangeable Ammonium as NH4	TM024	**96.02** 74.04 : 103.44

Anions by Kone (soil)

Component	Method Code	QC 2419
Chloride (soluble)	TM243	**146.11** 80.93 : 111.66
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**167.76** 70.00 : 130.00

Boron Water Soluble

Component	Method Code	QC 2465
Water Soluble Boron	TM222	**100.0** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2403	QC 2479
Free Cyanide	TM153	**92.97** 78.00 : 114.00	
Free Cyanide (W)	TM227		**81.75** 90.67 : 122.67
Thiocyanate	TM153	**99.36** 94.53 : 113.33	
Thiocyanate (W)	TM227		**107.25** 92.25 : 117.75
Total Cyanide	TM153	**95.8** 77.13 : 111.53	
Total Cyanide (W)	TM227		**104.75** 88.75 : 111.25

Dissolved Metals by ICP-MS

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Dissolved Metals by ICP-MS

Component	Method Code	QC 2464
Aluminium	TM152	**98.33** 94.21 : 111.52
Antimony	TM152	**111.33** 88.37 : 130.57
Arsenic	TM152	**101.33** 92.62 : 113.52
Barium	TM152	**98.67** 88.62 : 113.14
Beryllium	TM152	**98.33** 87.08 : 111.38
Bismuth	TM152	**103.17** 92.62 : 115.02
Boron	TM152	**97.67** 86.31 : 120.88
Cadmium	TM152	**98.0** 93.85 : 111.65
Calcium	TM152	**98.67** 89.20 : 126.91
Chromium	TM152	**97.33** 92.50 : 113.03
Cobalt	TM152	**98.17** 85.01 : 114.87
Copper	TM152	**99.33** 89.87 : 119.73
Iron	TM152	**99.33** 93.02 : 113.86
Lead	TM152	**98.67** 91.11 : 116.98
Lithium	TM152	**98.33** 87.70 : 115.90
Magnesium	TM152	**100.67** 89.60 : 116.61
Manganese	TM152	**99.33** 93.97 : 112.46
Molybdenum	TM152	**101.83** 89.07 : 110.96
Nickel	TM152	**99.17** 93.70 : 112.15
Phosphorus	TM152	**97.67** 89.24 : 114.18
Potassium	TM152	**98.67** 93.20 : 115.55
Selenium	TM152	**100.17** 91.69 : 117.12
Silver	TM152	**102.67** 90.93 : 121.73
Sodium	TM152	**101.33** 92.42 : 113.24
Strontium	TM152	**100.0** 92.14 : 116.24
Tellurium	TM152	**106.83** 89.88 : 111.78
Thallium	TM152	**88.5** 82.43 : 113.83

Dissolved Metals by ICP-MS

		QC 2464
Tin	TM152	**98.17** 94.62 : 107.79
Titanium	TM152	**98.17** 90.29 : 115.23
Tungsten	TM152	**102.17** 77.61 : 132.31
Uranium	TM152	**99.33** 86.97 : 115.76
Vanadium	TM152	**97.33** 89.61 : 115.48
Zinc	TM152	**100.0** 87.51 : 116.26

EPH by GCxGC-FID

Component	Method Code	QC 2473
EPH >C10-C40 Raw	TM415	**92.44** 63.71 : 122.01

GRO by GC-FID (S)

Component	Method Code	QC 2430
QC	TM089	**78.86** 70.34 : 111.95

Hexavalent Chromium (s)

Component	Method Code	QC 2447
Hexavalent Chromium	TM151	**100.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2459
Hexavalent Chromium	TM241	**98.0** 94.17 : 106.17

Mercury Dissolved

Mercury Dissolved

Component	Method Code	QC 2415
Mercury Dissolved (CVAF)	TM183	**100.0** 0.00 : 0.00

Metals in solid samples by OES

Component	Method Code	QC 2451
Aluminium	TM181	**92.92** 73.56 : 108.85
Antimony	TM181	**97.97** 76.89 : 111.24
Arsenic	TM181	**100.0** 88.53 : 111.01
Barium	TM181	**94.5** 77.67 : 105.35
Beryllium	TM181	**99.63** 85.44 : 109.61
Boron	TM181	**92.55** 73.51 : 104.66
Cadmium	TM181	**93.42** 77.67 : 104.12
Chromium	TM181	**89.05** 79.64 : 105.83
Cobalt	TM181	**90.88** 84.60 : 104.13
Copper	TM181	**96.65** 82.40 : 105.45
Iron	TM181	**98.41** 82.95 : 110.58
Lead	TM181	**94.59** 78.24 : 104.05
Manganese	TM181	**106.39** 94.29 : 119.51
Mercury	TM181	**94.44** 83.16 : 107.81
Molybdenum	TM181	**97.94** 87.11 : 106.87
Nickel	TM181	**91.44** 80.26 : 102.28
Phosphorus	TM181	**107.27** 94.56 : 124.28
Selenium	TM181	**99.61** 82.28 : 110.48
Strontium	TM181	**93.54** 79.13 : 102.79
Thallium	TM181	**93.81** 82.94 : 111.86
Tin	TM181	**105.7** 86.72 : 110.03
Titanium	TM181	**88.55** 66.23 : 102.06

CERTIFICATE OF ANALYSIS

SDG:	210609-43	**Client Reference:**	784-B026948	**Report Number:**	602199
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Metals in solid samples by OES

		QC 2451
Vanadium	TM181	**96.7** 86.19 : 109.45
Zinc	TM181	**100.41** 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2460
Acenaphthene	TM218	**90.5** 76.79 : 103.90
Acenaphthylene	TM218	**88.5** 74.19 : 106.17
Anthracene	TM218	**85.0** 70.90 : 109.22
Benz(a)anthracene	TM218	**82.0** 73.77 : 119.26
Benzo(a)pyrene	TM218	**77.5** 73.20 : 114.18
Benzo(b)fluoranthene	TM218	**81.5** 75.36 : 117.58
Benzo(ghi)perylene	TM218	**79.5** 70.73 : 116.12
Benzo(k)fluoranthene	TM218	**81.0** 75.98 : 116.59
Chrysene	TM218	**79.5** 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	**83.5** 69.17 : 115.30
Fluoranthene	TM218	**81.0** 66.06 : 114.63
Fluorene	TM218	**88.5** 76.66 : 107.56
Indeno(123cd)pyrene	TM218	**76.5** 70.26 : 117.95
Naphthalene	TM218	**87.5** 74.70 : 101.83
Phenanthrene	TM218	**85.5** 73.62 : 109.34
Pyrene	TM218	**80.0** 71.46 : 117.00

pH

Component	Method Code	QC 2420
pH	TM133	**98.38** 97.51 : 101.32

pH Value of Filtered Water

pH Value of Filtered Water

Component	Method Code	QC 2497
pH	TM256	**100.8** 99.06 : 101.47

Phenols by HPLC (S)

Component	Method Code	QC 2480
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**50.65** 69.38 : 125.27
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**43.86** 69.79 : 122.84
Cresols by HPLC (S)	TM062 (S)	**46.76** 77.98 : 111.41
Phenol by HPLC (S)	TM062 (S)	**48.34** 67.94 : 117.69
Xylenols by HPLC (S)	TM062 (S)	**47.5** 88.23 : 104.42

Sulphide

Component	Method Code	QC 2443
Sulphide	TM101	**101.33** 88.90 : 112.50

Total Organic Carbon

Component	Method Code	QC 2441
Total Organic Carbon	TM132	**98.83** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2485
1,1,1,2-tetrachloroethane	TM116	**97.8** 84.84 : 116.25
1,1,1-Trichloroethane	TM116	**95.2** 73.73 : 118.05
1,1,2-Trichloroethane	TM116	**90.8** 77.12 : 116.04
1,1-Dichloroethane	TM116	**102.8** 74.46 : 129.15
1,2-Dichloroethane	TM116	**103.4** 92.38 : 131.65
1,4-Dichlorobenzene	TM116	**97.8** 83.64 : 126.18

VOC MS (S)

		QC 2485
2-Chlorotoluene	TM116	**86.8** 76.03 : 113.25
4-Chlorotoluene	TM116	**89.2** 66.90 : 112.46
Benzene	TM116	**97.2** 88.60 : 113.80
Carbon Disulphide	TM116	**96.2** 74.91 : 122.14
Carbontetrachloride	TM116	**97.2** 80.31 : 124.50
Chlorobenzene	TM116	**97.4** 83.81 : 114.18
Chloroform	TM116	**102.0** 87.40 : 122.49
Chloromethane	TM116	**95.4** 65.89 : 136.93
Cis-1,2-Dichloroethene	TM116	**99.4** 80.67 : 126.72
Dibromomethane	TM116	**95.8** 73.23 : 118.35
Dichloromethane	TM116	**108.8** 81.11 : 133.25
Ethylbenzene	TM116	**88.0** 75.92 : 110.41
Hexachlorobutadiene	TM116	**69.8** 12.82 : 152.73
Isopropylbenzene	TM116	**79.2** 54.30 : 105.91
Naphthalene	TM116	**107.0** 80.86 : 128.81
o-Xylene	TM116	**84.8** 69.99 : 108.74
p/m-Xylene	TM116	**84.2** 68.32 : 108.91
Sec-Butylbenzene	TM116	**73.0** 38.50 : 101.50
Tetrachloroethene	TM116	**103.0** 76.95 : 121.02
Toluene	TM116	**96.6** 74.24 : 107.42
Trichloroethene	TM116	**94.2** 85.28 : 109.36
Trichlorofluoromethane	TM116	**100.8** 81.46 : 120.52
Vinyl Chloride	TM116	**98.0** 68.02 : 143.37

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	16 June 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210609-50
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	602280

We received 13 samples on Saturday June 05, 2021 and 4 of these samples were scheduled for analysis which was completed on Wednesday June 16, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Son

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210609-50	**Client Reference:**	784-B026948	**Report Number:**	602280
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24415866	BH30	ES1	0.40	03/06/2021
24415876	BH30	ES4	1.00	03/06/2021
24415884	TP01	ES1	0.20	04/06/2021
24415896	TP01	ES2	1.00	04/06/2021
24415810	TP03	ES1	0.20	03/06/2021
24415903	TP03	ES2	1.00	03/06/2021
24415916	TP04	ES1	0.10	03/06/2021
24415924	TP04	ES2	1.00	03/06/2021
24415932	TP04	ES3	1.60	03/06/2021
24415861	TP05	EW1	0.00 - 0.00	03/06/2021
24415824	TP05	ES1	0.20	03/06/2021
24415844	TP05	ES2	1.00	03/06/2021
24415852	TP05	ES3	2.00	03/06/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	210609-50	**Client Reference:**	784-B026948	**Report Number:**	602280
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)											
			24415866			24415876			24415884			24415924		
			Customer Sample Reference			BH30			BH30			TP01			TP04		
			AGS Reference			ES1			ES4			ES1			ES2		
			Depth (m)			0.40			1.00			0.20			1.00		
			Container	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
			Sample Type	S	S	S	S	S	S	S	S	S	S	S	S
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 3		X			X			X					
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 2	X			X										
Ammonium Soil by Titration	All	NDPs: 0 Tests: 3		X			X			X					
Anions by Kone (soil)	All	NDPs: 0 Tests: 3		X			X			X					
Anions by Kone (w)	All	NDPs: 0 Tests: 1											X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 3	X			X			X						
Boron Water Soluble	All	NDPs: 0 Tests: 3		X			X			X					
CEN Readings	All	NDPs: 0 Tests: 3	X			X							X		
Coronene	All	NDPs: 0 Tests: 1												X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 5	X	X		X	X			X					
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 3	X			X							X		
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1											X		
EPH	All	NDPs: 0 Tests: 3		X			X			X					
EPH by GCxGC-FID	All	NDPs: 0 Tests: 4		X			X			X				X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 3		X			X			X					

Validated

CERTIFICATE OF ANALYSIS

SDG:	210609-50	**Client Reference:**	784-B026948	**Report Number:**	602280
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
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SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
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DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24415866			24415876			24415884			24415924												
Customer Sample Reference			BH30			BH30			TP01			TP04												
AGS Reference			ES1			ES4			ES1			ES2												
Depth (m)			0.40			1.00			0.20			1.00												
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)										
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S										
Fluoride	All	NDPs: 0 Tests: 1										X												
GRO by GC-FID (S)	All	NDPs: 0 Tests: 3			X			X			X													
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 3		X			X			X														
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 2	X			X																		
Mercury Dissolved	All	NDPs: 0 Tests: 3	X			X						X												
Metals in solid samples by OES	All	NDPs: 0 Tests: 3		X			X			X														
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1											X											
PAH by GCMS	All	NDPs: 0 Tests: 4		X			X			X			X											
PCBs by GCMS	All	NDPs: 0 Tests: 1											X											
pH	All	NDPs: 0 Tests: 3		X			X			X														
pH Value of Filtered Water	All	NDPs: 0 Tests: 2	X			X																		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 3		X			X			X														
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1										X												
Sample description	All	NDPs: 0 Tests: 4		X			X			X			X											
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 2		X			X																	

Validated

CERTIFICATE OF ANALYSIS

SDG:	210609-50	**Client Reference:**	784-B026948	**Report Number:**	602280
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24415866			24415876			24415884			24415924	
Customer Sample Reference			BH30			BH30			TP01			TP04	
AGS Reference			ES1			ES4			ES1			ES2	
Depth (m)			0.40			1.00			0.20			1.00	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S
Sulphide	All	NDPs: 0 Tests: 2	X			X								
Total Dissolved Solids	All	NDPs: 0 Tests: 1										X		
Total Organic Carbon	All	NDPs: 0 Tests: 4		X			X			X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 3		X			X			X				
VOC MS (S)	All	NDPs: 0 Tests: 4			X			X			X			X

CERTIFICATE OF ANALYSIS

SDG:	210609-50	**Client Reference:**	784-B026948	**Report Number:**	602280
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24415866	BH30	0.40	Light Brown	Sand	Stones	None
24415876	BH30	1.00	Dark Brown	Sand	Stones	None
24415884	TP01	0.20	Dark Brown	Sandy Clay Loam	Stones	Vegetation
24415924	TP04	1.00	Dark Brown	Sandy Loam	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210609-50	**Client Reference:**	784-B026948	**Report Number:**	602280
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH30	BH30	TP01	TP04		
			Depth (m)	0.40	1.00	0.20	1.00		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	03/06/2021	03/06/2021	04/06/2021	03/06/2021		
			Sample Time	.	.	.	.		
			Date Received	05/06/2021	05/06/2021	05/06/2021	05/06/2021		
			SDG Ref	210609-50	210609-50	210609-50	210609-50		
			Lab Sample No.(s)	24415866	24415876	24415884	24415924		
			AGS Reference	ES1	ES4	ES1	ES2		
Moisture Content Ratio (% of as received sample)	%	PM024		6.4	1	14	18		
Exchangeable Ammonia as N	<12 mg/kg	TM024		13.5 M	<12 M	<12 M			
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 M	<0.01 M	<0.01 M			
Cresols	<0.01 mg/kg	TM062 (S)		<0.01 M	<0.01 M	<0.01 M			
Xylenols	<0.015 mg/kg	TM062 (S)		<0.015 M	<0.015 M	<0.015 M			
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 M	<0.035 M	<0.035 M			
Organic Carbon, Total	<0.2 %	TM132					0.226 M		
Soil Organic Matter (SOM)	<0.35 %	TM132		<0.35 #	<0.35 #	8.55 #			
pH	1 pH Units	TM133		9.3 M	9.05 M	7.51 M			
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #			
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M	<1 M			
PCB congener 28	<0.003 mg/kg	TM168					<0.003 M		
PCB congener 52	<0.003 mg/kg	TM168					<0.003 M		
PCB congener 101	<0.003 mg/kg	TM168					<0.003 M		
PCB congener 118	<0.003 mg/kg	TM168					<0.003 M		
PCB congener 138	<0.003 mg/kg	TM168					<0.003 M		
PCB congener 153	<0.003 mg/kg	TM168					<0.003 M		
PCB congener 180	<0.003 mg/kg	TM168					<0.003 M		
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168					<0.021		
Arsenic	<0.6 mg/kg	TM181		1.61 M	29.6 M	8.69 M			
Cadmium	<0.02 mg/kg	TM181		0.398 M	0.159 M	0.509 M			
Chromium	<0.9 mg/kg	TM181		1.9 M	<0.9 M	12.3 M			
Copper	<1.4 mg/kg	TM181		2.58 M	3.84 M	23 M			
Iron	<1000 mg/kg	TM181		3620 #	7470 #	18600 #			
Lead	<0.7 mg/kg	TM181		6.28 M	41.3 M	61.4 M			
Mercury	<0.1 mg/kg	TM181		<0.1 M	<0.1 M	0.143 M			
Nickel	<0.2 mg/kg	TM181		2.55 M	3.93 M	17 M			
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #			
Vanadium	<0.2 mg/kg	TM181		3.24 #	4.59 #	21.2 #			
Zinc	<1.9 mg/kg	TM181		35.4 M	40.1 M	84 M			
Boron, water soluble	<1 mg/kg	TM222		<1 M	<1 M	<1 M			
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.012 M	0.0089 M	0.0064 M			
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248		6.45	7.22	2.62			

Validated

CERTIFICATE OF ANALYSIS

SDG:	210609-50	**Client Reference:**	784-B026948	**Report Number:**	602280
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH30	BH30	TP01	TP04		
			Depth (m)	0.40	1.00	0.20	1.00		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	03/06/2021	03/06/2021	04/06/2021	03/06/2021		
			Sample Time	.	.	.	.		
			Date Received	05/06/2021	05/06/2021	05/06/2021	05/06/2021		
			SDG Ref	210609-50	210609-50	210609-50	210609-50		
			Lab Sample No.(s)	24415866	24415876	24415884	24415924		
			AGS Reference	ES1	ES4	ES1	ES2		
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410					<10		
Coronene	<0.2 mg/kg	TM410					<0.2		
EPH (C5-C40)	<35 mg/kg	TM415		54.4	<35	<35			
EPH Surrogate % recovery**	%	TM415		104	105	95.7	102		
EPH >C10-C40	<35 mg/kg	TM415		54.4 M	<35 M	<35 M			
Mineral Oil >C10-C40	<5 mg/kg	TM415					<5		

Validated

CERTIFICATE OF ANALYSIS

SDG:	210609-50	**Client Reference:**	784-B026948	**Report Number:**	602280
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH30	BH30	TP01			
			Depth (m)	0.40	1.00	0.20			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	03/06/2021	03/06/2021	04/06/2021			
			Sample Time	.	.	.			
			Date Received	05/06/2021	05/06/2021	05/06/2021			
			SDG Ref	210609-50	210609-50	210609-50			
			Lab Sample No.(s)	24415866	24415876	24415884			
			AGS Reference	ES1	ES4	ES1			
Naphthalene-d8 % recovery**	%	TM218		79.4	85.6	82.6			
Acenaphthene-d10 % recovery**	%	TM218		77.1	79.1	77			
Phenanthrene-d10 % recovery**	%	TM218		84	87	85.9			
Chrysene-d12 % recovery**	%	TM218		77.2	84.3	79.3			
Perylene-d12 % recovery**	%	TM218		82.1	82.9	72.9			
Naphthalene	<0.009 mg/kg	TM218		<0.045 M	<0.009 M	<0.009 M			
Acenaphthylene	<0.012 mg/kg	TM218		<0.06 M	<0.012 M	0.053 M			
Acenaphthene	<0.008 mg/kg	TM218		<0.04 M	<0.008 M	<0.008 M			
Fluorene	<0.01 mg/kg	TM218		<0.05 M	<0.01 M	<0.01 M			
Phenanthrene	<0.015 mg/kg	TM218		<0.075 M	<0.015 M	0.127 M			
Anthracene	<0.016 mg/kg	TM218		<0.08 M	<0.016 M	0.0374 M			
Fluoranthene	<0.017 mg/kg	TM218		<0.085 M	<0.017 M	0.448 M			
Pyrene	<0.015 mg/kg	TM218		<0.075 M	<0.015 M	0.393 M			
Benz(a)anthracene	<0.014 mg/kg	TM218		<0.07 M	<0.014 M	0.263 M			
Chrysene	<0.01 mg/kg	TM218		<0.05 M	<0.01 M	0.273 M			
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		<0.075 M	<0.015 M	0.434 M			
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		<0.07 M	<0.014 M	0.151 M			
Benzo(a)pyrene	<0.015 mg/kg	TM218		<0.075 M	<0.015 M	0.278 M			
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		<0.09 M	<0.018 M	0.224 M			
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.115 M	<0.023 M	0.0398 M			
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		<0.12 M	<0.024 M	0.183 M			
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		<0.59	<0.118	2.9			

CERTIFICATE OF ANALYSIS

SDG:	210609-50	**Client Reference:**	784-B026948	**Report Number:**	602280
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.					
			BH30	BH30				
			Depth (m)	0.40	1.00			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	03/06/2021	03/06/2021			
			Sample Time	.	.			
			Date Received	05/06/2021	05/06/2021			
			SDG Ref	210609-50	210609-50			
			Lab Sample No.(s)	24415866	24415876			
			AGS Reference	ES1	ES4			
Phenol	<0.1 mg/kg	TM157		<0.2	<0.1			
Pentachlorophenol	<0.1 mg/kg	TM157		<1	<0.5			
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157		<0.2	<0.1			
Nitrobenzene	<0.1 mg/kg	TM157		<0.2	<0.1			
Isophorone	<0.1 mg/kg	TM157		<0.2	<0.1			
Hexachloroethane	<0.1 mg/kg	TM157		<0.2	<0.1			
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157		<0.2	<0.1			
Hexachlorobutadiene	<0.1 mg/kg	TM157		<0.2	<0.1			
Hexachlorobenzene	<0.1 mg/kg	TM157		<0.2	<0.1			
n-Dioctyl phthalate	<0.1 mg/kg	TM157		<0.2	<0.1			
Dimethyl phthalate	<0.1 mg/kg	TM157		<0.2	<0.1			
Diethyl phthalate	<0.1 mg/kg	TM157		<0.2	<0.1			
n-Dibutyl phthalate	<0.1 mg/kg	TM157		<0.2	<0.1			
Dibenzofuran	<0.1 mg/kg	TM157		<0.2	<0.1			
Carbazole	<0.1 mg/kg	TM157		<0.2	<0.1			
Butylbenzyl phthalate	<0.1 mg/kg	TM157		<0.2	<0.1			
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157		<0.2	<0.1			
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157		<0.2	<0.1			
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157		<0.2	<0.1			
Azobenzene	<0.1 mg/kg	TM157		<0.2	<0.1			
4-Nitrophenol	<0.1 mg/kg	TM157		<1	<0.5			
4-Nitroaniline	<0.1 mg/kg	TM157		<1	<0.5			
4-Methylphenol	<0.1 mg/kg	TM157		<0.2	<0.1			
4-Chlorophenylphenylether	<0.1 mg/kg	TM157		<0.2	<0.1			
4-Chloroaniline	<0.1 mg/kg	TM157		<0.2	<0.1			
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157		<0.2	<0.1			
4-Bromophenylphenylether	<0.1 mg/kg	TM157		<0.2	<0.1			
3-Nitroaniline	<0.1 mg/kg	TM157		<0.2	<0.1			
2-Nitrophenol	<0.1 mg/kg	TM157		<0.2	<0.1			
2-Nitroaniline	<0.1 mg/kg	TM157		<0.2	<0.1			
2-Methylphenol	<0.1 mg/kg	TM157		<0.2	<0.1			
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157		<0.2	<0.1			
2-Chlorophenol	<0.1 mg/kg	TM157		<0.2	<0.1			

CERTIFICATE OF ANALYSIS

SDG:	210609-50	**Client Reference:**	784-B026948	**Report Number:**	602280
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH30	BH30				
			Depth (m)	0.40	1.00				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	03/06/2021	03/06/2021				
			Sample Time	.	.				
			Date Received	05/06/2021	05/06/2021				
			SDG Ref	210609-50	210609-50				
			Lab Sample No.(s)	24415866	24415876				
			AGS Reference	ES1	ES4				
2,6-Dinitrotoluene	<0.1 mg/kg	TM157		<0.2	<0.1				
2,4-Dinitrotoluene	<0.1 mg/kg	TM157		<0.2	<0.1				
2,4-Dimethylphenol	<0.1 mg/kg	TM157		<0.2	<0.1				
2,4-Dichlorophenol	<0.1 mg/kg	TM157		<0.2	<0.1				
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157		<0.2	<0.1				
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157		<0.2	<0.1				
1,4-Dichlorobenzene	<0.1 mg/kg	TM157		<0.2	<0.1				
1,3-Dichlorobenzene	<0.1 mg/kg	TM157		<0.2	<0.1				
1,2-Dichlorobenzene	<0.1 mg/kg	TM157		<0.2	<0.1				
2-Chloronaphthalene	<0.1 mg/kg	TM157		<0.2	<0.1				
2-Methylnaphthalene	<0.1 mg/kg	TM157		<0.2	<0.1				
Acenaphthylene	<0.1 mg/kg	TM157		<0.2	<0.1				
Acenaphthene	<0.1 mg/kg	TM157		<0.2	<0.1				
Anthracene	<0.1 mg/kg	TM157		<0.2	<0.1				
Benzo(a)anthracene	<0.1 mg/kg	TM157		<0.2	<0.1				
Benzo(b)fluoranthene	<0.1 mg/kg	TM157		<0.2	<0.1				
Benzo(k)fluoranthene	<0.1 mg/kg	TM157		<0.2	<0.1				
Benzo(a)pyrene	<0.1 mg/kg	TM157		<0.2	<0.1				
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157		<0.2	<0.1				
Chrysene	<0.1 mg/kg	TM157		<0.2	<0.1				
Fluoranthene	<0.1 mg/kg	TM157		<0.2	<0.1				
Fluorene	<0.1 mg/kg	TM157		<0.2	<0.1				
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157		<0.2	<0.1				
Phenanthrene	<0.1 mg/kg	TM157		<0.2	<0.1				
Pyrene	<0.1 mg/kg	TM157		<0.2	<0.1				
Naphthalene	<0.1 mg/kg	TM157		<0.2	<0.1				
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157		<0.2	<0.1				
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157		<0.2	<0.1				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210609-50	**Client Reference:**	784-B026948	**Report Number:**	602280
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH30	BH30	TP01			
			Depth (m)	0.40	1.00	0.20			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	03/06/2021	03/06/2021	04/06/2021			
			Sample Time	.	.	.			
			Date Received	05/06/2021	05/06/2021	05/06/2021			
			SDG Ref	210609-50	210609-50	210609-50			
			Lab Sample No.(s)	24415866	24415876	24415884			
			AGS Reference	ES1	ES4	ES1			
GRO Surrogate % recovery**	%	TM089		101	91.5				
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01				
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01				
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01				
Aliphatics >C10-C12	<1 mg/kg	TM414	<1 #	<1 #	<1 #				
Aliphatics >C12-C16	<1 mg/kg	TM414	<1 #	<1 #	<1 #				
Aliphatics >C16-C21	<1 mg/kg	TM414	<1 #	<1 #	<1 #				
Aliphatics >C21-C35	<1 mg/kg	TM414	6.14 #	<1 #	3.53 #				
Aliphatics >C35-C44	<1 mg/kg	TM414	5.03	<1	<1				
Total Aliphatics >C10-C44	<5 mg/kg	TM414	11.2	<5	<5				
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414	46.6	<10	<10				
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01				
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01				
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	<0.01	<0.01	<0.01				
Aromatics > EC10-EC12	<1 mg/kg	TM414	<1 #	<1 #	<1 #				
Aromatics > EC12-EC16	<1 mg/kg	TM414	<1 #	<1 #	<1 #				
Aromatics > EC16-EC21	<1 mg/kg	TM414	<1 #	<1 #	<1 #				
Aromatics > EC21-EC35	<1 mg/kg	TM414	29.3 #	<1 #	2.95 #				
Aromatics >EC35-EC44	<1 mg/kg	TM414	5.99	<1	<1				
Aromatics > EC40-EC44	<1 mg/kg	TM414	1.13	<1	<1				
Total Aromatics > EC10-EC44	<5 mg/kg	TM414	35.5	<5	<5				
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414	46.6	<10	<10				
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089	<0.05	<0.05	<0.05				
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089	<0.05	<0.05	<0.05				
GRO >C5-C10	<0.02 mg/kg	TM089	<0.02	<0.02	<0.02				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210609-50	**Client Reference:**	784-B026948	**Report Number:**	602280
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH30	BH30	TP01	TP04		
			Depth (m)	0.40	1.00	0.20	1.00		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	03/06/2021	03/06/2021	04/06/2021	03/06/2021		
			Sample Time	.	.	.	.		
			Date Received	05/06/2021	05/06/2021	05/06/2021	05/06/2021		
			SDG Ref	210609-50	210609-50	210609-50	210609-50		
			Lab Sample No.(s)	24415866	24415876	24415884	24415924		
			AGS Reference	ES1	ES4	ES1	ES2		
Dibromofluoromethane**	%	TM116		106	110	107	106		
Toluene-d8**	%	TM116		97.5	96.5	97.5	96.8		
4-Bromofluorobenzene**	%	TM116		99.9	98.6	98.1	101		
Dichlorodifluoromethane	<0.006 mg/kg	TM116		<0.12 M	<0.12 M				
Chloromethane	<0.007 mg/kg	TM116		<0.14 #	<0.14 #				
Vinyl Chloride	<0.006 mg/kg	TM116		<0.12 @ M	<0.12 @ M				
Bromomethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Chloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Trichlorofluorormethane	<0.006 mg/kg	TM116		<0.12 M	<0.12 M				
1,1-Dichloroethene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #				
Carbon Disulphide	<0.007 mg/kg	TM116		<0.14 M	<0.14 M				
Dichloromethane	<0.01 mg/kg	TM116		<0.2 #	<0.2 #				
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M	<0.2 M		
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
1,1-Dichloroethane	<0.008 mg/kg	TM116		<0.16 M	<0.16 M				
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116		<0.12 M	<0.12 M				
2,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2	<0.2				
Bromochloromethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Chloroform	<0.008 mg/kg	TM116		<0.16 M	<0.16 M				
1,1,1-Trichloroethane	<0.007 mg/kg	TM116		<0.14 M	<0.14 M				
1,1-Dichloropropene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Carbontetrachloride	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
1,2-Dichloroethane	<0.005 mg/kg	TM116		<0.1 M	<0.1 M				
Benzene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M	<0.18 M	<0.18 M		
Trichloroethene	<0.009 mg/kg	TM116		<0.18 #	<0.18 #				
1,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Dibromomethane	<0.009 mg/kg	TM116		<0.18 M	<0.18 M				
Bromodichloromethane	<0.007 mg/kg	TM116		<0.14 M	<0.14 M				
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Toluene	<0.007 mg/kg	TM116		<0.14 M	<0.14 M	<0.14 M	<0.14 M		
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2	<0.2				
1,1,2-Trichloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
1,3-Dichloropropane	<0.007 mg/kg	TM116		<0.14 M	<0.14 M				

CERTIFICATE OF ANALYSIS

SDG:	210609-50	**Client Reference:**	784-B026948	**Report Number:**	602280
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH30	BH30	TP01	TP04		
			Depth (m)	0.40	1.00	0.20	1.00		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	03/06/2021	03/06/2021	04/06/2021	03/06/2021		
			Sample Time	.	.	.	.		
			Date Received	05/06/2021	05/06/2021	05/06/2021	05/06/2021		
			SDG Ref	210609-50	210609-50	210609-50	210609-50		
			Lab Sample No.(s)	24415866	24415876	24415884	24415924		
			AGS Reference	ES1	ES4	ES1	ES2		
Tetrachloroethene	<0.005 mg/kg	TM116		<0.1 M	<0.1 M				
Dibromochloromethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
1,2-Dibromoethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Chlorobenzene	<0.005 mg/kg	TM116		<0.1 M	<0.1 M				
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 M	<0.08 M	<0.08 M	<0.08 M		
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #	<0.2 #	<0.2 #		
o-Xylene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M	<0.2 M		
Styrene	<0.01 mg/kg	TM116		<0.2 @ #	<0.2 @ #				
Bromoform	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Isopropylbenzene	<0.005 mg/kg	TM116		<0.1 #	<0.1 #				
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 #	<0.2 #				
1,2,3-Trichloropropane	<0.016 mg/kg	TM116		<0.32 M	<0.32 M				
Bromobenzene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Propylbenzene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
2-Chlorotoluene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M				
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116		<0.16 M	<0.16 M				
4-Chlorotoluene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
tert-Butylbenzene	<0.014 mg/kg	TM116		<0.28 M	<0.28 M				
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116		<0.18 #	<0.18 #				
sec-Butylbenzene	<0.01 mg/kg	TM116		<0.2	<0.2				
4-Isopropyltoluene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
1,3-Dichlorobenzene	<0.008 mg/kg	TM116		<0.16 M	<0.16 M				
1,4-Dichlorobenzene	<0.005 mg/kg	TM116		<0.1 M	<0.1 M				
n-Butylbenzene	<0.011 mg/kg	TM116		<0.22	<0.22				
1,2-Dichlorobenzene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116		<0.28 M	<0.28 M				
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.2 #	<0.2 #				
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4	<0.4				
Hexachlorobutadiene	<0.02 mg/kg	TM116		<0.4	<0.4				
Naphthalene	<0.013 mg/kg	TM116		<0.26 M	<0.26 M				
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4 #	<0.4 #				
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4	<0.4				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210609-50	**Client Reference:**	784-B026948	**Report Number:**	602280
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH30	BH30	TP01	TP04		
			Depth (m)	0.40	1.00	0.20	1.00		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	03/06/2021	03/06/2021	04/06/2021	03/06/2021		
			Sample Time	.	.	.	.		
			Date Received	05/06/2021	05/06/2021	05/06/2021	05/06/2021		
			SDG Ref	210609-50	210609-50	210609-50	210609-50		
			Lab Sample No.(s)	24415866	24415876	24415884	24415924		
			AGS Reference	ES1	ES4	ES1	ES2		
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4	<0.4	<0.4			
Sum of BTEX	<0.04 mg/kg	TM116		<0.8	<0.8	<0.8			

CERTIFICATE OF ANALYSIS

SDG:	210609-50	**Client Reference:**	784-B026948	**Report Number:**	602280
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&+$@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	BH30ES1 0.40 SOLID 03/06/2021 00:00:00 05/06/2021 05:00:00 210609-50 24415866 TM048	14/06/2021	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	BH30ES4 1.00 SOLID 03/06/2021 00:00:00 05/06/2021 05:00:00 210609-50 24415876 TM048	10/06/2021	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP01ES1 0.20 SOLID 04/06/2021 00:00:00 05/06/2021 05:00:00 210609-50 24415884 TM048	10/06/2021	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG:	210609-50	**Client Reference:**	784-B026948	**Report Number:**	602280
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.114	**Natural Moisture Content (%)**	26.8
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	78.9
Particle Size <4mm	>95%		

Case	
SDG	210609-50
Lab Sample Number(s)	24415924
Sampled Date	03-Jun-2021
Customer Sample Ref.	TP04 ES2
Depth (m)	1.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.226	3	5	6
Loss on Ignition (%)	-	-	-	-
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	-	-	-	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.0496	<0.0002	0.496	<0.002	20	100	300
Cadmium	0.0000935	<0.00008	0.000935	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	<0.0003	<0.0003	<0.003	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	<0.0004	<0.0004	<0.004	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.0101	<0.001	0.101	<0.01	4	50	200
Chloride	6.3	<2	63	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	20.9	<2	209	<20	1000	20000	50000
Total Dissolved Solids	78.5	<5	785	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	3.47	<3	34.7	<30	500	800	1000

Leach Test Information

Date Prepared	10-Jun-2021
pH (pH Units)	7.74
Conductivity (µS/cm)	94.70
Temperature (°C)	19.80
Volume Leachant (Litres)	0.876

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation

16/06/2021 16:17:19

16:16:59 16/06/2021

CERTIFICATE OF ANALYSIS

SDG:	210609-50	**Client Reference:**	784-B026948	**Report Number:**	602280
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.097	**Natural Moisture Content (%)**	8.45
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	92.2
Particle Size <4mm	>95%		

Case	
SDG	210609-50
Lab Sample Number(s)	24415866
Sampled Date	03-Jun-2021
Customer Sample Ref.	BH30 ES1
Depth (m)	0.40

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Boron	<0.01	<0.01	<0.1	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.19	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	<0.001	<0.001	<0.01	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	10-Jun-2021
pH (pH Units)	9.58
Conductivity (µS/cm)	138.00
Temperature (°C)	20.80
Volume Leachant (Litres)	0.892

CERTIFICATE OF ANALYSIS

SDG:	210609-50	**Client Reference:**	784-B026948	**Report Number:**	602280
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.093	**Natural Moisture Content (%)**	4.06
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	96.1
Particle Size <4mm	>95%		

Case	
SDG	210609-50
Lab Sample Number(s)	24415876
Sampled Date	03-Jun-2021
Customer Sample Ref.	BH30 ES4
Depth (m)	1.00

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.000909	<0.0005	0.00909	<0.005	-	-	-
Boron	0.0103	<0.01	0.103	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.19	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	<0.001	<0.001	<0.01	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	10-Jun-2021
pH (pH Units)	7.73
Conductivity (µS/cm)	107.00
Temperature (°C)	20.70
Volume Leachant (Litres)	0.896

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210609-50	**Client Reference:**	784-B026948	**Report Number:**	602280
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24415866	24415876	24415884	24415924
Customer Sample Ref.	BH30	BH30	TP01	TP04
AGS Ref.	ES1	ES4	ES1	ES2
Depth	0.40	1.00	0.20	1.00
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	14-Jun-2021	14-Jun-2021	14-Jun-2021	
Ammoniacal Nitrogen	14-Jun-2021	14-Jun-2021		
Ammonium Soil by Titration	15-Jun-2021	15-Jun-2021	15-Jun-2021	
Anions by Kone (soil)	15-Jun-2021	15-Jun-2021	15-Jun-2021	
Anions by Kone (w)				11-Jun-2021
Asbestos ID in Solid Samples	14-Jun-2021	10-Jun-2021	10-Jun-2021	
Boron Water Soluble	14-Jun-2021	14-Jun-2021	14-Jun-2021	
CEN 10:1 Leachate (1 Stage)	10-Jun-2021	10-Jun-2021		10-Jun-2021
CEN Readings	14-Jun-2021	14-Jun-2021		11-Jun-2021
Coronene				10-Jun-2021
Cyanide Comp/Free/Total/Thiocyanate	15-Jun-2021	15-Jun-2021	11-Jun-2021	
Dissolved Metals by ICP-MS	14-Jun-2021	14-Jun-2021		14-Jun-2021
Dissolved Organic/Inorganic Carbon				16-Jun-2021
EPH	15-Jun-2021	15-Jun-2021	15-Jun-2021	
EPH by GCxGC-FID	11-Jun-2021	11-Jun-2021	11-Jun-2021	11-Jun-2021
EPH CWG GC (S)	11-Jun-2021	15-Jun-2021	14-Jun-2021	
Fluoride				14-Jun-2021
GRO by GC-FID (S)	15-Jun-2021	15-Jun-2021	15-Jun-2021	
Hexavalent Chromium (s)	11-Jun-2021	11-Jun-2021	11-Jun-2021	
Hexavalent Chromium (w)	16-Jun-2021	16-Jun-2021		
Mercury Dissolved	15-Jun-2021	15-Jun-2021		15-Jun-2021
Metals in solid samples by OES	14-Jun-2021	14-Jun-2021	14-Jun-2021	
Moisture at 105C	10-Jun-2021	10-Jun-2021		10-Jun-2021
PAH 16 & 17 Calc				10-Jun-2021
PAH by GCMS	14-Jun-2021	14-Jun-2021	14-Jun-2021	11-Jun-2021
PCBs by GCMS				10-Jun-2021
pH	10-Jun-2021	10-Jun-2021	10-Jun-2021	
pH Value of Filtered Water	14-Jun-2021	14-Jun-2021		
Phenols by HPLC (S)	16-Jun-2021	16-Jun-2021	11-Jun-2021	
Phenols by HPLC (W)				14-Jun-2021
Sample description	09-Jun-2021	09-Jun-2021	09-Jun-2021	09-Jun-2021
Semi Volatile Organic Compounds	11-Jun-2021	11-Jun-2021		
Sulphide	16-Jun-2021	16-Jun-2021		
Total Dissolved Solids				14-Jun-2021
Total Organic Carbon	15-Jun-2021	15-Jun-2021	14-Jun-2021	14-Jun-2021
TPH CWG GC (S)	15-Jun-2021	15-Jun-2021	15-Jun-2021	
VOC MS (S)	14-Jun-2021	14-Jun-2021	14-Jun-2021	14-Jun-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2431
Ammoniacal Nitrogen as N	TM099	**94.8** 88.02 : 104.70

Ammonium Soil by Titration

Component	Method Code	QC 2405
Exchangeable Ammonium as NH4	TM024	**96.02** 74.04 : 103.44

Anions by Kone (soil)

Component	Method Code	QC 2403	QC 2415
Chloride (soluble)	TM243	**140.41** 80.93 : 111.66	**146.63** 80.93 : 111.66
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**166.82** 70.00 : 130.00	**170.09** 70.00 : 130.00

Anions by Kone (w)

Component	Method Code	QC 2490
Chloride	TM184	**103.0** 92.93 : 115.43
Sulphate (soluble)	TM184	**103.2** 90.53 : 113.03

Boron Water Soluble

Component	Method Code	QC 2465
Water Soluble Boron	TM222	**100.0** 84.00 : 111.00

Coronene

Component	Method Code	QC 2427
Coronene RAW	TM410	**112.5** 79.43 : 137.78

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2403	QC 2479
Free Cyanide	TM153	**92.97** 78.00 : 114.00	
Free Cyanide (W)	TM227		**81.75** 90.67 : 122.67
Thiocyanate	TM153	**99.36** 94.53 : 113.33	
Thiocyanate (W)	TM227		**107.25** 92.25 : 117.75
Total Cyanide	TM153	**95.8** 77.13 : 111.53	
Total Cyanide (W)	TM227		**104.75** 88.75 : 111.25

Dissolved Metals by ICP-MS

Component	Method Code	QC 2464
Aluminium	TM152	**98.33** 94.21 : 111.52
Antimony	TM152	**111.33** 88.37 : 130.57
Arsenic	TM152	**101.33** 92.62 : 113.52
Barium	TM152	**98.67** 88.62 : 113.14
Beryllium	TM152	**98.33** 87.08 : 111.38
Bismuth	TM152	**103.17** 92.62 : 115.02
Boron	TM152	**97.67** 86.31 : 120.88
Cadmium	TM152	**98.0** 93.85 : 111.65
Calcium	TM152	**98.67** 89.20 : 126.91
Chromium	TM152	**97.33** 92.50 : 113.03
Cobalt	TM152	**98.17** 85.01 : 114.87
Copper	TM152	**99.33** 89.87 : 119.73
Iron	TM152	**99.33** 93.02 : 113.86
Lead	TM152	**98.67** 91.11 : 116.98
Lithium	TM152	**98.33** 87.70 : 115.90
Magnesium	TM152	**100.67** 89.60 : 116.61
Manganese	TM152	**99.33** 93.97 : 112.46
Molybdenum	TM152	**101.83** 89.07 : 110.96
Nickel	TM152	**99.17** 93.70 : 112.15

Dissolved Metals by ICP-MS

		QC 2464
Phosphorus	TM152	**97.67** 89.24 : 114.18
Potassium	TM152	**98.67** 93.20 : 115.55
Selenium	TM152	**100.17** 91.69 : 117.12
Silver	TM152	**102.67** 90.93 : 121.73
Sodium	TM152	**101.33** 92.42 : 113.24
Strontium	TM152	**100.0** 92.14 : 116.24
Tellurium	TM152	**106.83** 89.88 : 111.78
Thallium	TM152	**88.5** 82.43 : 113.83
Tin	TM152	**98.17** 94.62 : 107.79
Titanium	TM152	**98.17** 90.29 : 115.23
Tungsten	TM152	**102.17** 77.61 : 132.31
Uranium	TM152	**99.33** 86.97 : 115.76
Vanadium	TM152	**97.33** 89.61 : 115.48
Zinc	TM152	**100.0** 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2440
Dissolved Inorganic Carbon	TM090	**98.5** 93.58 : 112.28
Dissolved Organic Carbon	TM090	**101.5** 96.13 : 109.53

Fluoride

Component	Method Code	QC 2428
Fluoride	TM104	**103.33** 96.67 : 108.67

GRO by GC-FID (S)

GRO by GC-FID (S)

Component	Method Code	QC 2430	QC 2496
QC	TM089	**78.86** 70.34 : 111.95	**86.93** 70.34 : 111.95

Hexavalent Chromium (s)

Component	Method Code	QC 2447
Hexavalent Chromium	TM151	**100.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2459
Hexavalent Chromium	TM241	**98.0** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2415	QC 2400
Mercury Dissolved (CVAF)	TM183	**100.0** 0.00 : 0.00	**103.0** 0.00 : 0.00

Metals in solid samples by OES

Component	Method Code	QC 2452
Aluminium	TM181	**92.92** 73.56 : 108.85
Antimony	TM181	**97.15** 76.89 : 111.24
Arsenic	TM181	**99.71** 88.53 : 111.01
Barium	TM181	**93.58** 77.67 : 105.35
Beryllium	TM181	**97.76** 85.44 : 109.61
Boron	TM181	**91.4** 73.51 : 104.66
Cadmium	TM181	**93.0** 77.67 : 104.12
Chromium	TM181	**86.61** 79.64 : 105.83

Metals in solid samples by OES

		QC 2452
Cobalt	TM181	**89.94** 84.60 : 104.13
Copper	TM181	**93.31** 82.40 : 105.45
Iron	TM181	**92.06** 82.95 : 110.58
Lead	TM181	**94.37** 78.24 : 104.05
Manganese	TM181	**104.44** 94.29 : 119.51
Mercury	TM181	**93.24** 83.16 : 107.81
Molybdenum	TM181	**97.12** 87.11 : 106.87
Nickel	TM181	**90.46** 80.26 : 102.28
Phosphorus	TM181	**106.46** 94.56 : 124.28
Selenium	TM181	**99.22** 82.28 : 110.48
Strontium	TM181	**90.42** 79.13 : 102.79
Thallium	TM181	**92.04** 82.94 : 111.86
Tin	TM181	**100.38** 86.72 : 110.03
Titanium	TM181	**87.79** 66.23 : 102.06
Vanadium	TM181	**94.51** 86.19 : 109.45
Zinc	TM181	**99.18** 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2409	QC 2460
Acenaphthene	TM218	**87.5** 76.79 : 103.90	**90.5** 76.79 : 103.90
Acenaphthylene	TM218	**87.5** 74.19 : 106.17	**88.5** 74.19 : 106.17
Anthracene	TM218	**85.0** 70.90 : 109.22	**85.0** 70.90 : 109.22
Benz(a)anthracene	TM218	**88.0** 73.77 : 119.26	**82.0** 73.77 : 119.26
Benzo(a)pyrene	TM218	**88.0** 73.20 : 114.18	**77.5** 73.20 : 114.18
Benzo(b)fluoranthene	TM218	**90.5** 75.36 : 117.58	**81.5** 75.36 : 117.58
Benzo(ghi)perylene	TM218	**86.5** 70.73 : 116.12	**79.5** 70.73 : 116.12
Benzo(k)fluoranthene	TM218	**91.0** 75.98 : 116.59	**81.0** 75.98 : 116.59
Chrysene	TM218	**88.0** 74.82 : 114.18	**79.5** 74.82 : 114.18

PAH by GCMS

		QC 2409	QC 2460
Dibenzo(ah)anthracene	TM218	**89.0** 69.17 : 115.30	**83.5** 69.17 : 115.30
Fluoranthene	TM218	**86.0** 66.06 : 114.63	**81.0** 66.06 : 114.63
Fluorene	TM218	**86.5** 76.66 : 107.56	**88.5** 76.66 : 107.56
Indeno(123cd)pyrene	TM218	**85.0** 70.26 : 117.95	**76.5** 70.26 : 117.95
Naphthalene	TM218	**87.0** 74.70 : 101.83	**87.5** 74.70 : 101.83
Phenanthrene	TM218	**87.5** 73.62 : 109.34	**85.5** 73.62 : 109.34
Pyrene	TM218	**84.5** 71.46 : 117.00	**80.0** 71.46 : 117.00

PCBs by GCMS

Component	Method Code	QC 2417
PCB congener 101	TM168	**80.4** 65.66 : 110.06
PCB congener 105	TM168	**76.3** 58.10 : 106.34
PCB congener 114	TM168	**78.2** 59.38 : 106.48
PCB congener 118	TM168	**77.3** 60.02 : 106.23
PCB congener 123	TM168	**82.2** 65.01 : 99.81
PCB congener 126	TM168	**77.2** 59.31 : 109.23
PCB congener 138	TM168	**81.9** 63.95 : 107.63
PCB congener 153	TM168	**85.1** 62.65 : 108.85
PCB congener 156	TM168	**77.0** 61.69 : 112.27
PCB congener 157	TM168	**74.0** 55.37 : 104.81
PCB congener 167	TM168	**78.9** 65.58 : 109.14
PCB congener 169	TM168	**78.3** 56.84 : 112.10
PCB congener 180	TM168	**82.4** 66.99 : 111.63
PCB congener 189	TM168	**75.7** 57.75 : 112.59
PCB congener 28	TM168	**83.3** 73.68 : 105.96
PCB congener 52	TM168	**82.3** 67.24 : 107.62
PCB congener 77	TM168	**81.6** 64.87 : 108.49
PCB congener 81	TM168	**80.6** 70.78 : 110.80

pH

Component	Method Code	QC 2420	QC 2474
pH	TM133	**98.38** 97.51 : 101.32	**98.24** 97.51 : 101.32

pH Value of Filtered Water

Component	Method Code	QC 2497
pH	TM256	**100.8** 99.06 : 101.47

Phenols by HPLC (S)

Component	Method Code	QC 2473	QC 2480	QC 2491
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**57.14** 69.38 : 125.27	**50.65** 69.38 : 125.27	**49.35** 69.38 : 125.27
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**50.29** 69.79 : 122.84	**43.86** 69.79 : 122.84	**43.86** 69.79 : 122.84
Cresols by HPLC (S)	TM062 (S)	**53.86** 77.98 : 111.41	**46.76** 77.98 : 111.41	**46.97** 77.98 : 111.41
Phenol by HPLC (S)	TM062 (S)	**55.63** 67.94 : 117.69	**48.34** 67.94 : 117.69	**47.68** 67.94 : 117.69
Xylenols by HPLC (S)	TM062 (S)	**53.85** 88.23 : 104.42	**47.5** 88.23 : 104.42	**47.4** 88.23 : 104.42

Phenols by HPLC (W)

Component	Method Code	QC 2445
2.3.5 Trimethyl-Phenol by HPLC (W)	TM259	**97.66** 77.41 : 127.55
2-Isopropyl Phenol by HPLC (W)	TM259	**91.78** 82.77 : 126.51
Cresols by HPLC (W)	TM259	**98.68** 76.60 : 126.28
Napthol by HPLC (W)	TM259	**97.66** 75.40 : 129.40
Phenol by HPLC (W)	TM259	**94.52** 85.77 : 125.91
Xylenols by HPLC (W)	TM259	**95.89** 79.09 : 131.82

Semi Volatile Organic Compounds

Component	Method Code	QC 2417
4-Bromophenylphenylether (Soil)	TM157	**90.0** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**99.0** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**91.5** 68.25 : 126.75

Semi Volatile Organic Compounds

		QC 2417
Naphthalene (Soil)	TM157	**93.0** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**93.0** 66.50 : 123.50
Phenol (Soil)	TM157	**99.5** 69.92 : 114.02

Sulphide

Component	Method Code	QC 2425
Sulphide	TM101	**107.33** 88.90 : 112.50

Total Dissolved Solids

Component	Method Code	QC 2453
Total Dissolved Solids	TM123	**99.1** 97.30 : 100.92

Total Organic Carbon

Component	Method Code	QC 2439	QC 2441	QC 2449
Total Organic Carbon	TM132	**99.61** 87.02 : 113.45	**98.83** 87.02 : 113.45	**99.61** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2485
1,1,1,2-tetrachloroethane	TM116	**97.8** 84.84 : 116.25
1,1,1-Trichloroethane	TM116	**95.2** 73.73 : 118.05
1,1,2-Trichloroethane	TM116	**90.8** 77.12 : 116.04
1,1-Dichloroethane	TM116	**102.8** 74.46 : 129.15
1,2-Dichloroethane	TM116	**103.4** 92.38 : 131.65
1,4-Dichlorobenzene	TM116	**97.8** 83.64 : 126.18
2-Chlorotoluene	TM116	**86.8** 76.03 : 113.25
4-Chlorotoluene	TM116	**89.2** 66.90 : 112.46

		QC 2485
Benzene	TM116	**97.2** 88.60 : 113.80
Carbon Disulphide	TM116	**96.2** 74.91 : 122.14
Carbontetrachloride	TM116	**97.2** 80.31 : 124.50
Chlorobenzene	TM116	**97.4** 83.81 : 114.18
Chloroform	TM116	**102.0** 87.40 : 122.49
Chloromethane	TM116	**95.4** 65.89 : 136.93
Cis-1,2-Dichloroethene	TM116	**99.4** 80.67 : 126.72
Dibromomethane	TM116	**95.8** 73.23 : 118.35
Dichloromethane	TM116	**108.8** 81.11 : 133.25
Ethylbenzene	TM116	**88.0** 75.92 : 110.41
Hexachlorobutadiene	TM116	**69.8** 12.82 : 152.73
Isopropylbenzene	TM116	**79.2** 54.30 : 105.91
Naphthalene	TM116	**107.0** 80.86 : 128.81
o-Xylene	TM116	**84.8** 69.99 : 108.74
p/m-Xylene	TM116	**84.2** 68.32 : 108.91
Sec-Butylbenzene	TM116	**73.0** 38.50 : 101.50
Tetrachloroethene	TM116	**103.0** 76.95 : 121.02
Toluene	TM116	**96.6** 74.24 : 107.42
Trichloroethene	TM116	**94.2** 85.28 : 109.36
Trichlorofluoromethane	TM116	**100.8** 81.46 : 120.52
Vinyl Chloride	TM116	**98.0** 68.02 : 143.37

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	17 June 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210609-117
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	602424

We received 9 samples on Wednesday June 09, 2021 and 3 of these samples were scheduled for analysis which was completed on Thursday June 17, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210609-117	**Client Reference:**	784-B026948	**Report Number:**	602424
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24419026	TP02	ES3	0.00 - 0.00	07/06/2021
24419006	TP02	ES1	0.20	07/06/2021
24419017	TP02	ES2	1.00	07/06/2021
24418997	TP27	EW1	0.00 - 0.00	07/06/2021
24418959	TP27	ES1	0.20	07/06/2021
24418968	TP27	ES2	0.70	07/06/2021
24418981	TP27	ES3	1.00	07/06/2021
24418923	TP33	ES1	0.20	07/06/2021
24418940	TP33	ES2	0.50	07/06/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210609-117	**Client Reference:**	784-B026948	**Report Number:**	602424
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24419006			24419017			24418968		
Customer Sample Reference			TP02			TP02			TP27		
AGS Reference			ES1			ES2			ES2		
Depth (m)			0.20			1.00			0.70		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 2		X						X	
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1							X		
Ammonium Soil by Titration	All	NDPs: 0 Tests: 2		X						X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 2		X						X	
Anions by Kone (w)	All	NDPs: 0 Tests: 1				X					
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2	X						X		
Boron Water Soluble	All	NDPs: 0 Tests: 2		X						X	
CEN Readings	All	NDPs: 0 Tests: 2				X			X		
Coronene	All	NDPs: 0 Tests: 1					X				
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 3		X					X	X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2				X			X		
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1				X					
EPH	All	NDPs: 0 Tests: 2		X						X	
EPH by GCxGC-FID	All	NDPs: 0 Tests: 3		X			X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 2		X						X	

Validated

CERTIFICATE OF ANALYSIS

SDG:	210609-117	**Client Reference:**	784-B026948	**Report Number:**	602424
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Results Legend

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US - Untreated Sewage
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DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24419006			24419017			24418968		
Customer Sample Reference			TP02			TP02			TP27		
AGS Reference			ES1			ES2			ES2		
Depth (m)			0.20			1.00			0.70		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S
Fluoride	All	NDPs: 0 Tests: 1				X					
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2			X						X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2		X						X	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1							X		
Mercury Dissolved	All	NDPs: 0 Tests: 2				X			X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 2		X						X	
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1					X				
PAH by GCMS	All	NDPs: 0 Tests: 3		X			X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 1					X				
pH	All	NDPs: 0 Tests: 2		X						X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 1							X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 2		X						X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1				X					
Sample description	All	NDPs: 0 Tests: 3		X			X			X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1								X	

Validated

CERTIFICATE OF ANALYSIS

SDG:	210609-117	**Client Reference:**	784-B026948	**Report Number:**	602424
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
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US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24419006			24419017			24418968		
Customer Sample Reference			TP02			TP02			TP27		
AGS Reference			ES1			ES2			ES2		
Depth (m)			0.20			1.00			0.70		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S
Sulphide	All	NDPs: 0 Tests: 1							X		
Total Dissolved Solids	All	NDPs: 0 Tests: 1				X					
Total Organic Carbon	All	NDPs: 0 Tests: 3		X			X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 2		X						X	
VOC MS (S)	All	NDPs: 0 Tests: 3			X			X			X

CERTIFICATE OF ANALYSIS

SDG:	210609-117	**Client Reference:**	784-B026948	**Report Number:**	602424
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24419006	TP02	0.20	Dark Brown	Silty Clay Loam	Vegetation	None
24419017	TP02	1.00	Dark Brown	Silty Clay	Stones	None
24418968	TP27	0.70	Dark Brown	Clay	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210609-117	**Client Reference:**	784-B026948	**Report Number:**	602424
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	TP02	TP02	TP27			
			Depth (m)	0.20	1.00	0.70			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	07/06/2021	07/06/2021	07/06/2021			
			Sample Time	.	.	.			
			Date Received	09/06/2021	09/06/2021	09/06/2021			
			SDG Ref	210609-117	210609-117	210609-117			
			Lab Sample No.(s)	24419006	24419017	24418968			
			AGS Reference	ES1	ES2	ES2			
Moisture Content Ratio (% of as received sample)	%	PM024		17	20	21			
Exchangeable Ammonia as N	<12 mg/kg	TM024		<12 M		<12 M			
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 M		<0.01 M			
Cresols	<0.01 mg/kg	TM062 (S)		<0.01 M		<0.01 M			
Xylenols	<0.015 mg/kg	TM062 (S)		<0.015 M		<0.015 M			
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 M		<0.035 M			
Organic Carbon, Total	<0.2 %	TM132			0.507 M				
Soil Organic Matter (SOM)	<0.35 %	TM132		3.95 #		4.36 #			
pH	1 pH Units	TM133		7.51 M		7.44 M			
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #		<0.6 #			
Cyanide, Total	<1 mg/kg	TM153		<1 M		<1 M			
PCB congener 28	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 52	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 101	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 118	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 138	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 153	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 180	<0.003 mg/kg	TM168			<0.003 M				
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168			<0.021				
Arsenic	<0.6 mg/kg	TM181		14.3 M		17.2 M			
Cadmium	<0.02 mg/kg	TM181		2.11 M		2.03 M			
Chromium	<0.9 mg/kg	TM181		28.9 M		42.6 M			
Copper	<1.4 mg/kg	TM181		37.5 M		53.6 M			
Iron	<1000 mg/kg	TM181		22800 #		40600 #			
Lead	<0.7 mg/kg	TM181		166 M		232 M			
Mercury	<0.1 mg/kg	TM181		0.737 M		0.593 M			
Nickel	<0.2 mg/kg	TM181		36.6 M		42.5 M			
Selenium	<1 mg/kg	TM181		<1 #		<1 #			
Vanadium	<0.2 mg/kg	TM181		46.3 #		63.7 #			
Zinc	<1.9 mg/kg	TM181		275 M		283 M			
Boron, water soluble	<1 mg/kg	TM222		1.25 M		1.89 M			
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.0382 M		0.0388 M			
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248		2.4		0.638			

Validated

CERTIFICATE OF ANALYSIS

SDG:	210609-117	**Client Reference:**	784-B026948	**Report Number:**	602424
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	TP02	TP02	TP27
			Depth (m)	0.20	1.00	0.70
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	07/06/2021	07/06/2021	07/06/2021
			Sample Time	.	.	.
			Date Received	09/06/2021	09/06/2021	09/06/2021
			SDG Ref	210609-117	210609-117	210609-117
			Lab Sample No.(s)	24419006	24419017	24418968
			AGS Reference	ES1	ES2	ES2
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410			<10	
Coronene	<0.2 mg/kg	TM410			<0.2	
EPH (C5-C40)	<35 mg/kg	TM415		<35		<35
EPH Surrogate % recovery**	%	TM415		86.9	88.7	90.1
EPH >C10-C40	<35 mg/kg	TM415		<35 M		<35 M
Mineral Oil >C10-C40	<5 mg/kg	TM415			<5	

Validated

CERTIFICATE OF ANALYSIS

SDG:	210609-117	**Client Reference:**	784-B026948	**Report Number:**	602424
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	TP02	TP27				
			Depth (m)	0.20	0.70				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	07/06/2021	07/06/2021				
			Sample Time	.	.				
			Date Received	09/06/2021	09/06/2021				
			SDG Ref	210609-117	210609-117				
			Lab Sample No.(s)	24419006	24418968				
			AGS Reference	ES1	ES2				
Naphthalene-d8 % recovery**	%	TM218		84.4	84.3				
Acenaphthene-d10 % recovery**	%	TM218		77.5	79.5				
Phenanthrene-d10 % recovery**	%	TM218		82.8	87.6				
Chrysene-d12 % recovery**	%	TM218		79.7	86.8				
Perylene-d12 % recovery**	%	TM218		76.1	91				
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	<0.009 M				
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 M	<0.012 M				
Acenaphthene	<0.008 mg/kg	TM218		<0.008 M	<0.008 M				
Fluorene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M				
Phenanthrene	<0.015 mg/kg	TM218		0.0271 M	0.0651 M				
Anthracene	<0.016 mg/kg	TM218		<0.016 M	<0.016 M				
Fluoranthene	<0.017 mg/kg	TM218		0.0652 M	0.192 M				
Pyrene	<0.015 mg/kg	TM218		0.0574 M	0.175 M				
Benz(a)anthracene	<0.014 mg/kg	TM218		0.0371 M	0.102 M				
Chrysene	<0.01 mg/kg	TM218		0.036 M	0.0971 M				
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		0.05 M	0.112 M				
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		<0.014 M	0.0553 M				
Benzo(a)pyrene	<0.015 mg/kg	TM218		0.0351 M	0.103 M				
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.0291 M	0.073 M				
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	<0.023 M				
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.0303 M	0.0774 M				
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		0.367	1.05				

CERTIFICATE OF ANALYSIS

SDG:	210609-117	**Client Reference:**	784-B026948	**Report Number:**	602424
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			TP27	0.70	Soil/Solid (S)	07/06/2021	.	09/06/2021	210609-117	24418968	ES2
Phenol	<0.1 mg/kg	TM157	<0.1								
Pentachlorophenol	<0.1 mg/kg	TM157	<0.1								
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157	<0.1								
Nitrobenzene	<0.1 mg/kg	TM157	<0.1								
Isophorone	<0.1 mg/kg	TM157	<0.1								
Hexachloroethane	<0.1 mg/kg	TM157	<0.1								
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157	<0.1								
Hexachlorobutadiene	<0.1 mg/kg	TM157	<0.1								
Hexachlorobenzene	<0.1 mg/kg	TM157	<0.1								
n-Dioctyl phthalate	<0.1 mg/kg	TM157	<0.1								
Dimethyl phthalate	<0.1 mg/kg	TM157	<0.1								
Diethyl phthalate	<0.1 mg/kg	TM157	<0.1								
n-Dibutyl phthalate	<0.1 mg/kg	TM157	<0.1								
Dibenzofuran	<0.1 mg/kg	TM157	<0.1								
Carbazole	<0.1 mg/kg	TM157	<0.1								
Butylbenzyl phthalate	<0.1 mg/kg	TM157	<0.1								
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157	<0.1								
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157	<0.1								
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157	<0.1								
Azobenzene	<0.1 mg/kg	TM157	<0.1								
4-Nitrophenol	<0.1 mg/kg	TM157	<0.1								
4-Nitroaniline	<0.1 mg/kg	TM157	<0.1								
4-Methylphenol	<0.1 mg/kg	TM157	<0.1								
4-Chlorophenylphenylether	<0.1 mg/kg	TM157	<0.1								
4-Chloroaniline	<0.1 mg/kg	TM157	<0.1								
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157	<0.1								
4-Bromophenylphenylether	<0.1 mg/kg	TM157	<0.1								
3-Nitroaniline	<0.1 mg/kg	TM157	<0.1								
2-Nitrophenol	<0.1 mg/kg	TM157	<0.1								
2-Nitroaniline	<0.1 mg/kg	TM157	<0.1								
2-Methylphenol	<0.1 mg/kg	TM157	<0.1								
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157	<0.1								
2-Chlorophenol	<0.1 mg/kg	TM157	<0.1								

CERTIFICATE OF ANALYSIS

SDG:	210609-117	**Client Reference:**	784-B026948	**Report Number:**	602424
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref. TP27				
			Depth (m) 0.70				
			Sample Type Soil/Solid (S)				
			Date Sampled 07/06/2021				
			Sample Time .				
			Date Received 09/06/2021				
			SDG Ref 210609-117				
			Lab Sample No.(s) 24418968				
			AGS Reference ES2				
2,6-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1				
2,4-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1				
2,4-Dimethylphenol	<0.1 mg/kg	TM157	<0.1				
2,4-Dichlorophenol	<0.1 mg/kg	TM157	<0.1				
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157	<0.1				
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157	<0.1				
1,4-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1				
1,3-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1				
1,2-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1				
2-Chloronaphthalene	<0.1 mg/kg	TM157	<0.1				
2-Methylnaphthalene	<0.1 mg/kg	TM157	<0.1				
Acenaphthylene	<0.1 mg/kg	TM157	<0.1				
Acenaphthene	<0.1 mg/kg	TM157	<0.1				
Anthracene	<0.1 mg/kg	TM157	<0.1				
Benzo(a)anthracene	<0.1 mg/kg	TM157	<0.1				
Benzo(b)fluoranthene	<0.1 mg/kg	TM157	<0.1				
Benzo(k)fluoranthene	<0.1 mg/kg	TM157	<0.1				
Benzo(a)pyrene	<0.1 mg/kg	TM157	<0.1				
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157	<0.1				
Chrysene	<0.1 mg/kg	TM157	<0.1				
Fluoranthene	<0.1 mg/kg	TM157	<0.1				
Fluorene	<0.1 mg/kg	TM157	<0.1				
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157	<0.1				
Phenanthrene	<0.1 mg/kg	TM157	<0.1				
Pyrene	<0.1 mg/kg	TM157	<0.1				
Naphthalene	<0.1 mg/kg	TM157	<0.1				
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157	<0.1				
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157	<0.1				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210609-117	**Client Reference:**	784-B026948	**Report Number:**	602424
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	TP02	TP27				
			Depth (m)	0.20	0.70				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	07/06/2021	07/06/2021				
			Sample Time	.	.				
			Date Received	09/06/2021	09/06/2021				
			SDG Ref	210609-117	210609-117				
			Lab Sample No.(s)	24419006	24418968				
			AGS Reference	ES1	ES2				
GRO Surrogate % recovery**	%	TM089		92.4	87.8				
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C10-C12	<1 mg/kg	TM414		<1 #	<1 #				
Aliphatics >C12-C16	<1 mg/kg	TM414		<1 #	<1 #				
Aliphatics >C16-C21	<1 mg/kg	TM414		<1 #	<1 #				
Aliphatics >C21-C35	<1 mg/kg	TM414		12 #	20 #				
Aliphatics >C35-C44	<1 mg/kg	TM414		<1	<1				
Total Aliphatics >C10-C44	<5 mg/kg	TM414		13.1	21.3				
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		21.8	30				
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics > EC10-EC12	<1 mg/kg	TM414		<1 #	<1 #				
Aromatics > EC12-EC16	<1 mg/kg	TM414		<1 #	<1 #				
Aromatics > EC16-EC21	<1 mg/kg	TM414		<1 #	<1 #				
Aromatics > EC21-EC35	<1 mg/kg	TM414		7.23 #	6.84 #				
Aromatics >EC35-EC44	<1 mg/kg	TM414		<1	<1				
Aromatics > EC40-EC44	<1 mg/kg	TM414		<1	<1				
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		8.68	8.69				
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		21.8	30				
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		<0.05	<0.05				
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		<0.05	<0.05				
GRO >C5-C10	<0.02 mg/kg	TM089		<0.02	<0.02				

CERTIFICATE OF ANALYSIS

SDG:	210609-117	**Client Reference:**	784-B026948	**Report Number:**	602424
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
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**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	TP02	TP02	TP27			
			Depth (m)	0.20	1.00	0.70			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	07/06/2021	07/06/2021	07/06/2021			
			Sample Time	.	.	.			
			Date Received	09/06/2021	09/06/2021	09/06/2021			
			SDG Ref	210609-117	210609-117	210609-117			
			Lab Sample No.(s)	24419006	24419017	24418968			
			AGS Reference	ES1	ES2	ES2			
Dibromofluoromethane**	%	TM116		112	112	107			
Toluene-d8**	%	TM116		97.6	96.9	98.4			
4-Bromofluorobenzene**	%	TM116		101	99.8	98.6			
Dichlorodifluoromethane	<0.006 mg/kg	TM116				<0.12 M			
Chloromethane	<0.007 mg/kg	TM116				<0.14 #			
Vinyl Chloride	<0.006 mg/kg	TM116				<0.12 M			
Bromomethane	<0.01 mg/kg	TM116				<0.2 M			
Chloroethane	<0.01 mg/kg	TM116				<0.2 M			
Trichlorofluorormethane	<0.006 mg/kg	TM116				<0.12 M			
1,1-Dichloroethene	<0.01 mg/kg	TM116				<0.2 #			
Carbon Disulphide	<0.007 mg/kg	TM116				<0.14 M			
Dichloromethane	<0.01 mg/kg	TM116				<0.2 #			
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116				<0.2 M			
1,1-Dichloroethane	<0.008 mg/kg	TM116				<0.16 M			
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116				<0.12 M			
2,2-Dichloropropane	<0.01 mg/kg	TM116				<0.2			
Bromochloromethane	<0.01 mg/kg	TM116				<0.2 M			
Chloroform	<0.008 mg/kg	TM116				<0.16 M			
1,1,1-Trichloroethane	<0.007 mg/kg	TM116				<0.14 M			
1,1-Dichloropropene	<0.01 mg/kg	TM116				<0.2 M			
Carbontetrachloride	<0.01 mg/kg	TM116				<0.2 M			
1,2-Dichloroethane	<0.005 mg/kg	TM116				<0.1 M			
Benzene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M	<0.18 M			
Trichloroethene	<0.009 mg/kg	TM116				<0.18 #			
1,2-Dichloropropane	<0.01 mg/kg	TM116				<0.2 M			
Dibromomethane	<0.009 mg/kg	TM116				<0.18 M			
Bromodichloromethane	<0.007 mg/kg	TM116				<0.14 M			
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116				<0.2 M			
Toluene	<0.007 mg/kg	TM116		<0.14 M	<0.14 M	<0.14 M			
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116				<0.2			
1,1,2-Trichloroethane	<0.01 mg/kg	TM116				<0.2 M			
1,3-Dichloropropane	<0.007 mg/kg	TM116				<0.14 M			

CERTIFICATE OF ANALYSIS

SDG:	210609-117	**Client Reference:**	784-B026948	**Report Number:**	602424
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	TP02	TP02	TP27			
			Depth (m)	0.20	1.00	0.70			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	07/06/2021	07/06/2021	07/06/2021			
			Sample Time	.	.	.			
			Date Received	09/06/2021	09/06/2021	09/06/2021			
			SDG Ref	210609-117	210609-117	210609-117			
			Lab Sample No.(s)	24419006	24419017	24418968			
			AGS Reference	ES1	ES2	ES2			
Tetrachloroethene	<0.005 mg/kg	TM116				<0.1 M			
Dibromochloromethane	<0.01 mg/kg	TM116				<0.2 M			
1,2-Dibromoethane	<0.01 mg/kg	TM116				<0.2 M			
Chlorobenzene	<0.005 mg/kg	TM116				<0.1 M			
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116				<0.2 M			
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 M	<0.08 M	<0.08 M			
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #	<0.2 #			
o-Xylene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
Styrene	<0.01 mg/kg	TM116				<0.2 #			
Bromoform	<0.01 mg/kg	TM116				<0.2 M			
Isopropylbenzene	<0.005 mg/kg	TM116				<0.1 #			
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116				<0.2 #			
1,2,3-Trichloropropane	<0.016 mg/kg	TM116				<0.32 M			
Bromobenzene	<0.01 mg/kg	TM116				<0.2 M			
Propylbenzene	<0.01 mg/kg	TM116				<0.2 M			
2-Chlorotoluene	<0.009 mg/kg	TM116				<0.18 M			
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116				<0.16 M			
4-Chlorotoluene	<0.01 mg/kg	TM116				<0.2 M			
tert-Butylbenzene	<0.014 mg/kg	TM116				<0.28 M			
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116				<0.18 #			
sec-Butylbenzene	<0.01 mg/kg	TM116				<0.2			
4-Isopropyltoluene	<0.01 mg/kg	TM116				<0.2 M			
1,3-Dichlorobenzene	<0.008 mg/kg	TM116				<0.16 M			
1,4-Dichlorobenzene	<0.005 mg/kg	TM116				<0.1 M			
n-Butylbenzene	<0.011 mg/kg	TM116				<0.22			
1,2-Dichlorobenzene	<0.01 mg/kg	TM116				<0.2 M			
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116				<0.28 M			
Tert-amyl methyl ether	<0.01 mg/kg	TM116				<0.2 #			
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116				<0.4			
Hexachlorobutadiene	<0.02 mg/kg	TM116				<0.4			
Naphthalene	<0.013 mg/kg	TM116				<0.26 M			
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116				<0.4 #			
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116				<0.4			

Validated

CERTIFICATE OF ANALYSIS

SDG:	210609-117	**Client Reference:**	784-B026948	**Report Number:**	602424
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	TP02	TP02	TP27			
			Depth (m)	0.20	1.00	0.70			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	07/06/2021	07/06/2021	07/06/2021			
			Sample Time	.	.	.			
			Date Received	09/06/2021	09/06/2021	09/06/2021			
			SDG Ref	210609-117	210609-117	210609-117			
			Lab Sample No.(s)	24419006	24419017	24418968			
			AGS Reference	ES1	ES2	ES2			
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4		<0.4			
Sum of BTEX	<0.04 mg/kg	TM116		<0.8		<0.8			

CERTIFICATE OF ANALYSIS

SDG:	210609-117	**Client Reference:**	784-B026948	**Report Number:**	602424
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP02ES1 0.20 SOLID 07/06/2021 00:00:00 09/06/2021 05:00:00 210609-117 24419006 TM048	11.06.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP27ES2 0.70 SOLID 07/06/2021 00:00:00 09/06/2021 05:00:00 210609-117 24418968 TM048	14/06/2021	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG:	210609-117	**Client Reference:**	784-B026948	**Report Number:**	602424
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.112	**Natural Moisture Content (%)**	24.3
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	80.5
Particle Size <4mm	>95%		

Case	
SDG	210609-117
Lab Sample Number(s)	24419017
Sampled Date	07-Jun-2021
Customer Sample Ref.	TP02 ES2
Depth (m)	1.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	0.507	3	5	6
Loss on Ignition (%)	-	-	-	-
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	-	-	-	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.00912	<0.0002	0.0912	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	<0.0003	<0.0003	<0.003	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	<0.0004	<0.0004	<0.004	<0.004	0.4	10	40
Lead	0.000379	<0.0002	0.00379	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.0341	<0.001	0.341	<0.01	4	50	200
Chloride	2.8	<2	28	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	13.8	<2	138	<20	1000	20000	50000
Total Dissolved Solids	58	<5	580	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.82	<3	48.2	<30	500	800	1000

Leach Test Information

Date Prepared	10-Jun-2021
pH (pH Units)	6.96
Conductivity (µS/cm)	70.10
Temperature (°C)	20.70
Volume Leachant (Litres)	0.878

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation

17/06/2021 15:18:15

15:17:57 17/06/2021

CERTIFICATE OF ANALYSIS

SDG:	210609-117	**Client Reference:**	784-B026948	**Report Number:**	602424
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.121	**Natural Moisture Content (%)**	35.5
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	73.8
Particle Size <4mm	>95%		

Case	
SDG	210609-117
Lab Sample Number(s)	24418968
Sampled Date	07-Jun-2021
Customer Sample Ref.	TP27 ES2
Depth (m)	0.70

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	0.0000127	<0.00001	0.000127	<0.0001	-	-	-
Arsenic	0.00107	<0.0005	0.0107	<0.005	-	-	-
Boron	0.0636	<0.01	0.636	<0.1	-	-	-
Cadmium	0.000193	<0.00008	0.00193	<0.0008	-	-	-
Chromium	0.00108	<0.001	0.0108	<0.01	-	-	-
Copper	0.0119	<0.0003	0.119	<0.003	-	-	-
Iron (Dis.Filt) mg/l	1.22	<0.019	12.2	<0.19	-	-	-
Lead	0.00427	<0.0002	0.0427	<0.002	-	-	-
Nickel	0.00462	<0.0004	0.0462	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	0.00145	<0.001	0.0145	<0.01	-	-	-
Zinc	0.0136	<0.001	0.136	<0.01	-	-	-
Sulphide	0.0384	<0.01	0.384	<0.1	-	-	-

Leach Test Information

Date Prepared	10-Jun-2021
pH (pH Units)	8.08
Conductivity (µS/cm)	91.10
Temperature (°C)	17.70
Volume Leachant (Litres)	0.868

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210609-117	**Client Reference:**	784-B026948	**Report Number:**	602424
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24419006	24419017	24418968
Customer Sample Ref.	TP02	TP02	TP27
AGS Ref.	ES1	ES2	ES2
Depth	0.20	1.00	0.70
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	14-Jun-2021		14-Jun-2021
Ammoniacal Nitrogen			14-Jun-2021
Ammonium Soil by Titration	16-Jun-2021		15-Jun-2021
Anions by Kone (soil)	15-Jun-2021		15-Jun-2021
Anions by Kone (w)		11-Jun-2021	
Asbestos ID in Solid Samples	11-Jun-2021		14-Jun-2021
Boron Water Soluble	14-Jun-2021		14-Jun-2021
CEN 10:1 Leachate (1 Stage)		10-Jun-2021	10-Jun-2021
CEN Readings		14-Jun-2021	11-Jun-2021
Coronene		14-Jun-2021	
Cyanide Comp/Free/Total/Thiocyanate	15-Jun-2021		15-Jun-2021
Dissolved Metals by ICP-MS		14-Jun-2021	14-Jun-2021
Dissolved Organic/Inorganic Carbon		17-Jun-2021	
EPH	15-Jun-2021		15-Jun-2021
EPH by GCxGC-FID	11-Jun-2021	11-Jun-2021	11-Jun-2021
EPH CWG GC (S)	11-Jun-2021		11-Jun-2021
Fluoride		14-Jun-2021	
GRO by GC-FID (S)	15-Jun-2021		15-Jun-2021
Hexavalent Chromium (s)	16-Jun-2021		11-Jun-2021
Hexavalent Chromium (w)			16-Jun-2021
Mercury Dissolved		15-Jun-2021	15-Jun-2021
Metals in solid samples by OES	14-Jun-2021		14-Jun-2021
Moisture at 105C		10-Jun-2021	10-Jun-2021
PAH 16 & 17 Calc		11-Jun-2021	
PAH by GCMS	14-Jun-2021	11-Jun-2021	14-Jun-2021
PCBs by GCMS		11-Jun-2021	
pH	14-Jun-2021		10-Jun-2021
pH Value of Filtered Water			14-Jun-2021
Phenols by HPLC (S)	14-Jun-2021		16-Jun-2021
Phenols by HPLC (W)		14-Jun-2021	
Sample description	10-Jun-2021	10-Jun-2021	09-Jun-2021
Semi Volatile Organic Compounds			11-Jun-2021
Sulphide			16-Jun-2021
Total Dissolved Solids		14-Jun-2021	
Total Organic Carbon	14-Jun-2021	15-Jun-2021	14-Jun-2021
TPH CWG GC (S)	15-Jun-2021		15-Jun-2021
VOC MS (S)	11-Jun-2021	11-Jun-2021	11-Jun-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2431
Ammoniacal Nitrogen as N	TM099	**94.8** 88.02 : 104.70

Ammonium Soil by Titration

Component	Method Code	QC 2405	QC 2493
Exchangeable Ammonium as NH4	TM024	**96.02** 74.04 : 103.44	**99.5** 74.04 : 103.44

Anions by Kone (soil)

Component	Method Code	QC 2415	QC 2419
Chloride (soluble)	TM243	**146.63** 80.93 : 111.66	**146.11** 80.93 : 111.66
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**170.09** 70.00 : 130.00	**167.76** 70.00 : 130.00

Anions by Kone (w)

Component	Method Code	QC 2490
Chloride	TM184	**103.0** 92.93 : 115.43
Sulphate (soluble)	TM184	**103.2** 90.53 : 113.03

Boron Water Soluble

Component	Method Code	QC 2465
Water Soluble Boron	TM222	**100.0** 84.00 : 111.00

Coronene

Component	Method Code	QC 2481
Coronene RAW	TM410	**93.0** 79.43 : 137.78

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2403	QC 2423	QC 2479
Free Cyanide	TM153	**92.97** 78.00 : 114.00	**93.66** 78.00 : 114.00	
Free Cyanide (W)	TM227			**81.75** 90.67 : 122.67
Thiocyanate	TM153	**99.36** 94.53 : 113.33	**100.0** 94.53 : 113.33	
Thiocyanate (W)	TM227			**107.25** 92.25 : 117.75
Total Cyanide	TM153	**95.8** 77.13 : 111.53	**100.7** 77.13 : 111.53	
Total Cyanide (W)	TM227			**104.75** 88.75 : 111.25

Dissolved Metals by ICP-MS

Component	Method Code	QC 2464
Aluminium	TM152	**98.33** 94.21 : 111.52
Antimony	TM152	**111.33** 88.37 : 130.57
Arsenic	TM152	**101.33** 92.62 : 113.52
Barium	TM152	**98.67** 88.62 : 113.14
Beryllium	TM152	**98.33** 87.08 : 111.38
Bismuth	TM152	**103.17** 92.62 : 115.02
Boron	TM152	**97.67** 86.31 : 120.88
Cadmium	TM152	**98.0** 93.85 : 111.65
Calcium	TM152	**98.67** 89.20 : 126.91
Chromium	TM152	**97.33** 92.50 : 113.03
Cobalt	TM152	**98.17** 85.01 : 114.87
Copper	TM152	**99.33** 89.87 : 119.73
Iron	TM152	**99.33** 93.02 : 113.86
Lead	TM152	**98.67** 91.11 : 116.98
Lithium	TM152	**98.33** 87.70 : 115.90
Magnesium	TM152	**100.67** 89.60 : 116.61
Manganese	TM152	**99.33** 93.97 : 112.46
Molybdenum	TM152	**101.83** 89.07 : 110.96
Nickel	TM152	**99.17** 93.70 : 112.15

Dissolved Metals by ICP-MS

		QC 2464
Phosphorus	TM152	**97.67** 89.24 : 114.18
Potassium	TM152	**98.67** 93.20 : 115.55
Selenium	TM152	**100.17** 91.69 : 117.12
Silver	TM152	**102.67** 90.93 : 121.73
Sodium	TM152	**101.33** 92.42 : 113.24
Strontium	TM152	**100.0** 92.14 : 116.24
Tellurium	TM152	**106.83** 89.88 : 111.78
Thallium	TM152	**88.5** 82.43 : 113.83
Tin	TM152	**98.17** 94.62 : 107.79
Titanium	TM152	**98.17** 90.29 : 115.23
Tungsten	TM152	**102.17** 77.61 : 132.31
Uranium	TM152	**99.33** 86.97 : 115.76
Vanadium	TM152	**97.33** 89.61 : 115.48
Zinc	TM152	**100.0** 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2454
Dissolved Inorganic Carbon	TM090	**99.17** 93.58 : 112.28
Dissolved Organic Carbon	TM090	**101.33** 96.13 : 109.53

Fluoride

Component	Method Code	QC 2428
Fluoride	TM104	**103.33** 96.67 : 108.67

GRO by GC-FID (S)

GRO by GC-FID (S)

Component	Method Code	QC 2430
QC	TM089	**78.86** 70.34 : 111.95

Hexavalent Chromium (s)

Component	Method Code	QC 2447	QC 2427
Hexavalent Chromium	TM151	**100.0** 91.40 : 115.40	**102.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2459
Hexavalent Chromium	TM241	**98.0** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2473	QC 2400
Mercury Dissolved (CVAF)	TM183	**87.8** 0.00 : 0.00	**103.0** 0.00 : 0.00

Metals in solid samples by OES

Component	Method Code	QC 2451	QC 2452
Aluminium	TM181	**92.92** 73.56 : 108.85	**92.92** 73.56 : 108.85
Antimony	TM181	**97.97** 76.89 : 111.24	**97.15** 76.89 : 111.24
Arsenic	TM181	**100.0** 88.53 : 111.01	**99.71** 88.53 : 111.01
Barium	TM181	**94.5** 77.67 : 105.35	**93.58** 77.67 : 105.35
Beryllium	TM181	**99.63** 85.44 : 109.61	**97.76** 85.44 : 109.61
Boron	TM181	**92.55** 73.51 : 104.66	**91.4** 73.51 : 104.66
Cadmium	TM181	**93.42** 77.67 : 104.12	**93.0** 77.67 : 104.12
Chromium	TM181	**89.05** 79.64 : 105.83	**86.61** 79.64 : 105.83

Metals in solid samples by OES

		QC 2451	QC 2452
Cobalt	TM181	**90.88** 84.60 : 104.13	**89.94** 84.60 : 104.13
Copper	TM181	**96.65** 82.40 : 105.45	**93.31** 82.40 : 105.45
Iron	TM181	**98.41** 82.95 : 110.58	**92.06** 82.95 : 110.58
Lead	TM181	**94.59** 78.24 : 104.05	**94.37** 78.24 : 104.05
Manganese	TM181	**106.39** 94.29 : 119.51	**104.44** 94.29 : 119.51
Mercury	TM181	**94.44** 83.16 : 107.81	**93.24** 83.16 : 107.81
Molybdenum	TM181	**97.94** 87.11 : 106.87	**97.12** 87.11 : 106.87
Nickel	TM181	**91.44** 80.26 : 102.28	**90.46** 80.26 : 102.28
Phosphorus	TM181	**107.27** 94.56 : 124.28	**106.46** 94.56 : 124.28
Selenium	TM181	**99.61** 82.28 : 110.48	**99.22** 82.28 : 110.48
Strontium	TM181	**93.54** 79.13 : 102.79	**90.42** 79.13 : 102.79
Thallium	TM181	**93.81** 82.94 : 111.86	**92.04** 82.94 : 111.86
Tin	TM181	**105.7** 86.72 : 110.03	**100.38** 86.72 : 110.03
Titanium	TM181	**88.55** 66.23 : 102.06	**87.79** 66.23 : 102.06
Vanadium	TM181	**96.7** 86.19 : 109.45	**94.51** 86.19 : 109.45
Zinc	TM181	**100.41** 84.68 : 113.99	**99.18** 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2486	QC 2474
Acenaphthene	TM218	**92.0** 76.79 : 103.90	**85.5** 76.79 : 103.90
Acenaphthylene	TM218	**90.0** 74.19 : 106.17	**85.0** 74.19 : 106.17
Anthracene	TM218	**85.5** 70.90 : 109.22	**82.5** 70.90 : 109.22
Benz(a)anthracene	TM218	**89.0** 73.77 : 119.26	**87.0** 73.77 : 119.26
Benzo(a)pyrene	TM218	**89.5** 73.20 : 114.18	**79.5** 73.20 : 114.18
Benzo(b)fluoranthene	TM218	**86.0** 75.36 : 117.58	**82.5** 75.36 : 117.58
Benzo(ghi)perylene	TM218	**94.0** 70.73 : 116.12	**77.5** 70.73 : 116.12
Benzo(k)fluoranthene	TM218	**90.5** 75.98 : 116.59	**80.0** 75.98 : 116.59
Chrysene	TM218	**88.5** 74.82 : 114.18	**83.0** 74.82 : 114.18

PAH by GCMS

		QC 2486	QC 2474
Dibenzo(ah)anthracene	TM218	**93.0** 69.17 : 115.30	**81.5** 69.17 : 115.30
Fluoranthene	TM218	**92.0** 66.06 : 114.63	**83.0** 66.06 : 114.63
Fluorene	TM218	**89.5** 76.66 : 107.56	**85.0** 76.66 : 107.56
Indeno(123cd)pyrene	TM218	**92.0** 70.26 : 117.95	**81.0** 70.26 : 117.95
Naphthalene	TM218	**91.0** 74.70 : 101.83	**83.5** 74.70 : 101.83
Phenanthrene	TM218	**90.5** 73.62 : 109.34	**84.5** 73.62 : 109.34
Pyrene	TM218	**89.0** 71.46 : 117.00	**81.0** 71.46 : 117.00

PCBs by GCMS

Component	Method Code	QC 2488
PCB congener 101	TM168	**89.4** 65.66 : 110.06
PCB congener 105	TM168	**83.3** 58.10 : 106.34
PCB congener 114	TM168	**84.0** 59.38 : 106.48
PCB congener 118	TM168	**85.4** 60.02 : 106.23
PCB congener 123	TM168	**89.1** 65.01 : 99.81
PCB congener 126	TM168	**85.3** 59.31 : 109.23
PCB congener 138	TM168	**88.8** 63.95 : 107.63
PCB congener 153	TM168	**91.9** 62.65 : 108.85
PCB congener 156	TM168	**87.1** 61.69 : 112.27
PCB congener 157	TM168	**84.2** 55.37 : 104.81
PCB congener 167	TM168	**87.5** 65.58 : 109.14
PCB congener 169	TM168	**87.5** 56.84 : 112.10
PCB congener 180	TM168	**91.7** 66.99 : 111.63
PCB congener 189	TM168	**87.5** 57.75 : 112.59
PCB congener 28	TM168	**88.9** 73.68 : 105.96
PCB congener 52	TM168	**88.8** 67.24 : 107.62
PCB congener 77	TM168	**88.7** 64.87 : 108.49
PCB congener 81	TM168	**88.6** 70.78 : 110.80

pH

Component	Method Code	QC 2420	QC 2434
pH	TM133	**98.38** 97.51 : 101.32	**98.24** 97.51 : 101.32

pH Value of Filtered Water

Component	Method Code	QC 2497
pH	TM256	**100.8** 99.06 : 101.47

Phenols by HPLC (S)

Component	Method Code	QC 2409	QC 2491
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**51.95** 69.38 : 125.27	**49.35** 69.38 : 125.27
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**45.61** 69.79 : 122.84	**43.86** 69.79 : 122.84
Cresols by HPLC (S)	TM062 (S)	**49.9** 77.98 : 111.41	**46.97** 77.98 : 111.41
Phenol by HPLC (S)	TM062 (S)	**50.99** 67.94 : 117.69	**47.68** 67.94 : 117.69
Xylenols by HPLC (S)	TM062 (S)	**50.31** 88.23 : 104.42	**47.4** 88.23 : 104.42

Phenols by HPLC (W)

Component	Method Code	QC 2445
2.3.5 Trimethyl-Phenol by HPLC (W)	TM259	**97.66** 77.41 : 127.55
2-Isopropyl Phenol by HPLC (W)	TM259	**91.78** 82.77 : 126.51
Cresols by HPLC (W)	TM259	**98.68** 76.60 : 126.28
Napthol by HPLC (W)	TM259	**97.66** 75.40 : 129.40
Phenol by HPLC (W)	TM259	**94.52** 85.77 : 125.91
Xylenols by HPLC (W)	TM259	**95.89** 79.09 : 131.82

Semi Volatile Organic Compounds

Component	Method Code	QC 2400
4-Bromophenylphenylether (Soil)	TM157	**88.5** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**92.0** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**88.5** 68.25 : 126.75

Semi Volatile Organic Compounds

		QC 2400
Naphthalene (Soil)	TM157	**89.5** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**89.5** 66.50 : 123.50
Phenol (Soil)	TM157	**96.5** 69.92 : 114.02

Sulphide

Component	Method Code	QC 2498
Sulphide	TM101	**107.33** 88.90 : 112.50

Total Dissolved Solids

Component	Method Code	QC 2463
Total Dissolved Solids	TM123	**98.5** 97.30 : 100.92

Total Organic Carbon

Component	Method Code	QC 2439	QC 2441
Total Organic Carbon	TM132	**99.61** 87.02 : 113.45	**98.83** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2480
1,1,1,2-tetrachloroethane	TM116	**99.8** 84.84 : 116.25
1,1,1-Trichloroethane	TM116	**96.8** 73.73 : 118.05
1,1,2-Trichloroethane	TM116	**95.0** 77.12 : 116.04
1,1-Dichloroethane	TM116	**102.8** 74.46 : 129.15
1,2-Dichloroethane	TM116	**106.0** 92.38 : 131.65
1,4-Dichlorobenzene	TM116	**97.8** 83.64 : 126.18
2-Chlorotoluene	TM116	**99.0** 76.03 : 113.25
4-Chlorotoluene	TM116	**91.8** 66.90 : 112.46

		QC 2480
Benzene	TM116	**102.6** 88.60 : 113.80
Carbon Disulphide	TM116	**101.6** 74.91 : 122.14
Carbontetrachloride	TM116	**98.4** 80.31 : 124.50
Chlorobenzene	TM116	**100.6** 83.81 : 114.18
Chloroform	TM116	**105.4** 87.40 : 122.49
Chloromethane	TM116	**98.4** 65.89 : 136.93
Cis-1,2-Dichloroethene	TM116	**102.6** 80.67 : 126.72
Dibromomethane	TM116	**97.6** 73.23 : 118.35
Dichloromethane	TM116	**110.4** 81.11 : 133.25
Ethylbenzene	TM116	**93.2** 75.92 : 110.41
Hexachlorobutadiene	TM116	**108.2** 12.82 : 152.73
Isopropylbenzene	TM116	**87.6** 54.30 : 105.91
Naphthalene	TM116	**103.6** 80.86 : 128.81
o-Xylene	TM116	**89.2** 69.99 : 108.74
p/m-Xylene	TM116	**89.1** 68.32 : 108.91
Sec-Butylbenzene	TM116	**85.4** 38.50 : 101.50
Tetrachloroethene	TM116	**104.2** 76.95 : 121.02
Toluene	TM116	**92.6** 74.24 : 107.42
Trichloroethene	TM116	**96.0** 85.28 : 109.36
Trichlorofluoromethane	TM116	**102.0** 81.46 : 120.52
Vinyl Chloride	TM116	**104.0** 68.02 : 143.37

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

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Tel: (01244) 528700
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[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	18 June 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210611-44
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	602481

We received 14 samples on Wednesday June 09, 2021 and 2 of these samples were scheduled for analysis which was completed on Friday June 18, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Soni

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210611-44	**Client Reference:**	784-B026948	**Report Number:**	602481
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24428193	BH30	ES7	1.50 - 1.60	08/06/2021
24428229	BH30	ES27	10.60 - 10.70	08/06/2021
24428221	BH30	ES21	10.80 - 10.90	08/06/2021
24428225	BH30	ES23	11.70 - 11.80	08/06/2021
24428197	BH30	ES9	2.50 - 2.60	08/06/2021
24428201	BH30	ES10	3.50 - 3.60	08/06/2021
24428205	BH30	ES12	4.50 - 4.60	08/06/2021
24428209	BH30	ES13	5.50 - 5.60	08/06/2021
24428213	BH30	ES17	8.50 - 8.60	08/06/2021
24428217	BH30	ES18	9.70 - 9.80	08/06/2021
24428240	BH59	ES1	0.30	08/06/2021
24428246	BH59	ES2	1.30	08/06/2021
24428186	TP31	ES1	0.20	08/06/2021
24428233	TP31	ES2	0.70	08/06/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	210611-44	**Client Reference:**	784-B026948	**Report Number:**	602481
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24428221				24428225				
Customer Sample Reference			BH30				BH30				
AGS Reference			ES21				ES23				
Depth (m)			10.80 - 10.90				11.70 - 11.80				
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)			
Sample Type			S	S	S	S	S	S			
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 2		X			X				
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 2	X			X					
Ammonium Soil by Titration	All	NDPs: 0 Tests: 2		X			X				
Anions by Kone (soil)	All	NDPs: 0 Tests: 2		X			X				
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2	X			X					
Boron Water Soluble	All	NDPs: 0 Tests: 2		X			X				
CEN Readings	All	NDPs: 0 Tests: 2	X			X					
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 4	X	X		X	X				
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2	X			X					
EPH	All	NDPs: 0 Tests: 2		X			X				
EPH by GCxGC-FID	All	NDPs: 0 Tests: 2		X			X				
EPH CWG GC (S)	All	NDPs: 0 Tests: 2		X			X				
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2			X			X			
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2		X			X				
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 2	X			X					

CERTIFICATE OF ANALYSIS

SDG:	210611-44	**Client Reference:**	784-B026948	**Report Number:**	602481
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)						2442821				2442825		
Customer Sample Reference						BH30				BH30		
AGS Reference						ES21				ES23		
Depth (m)						10.80 - 10.90				11.70 - 11.80		
Container						1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type						S	S	S	S	S	S	
Mercury Dissolved	All	NDPs: 0 Tests: 2				X			X			
Metals in solid samples by OES	All	NDPs: 0 Tests: 2					X			X		
PAH by GCMS	All	NDPs: 0 Tests: 2					X			X		
PCBs by GCMS	All	NDPs: 0 Tests: 2					X			X		
pH	All	NDPs: 0 Tests: 2					X			X		
pH Value of Filtered Water	All	NDPs: 0 Tests: 2				X			X			
Phenols by HPLC (S)	All	NDPs: 0 Tests: 2					X			X		
Sample description	All	NDPs: 0 Tests: 2					X			X		
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 2					X			X		
Sulphide	All	NDPs: 0 Tests: 2				X			X			
Total Organic Carbon	All	NDPs: 0 Tests: 2					X			X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 2					X			X		
VOC MS (S)	All	NDPs: 0 Tests: 2						X			X	

CERTIFICATE OF ANALYSIS

SDG:	210611-44	**Client Reference:**	784-B026948	**Report Number:**	602481
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24428221	BH30	10.80 - 10.90	Dark Brown	Sand	Stones	None
24428225	BH30	11.70 - 11.80	Dark Brown	Sand	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210611-44	**Client Reference:**	784-B026948	**Report Number:**	602481
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH30	BH30				
			Depth (m)	10.80 - 10.90	11.70 - 11.80				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	08/06/2021	08/06/2021				
			Sample Time	.	.				
			Date Received	09/06/2021	09/06/2021				
			SDG Ref	210611-44	210611-44				
			Lab Sample No.(s)	24428221	24428225				
			AGS Reference	ES21	ES23				
Moisture Content Ratio (% of as received sample)	%	PM024		0.9	2.8				
Exchangeable Ammonia as N	<12 mg/kg	TM024		<12 M	<12 M				
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 M	<0.01 M				
Cresols	<0.01 mg/kg	TM062 (S)		<0.01 M	<0.01 M				
Xylenols	<0.015 mg/kg	TM062 (S)		<0.015 M	<0.015 M				
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 M	<0.035 M				
Soil Organic Matter (SOM)	<0.35 %	TM132		<0.35 #	<0.35 #				
pH	1 pH Units	TM133		8.51 M	8.43 M				
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #				
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M				
PCB congener 118	<0.003 mg/kg	TM168		<0.003 M	<0.003 M				
PCB congener 81	<0.003 mg/kg	TM168		<0.003 M	<0.003 M				
PCB congener 77	<0.003 mg/kg	TM168		<0.003 M	<0.003 M				
PCB congener 123	<0.003 mg/kg	TM168		<0.003 M	<0.003 M				
PCB congener 114	<0.003 mg/kg	TM168		<0.003 M	<0.003 M				
PCB congener 105	<0.003 mg/kg	TM168		<0.003 M	<0.003 M				
PCB congener 126	<0.003 mg/kg	TM168		<0.003 M	<0.003 M				
PCB congener 167	<0.003 mg/kg	TM168		<0.003 M	<0.003 M				
PCB congener 156	<0.003 mg/kg	TM168		<0.003 M	<0.003 M				
PCB congener 157	<0.003 mg/kg	TM168		<0.003 M	<0.003 M				
PCB congener 169	<0.003 mg/kg	TM168		<0.003 M	<0.003 M				
PCB congener 189	<0.003 mg/kg	TM168		<0.003 M	<0.003 M				
Sum of detected WHO 12 PCBs	<0.036 mg/kg	TM168		<0.036	<0.036				
Arsenic	<0.6 mg/kg	TM181		4.65 M	5.18 M				
Cadmium	<0.02 mg/kg	TM181		0.36 M	0.408 M				
Chromium	<0.9 mg/kg	TM181		2.48 M	2.21 M				
Copper	<1.4 mg/kg	TM181		3.98 M	4.59 M				
Iron	<1000 mg/kg	TM181		13300 #	14100 #				
Lead	<0.7 mg/kg	TM181		9.63 M	8.1 M				
Mercury	<0.1 mg/kg	TM181		<0.1 M	<0.1 M				
Nickel	<0.2 mg/kg	TM181		9.26 M	9.51 M				
Selenium	<1 mg/kg	TM181		<1 #	<1 #				
Vanadium	<0.2 mg/kg	TM181		10 #	11.1 #				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210611-44	**Client Reference:**	784-B026948	**Report Number:**	602481
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH30	BH30				
			Depth (m)	10.80 - 10.90	11.70 - 11.80				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	08/06/2021	08/06/2021				
			Sample Time	.	.				
			Date Received	09/06/2021	09/06/2021				
			SDG Ref	210611-44	210611-44				
			Lab Sample No.(s)	24428221	24428225				
			AGS Reference	ES21	ES23				
Zinc	<1.9 mg/kg	TM181		45.3 M	41.4 M				
Boron, water soluble	<1 mg/kg	TM222		<1 M	<1 M				
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.0287 M	0.0189 M				
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248		8.33	7.95				
EPH (C5-C40)	<35 mg/kg	TM415		<35	<35				
EPH Surrogate % recovery**	%	TM415		92.1	92.4				
EPH >C10-C40	<35 mg/kg	TM415		<35 M	<35 M				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210611-44	**Client Reference:**	784-B026948	**Report Number:**	602481
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH30	BH30				
			Depth (m)	10.80 - 10.90	11.70 - 11.80				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	08/06/2021	08/06/2021				
			Sample Time	.	.				
			Date Received	09/06/2021	09/06/2021				
			SDG Ref	210611-44	210611-44				
			Lab Sample No.(s)	24428221	24428225				
			AGS Reference	ES21	ES23				
Naphthalene-d8 % recovery**	%	TM218		88.2	89.1				
Acenaphthene-d10 % recovery**	%	TM218		80.1	80.2				
Phenanthrene-d10 % recovery**	%	TM218		89.5	86				
Chrysene-d12 % recovery**	%	TM218		102	89.4				
Perylene-d12 % recovery**	%	TM218		100	86.6				
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	<0.009 M				
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 M	<0.012 M				
Acenaphthene	<0.008 mg/kg	TM218		0.00905 M	<0.008 M				
Fluorene	<0.01 mg/kg	TM218		0.0117 M	<0.01 M				
Phenanthrene	<0.015 mg/kg	TM218		0.056 M	<0.015 M				
Anthracene	<0.016 mg/kg	TM218		0.0222 M	<0.016 M				
Fluoranthene	<0.017 mg/kg	TM218		0.173 M	0.0316 M				
Pyrene	<0.015 mg/kg	TM218		0.146 M	0.0312 M				
Benz(a)anthracene	<0.014 mg/kg	TM218		0.0815 M	0.0178 M				
Chrysene	<0.01 mg/kg	TM218		0.0792 M	0.0159 M				
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		0.128 M	0.0315 M				
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.0471 M	<0.014 M				
Benzo(a)pyrene	<0.015 mg/kg	TM218		0.0952 M	0.023 M				
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.0773 M	0.0237 M				
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	<0.023 M				
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.0689 M	<0.024 M				
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		0.995	0.175				

CERTIFICATE OF ANALYSIS

SDG:	210611-44	**Client Reference:**	784-B026948	**Report Number:**	602481
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.					
			BH30	BH30				
			Depth (m)	10.80 - 10.90	11.70 - 11.80			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	08/06/2021	08/06/2021			
			Sample Time	.	.			
			Date Received	09/06/2021	09/06/2021			
			SDG Ref	210611-44	210611-44			
			Lab Sample No.(s)	24428221	24428225			
			AGS Reference	ES21	ES23			
Phenol	<0.1 mg/kg	TM157	<0.1	<0.1				
Pentachlorophenol	<0.1 mg/kg	TM157	<0.1	<0.1				
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157	<0.1	<0.1				
Nitrobenzene	<0.1 mg/kg	TM157	<0.1	<0.1				
Isophorone	<0.1 mg/kg	TM157	<0.1	<0.1				
Hexachloroethane	<0.1 mg/kg	TM157	<0.1	<0.1				
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157	<0.1	<0.1				
Hexachlorobutadiene	<0.1 mg/kg	TM157	<0.1	<0.1				
Hexachlorobenzene	<0.1 mg/kg	TM157	<0.1	<0.1				
n-Dioctyl phthalate	<0.1 mg/kg	TM157	<0.1	<0.1				
Dimethyl phthalate	<0.1 mg/kg	TM157	<0.1	<0.1				
Diethyl phthalate	<0.1 mg/kg	TM157	<0.1	<0.1				
n-Dibutyl phthalate	<0.1 mg/kg	TM157	<0.1	<0.1				
Dibenzofuran	<0.1 mg/kg	TM157	<0.1	<0.1				
Carbazole	<0.1 mg/kg	TM157	<0.1	<0.1				
Butylbenzyl phthalate	<0.1 mg/kg	TM157	<0.1	<0.1				
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157	<0.1	<0.1				
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157	<0.1	<0.1				
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157	<0.1	<0.1				
Azobenzene	<0.1 mg/kg	TM157	<0.1	<0.1				
4-Nitrophenol	<0.1 mg/kg	TM157	<0.1	<0.1				
4-Nitroaniline	<0.1 mg/kg	TM157	<0.1	<0.1				
4-Methylphenol	<0.1 mg/kg	TM157	<0.1	<0.1				
4-Chlorophenylphenylether	<0.1 mg/kg	TM157	<0.1	<0.1				
4-Chloroaniline	<0.1 mg/kg	TM157	<0.1	<0.1				
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157	<0.1	<0.1				
4-Bromophenylphenylether	<0.1 mg/kg	TM157	<0.1	<0.1				
3-Nitroaniline	<0.1 mg/kg	TM157	<0.1	<0.1				
2-Nitrophenol	<0.1 mg/kg	TM157	<0.1	<0.1				
2-Nitroaniline	<0.1 mg/kg	TM157	<0.1	<0.1				
2-Methylphenol	<0.1 mg/kg	TM157	<0.1	<0.1				
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157	<0.1	<0.1				
2-Chlorophenol	<0.1 mg/kg	TM157	<0.1	<0.1				

CERTIFICATE OF ANALYSIS

SDG:	210611-44	**Client Reference:**	784-B026948	**Report Number:**	602481
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH30	BH30				
			Depth (m)	10.80 - 10.90	11.70 - 11.80				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	08/06/2021	08/06/2021				
			Sample Time	.	.				
			Date Received	09/06/2021	09/06/2021				
			SDG Ref	210611-44	210611-44				
			Lab Sample No.(s)	24428221	24428225				
			AGS Reference	ES21	ES23				
2,6-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1				
2,4-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1				
2,4-Dimethylphenol	<0.1 mg/kg	TM157		<0.1	<0.1				
2,4-Dichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
1,4-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
1,3-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
1,2-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
2-Chloronaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1				
2-Methylnaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1				
Acenaphthylene	<0.1 mg/kg	TM157		<0.1	<0.1				
Acenaphthene	<0.1 mg/kg	TM157		<0.1	<0.1				
Anthracene	<0.1 mg/kg	TM157		<0.1	<0.1				
Benzo(a)anthracene	<0.1 mg/kg	TM157		<0.1	<0.1				
Benzo(b)fluoranthene	<0.1 mg/kg	TM157		<0.1	<0.1				
Benzo(k)fluoranthene	<0.1 mg/kg	TM157		<0.1	<0.1				
Benzo(a)pyrene	<0.1 mg/kg	TM157		<0.1	<0.1				
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157		<0.1	<0.1				
Chrysene	<0.1 mg/kg	TM157		<0.1	<0.1				
Fluoranthene	<0.1 mg/kg	TM157		<0.1	<0.1				
Fluorene	<0.1 mg/kg	TM157		<0.1	<0.1				
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157		<0.1	<0.1				
Phenanthrene	<0.1 mg/kg	TM157		<0.1	<0.1				
Pyrene	<0.1 mg/kg	TM157		<0.1	<0.1				
Naphthalene	<0.1 mg/kg	TM157		<0.1	<0.1				
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157		<0.1	<0.1				
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157		<0.1	<0.1				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210611-44	**Client Reference:**	784-B026948	**Report Number:**	602481
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH30	BH30				
			Depth (m)	10.80 - 10.90	11.70 - 11.80				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	08/06/2021	08/06/2021				
			Sample Time	.	.				
			Date Received	09/06/2021	09/06/2021				
			SDG Ref	210611-44	210611-44				
			Lab Sample No.(s)	24428221	24428225				
			AGS Reference	ES21	ES23				
GRO Surrogate % recovery**	%	TM089		107	105				
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C10-C12	<1 mg/kg	TM414		<1 #	<1 #				
Aliphatics >C12-C16	<1 mg/kg	TM414		<1 #	<1 #				
Aliphatics >C16-C21	<1 mg/kg	TM414		<1 #	<1 #				
Aliphatics >C21-C35	<1 mg/kg	TM414		<1 #	<1 #				
Aliphatics >C35-C44	<1 mg/kg	TM414		<1	<1				
Total Aliphatics >C10-C44	<5 mg/kg	TM414		<5	<5				
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		<10	<10				
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics > EC10-EC12	<1 mg/kg	TM414		<1 #	<1 #				
Aromatics > EC12-EC16	<1 mg/kg	TM414		<1 #	<1 #				
Aromatics > EC16-EC21	<1 mg/kg	TM414		<1 #	<1 #				
Aromatics > EC21-EC35	<1 mg/kg	TM414		<1 #	<1 #				
Aromatics >EC35-EC44	<1 mg/kg	TM414		<1	<1				
Aromatics > EC40-EC44	<1 mg/kg	TM414		<1	<1				
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		<5	<5				
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		<10	<10				
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		<0.05	<0.05				
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		<0.05	<0.05				
GRO >C5-C10	<0.02 mg/kg	TM089		<0.02	<0.02				

CERTIFICATE OF ANALYSIS

SDG:	210611-44	**Client Reference:**	784-B026948	**Report Number:**	602481
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH30	BH30				
			Depth (m)	10.80 - 10.90	11.70 - 11.80				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	08/06/2021	08/06/2021				
			Sample Time	.	.				
			Date Received	09/06/2021	09/06/2021				
			SDG Ref	210611-44	210611-44				
			Lab Sample No.(s)	24428221	24428225				
			AGS Reference	ES21	ES23				
Dibromofluoromethane**	%	TM116		120	127				
Toluene-d8**	%	TM116		99.2	97.1				
4-Bromofluorobenzene**	%	TM116		84	106				
Dichlorodifluoromethane	<0.006 mg/kg	TM116		<0.12 M	<0.12 M				
Chloromethane	<0.007 mg/kg	TM116		<0.14 #	<0.14 #				
Vinyl Chloride	<0.006 mg/kg	TM116		<0.12 M	<0.12 M				
Bromomethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Chloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Trichlorofluorormethane	<0.006 mg/kg	TM116		<0.12 M	<0.12 M				
1,1-Dichloroethene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #				
Carbon Disulphide	<0.007 mg/kg	TM116		<0.14 M	<0.14 M				
Dichloromethane	<0.01 mg/kg	TM116		<0.2 #	<0.2 #				
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
1,1-Dichloroethane	<0.008 mg/kg	TM116		<0.16 M	<0.16 M				
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116		<0.12 M	<0.12 M				
2,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2	<0.2				
Bromochloromethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Chloroform	<0.008 mg/kg	TM116		<0.16 M	<0.16 M				
1,1,1-Trichloroethane	<0.007 mg/kg	TM116		<0.14 M	<0.14 M				
1,1-Dichloropropene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Carbontetrachloride	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
1,2-Dichloroethane	<0.005 mg/kg	TM116		<0.1 M	<0.1 M				
Benzene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M				
Trichloroethene	<0.009 mg/kg	TM116		<0.18 #	<0.18 #				
1,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Dibromomethane	<0.009 mg/kg	TM116		<0.18 M	<0.18 M				
Bromodichloromethane	<0.007 mg/kg	TM116		<0.14 M	<0.14 M				
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Toluene	<0.007 mg/kg	TM116		<0.14 M	<0.14 M				
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2	<0.2				
1,1,2-Trichloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
1,3-Dichloropropane	<0.007 mg/kg	TM116		<0.14 M	<0.14 M				

CERTIFICATE OF ANALYSIS

SDG:	210611-44	**Client Reference:**	784-B026948	**Report Number:**	602481
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH30	BH30				
			Depth (m)	10.80 - 10.90	11.70 - 11.80				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	08/06/2021	08/06/2021				
			Sample Time	.	.				
			Date Received	09/06/2021	09/06/2021				
			SDG Ref	210611-44	210611-44				
			Lab Sample No.(s)	24428221	24428225				
			AGS Reference	ES21	ES23				
Tetrachloroethene	<0.005 mg/kg	TM116		<0.1 M	<0.1 M				
Dibromochloromethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
1,2-Dibromoethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Chlorobenzene	<0.005 mg/kg	TM116		<0.1 M	<0.1 M				
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 M	<0.08 M				
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #				
o-Xylene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Styrene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #				
Bromoform	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Isopropylbenzene	<0.005 mg/kg	TM116		<0.1 #	<0.1 #				
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 #	<0.2 #				
1,2,3-Trichloropropane	<0.016 mg/kg	TM116		<0.32 M	<0.32 M				
Bromobenzene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Propylbenzene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
2-Chlorotoluene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M				
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116		<0.16 M	<0.16 M				
4-Chlorotoluene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
tert-Butylbenzene	<0.014 mg/kg	TM116		<0.28 M	<0.28 M				
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116		<0.18 #	<0.18 #				
sec-Butylbenzene	<0.01 mg/kg	TM116		<0.2	<0.2				
4-Isopropyltoluene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
1,3-Dichlorobenzene	<0.008 mg/kg	TM116		<0.16 M	<0.16 M				
1,4-Dichlorobenzene	<0.005 mg/kg	TM116		<0.1 M	<0.1 M				
n-Butylbenzene	<0.011 mg/kg	TM116		<0.22	<0.22				
1,2-Dichlorobenzene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116		<0.28 M	<0.28 M				
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.2 #	<0.2 #				
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4	<0.4				
Hexachlorobutadiene	<0.02 mg/kg	TM116		<0.4	<0.4				
Naphthalene	<0.013 mg/kg	TM116		<0.26 M	<0.26 M				
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4 #	<0.4 #				
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4	<0.4				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210611-44	**Client Reference:**	784-B026948	**Report Number:**	602481
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH30	BH30				
			Depth (m)	10.80 - 10.90	11.70 - 11.80				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	08/06/2021	08/06/2021				
			Sample Time	.	.				
			Date Received	09/06/2021	09/06/2021				
			SDG Ref	210611-44	210611-44				
			Lab Sample No.(s)	24428221	24428225				
			AGS Reference	ES21	ES23				
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4	<0.4				
Sum of BTEX	<0.04 mg/kg	TM116		<0.8	<0.8				

CERTIFICATE OF ANALYSIS

SDG:	210611-44	**Client Reference:**	784-B026948	**Report Number:**	602481
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	BH30ES21 10.80 - 10.90 SOLID 08/06/2021 00:00:00 09/06/2021 05:00:00 210611-44 24428221 TM048	15.06.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	BH30ES23 11.70 - 11.80 SOLID 08/06/2021 00:00:00 09/06/2021 05:00:00 210611-44 24428225 TM048	15/06/2	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	210611-44	**Client Reference:**	784-B026948	**Report Number:**	602481
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.092	**Natural Moisture Content (%)**	2.45
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	97.6
Particle Size <4mm	>95%		

Case	
SDG	210611-44
Lab Sample Number(s)	24428221
Sampled Date	08-Jun-2021
Customer Sample Ref.	BH30 ES21
Depth (m)	10.80 - 10.90

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.00152	<0.0005	0.0152	<0.005	-	-	-
Boron	0.0114	<0.01	0.114	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.475	<0.019	4.75	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	0.00176	<0.001	0.0176	<0.01	-	-	-
Zinc	0.0996	<0.001	0.996	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	12-Jun-2021
pH (pH Units)	8.91
Conductivity (µS/cm)	84.90
Temperature (°C)	21.20
Volume Leachant (Litres)	0.898

CERTIFICATE OF ANALYSIS

SDG:	210611-44	**Client Reference:**	784-B026948	**Report Number:**	602481
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.089	**Natural Moisture Content (%)**	0.08
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	99.9
Particle Size <4mm	>95%		

Case	
SDG	210611-44
Lab Sample Number(s)	24428225
Sampled Date	08-Jun-2021
Customer Sample Ref.	BH30 ES23
Depth (m)	11.70 - 11.80

Eluate Analysis	**C_2 Conc^n in 10:1 eluate (mg/l)**		**A_2 10:1 conc^n leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.000542	<0.0005	0.00542	<0.005	-	-	-
Boron	<0.01	<0.01	<0.1	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.757	<0.019	7.57	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0012	<0.001	0.012	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	12-Jun-2021
pH (pH Units)	7.66
Conductivity (µS/cm)	32.80
Temperature (°C)	21.20
Volume Leachant (Litres)	0.900

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210611-44	**Client Reference:**	784-B026948	**Report Number:**	602481
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24428221	24428225
Customer Sample Ref.	BH30	BH30
AGS Ref.	ES21	ES23
Depth	10.80 - 10.90	11.70 - 11.80
Type	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	14-Jun-2021	14-Jun-2021
Ammoniacal Nitrogen	17-Jun-2021	17-Jun-2021
Ammonium Soil by Titration	16-Jun-2021	16-Jun-2021
Anions by Kone (soil)	16-Jun-2021	16-Jun-2021
Asbestos ID in Solid Samples	15-Jun-2021	15-Jun-2021
Boron Water Soluble	15-Jun-2021	16-Jun-2021
CEN 10:1 Leachate (1 Stage)	12-Jun-2021	12-Jun-2021
CEN Readings	15-Jun-2021	15-Jun-2021
Cyanide Comp/Free/Total/Thiocyanate	16-Jun-2021	16-Jun-2021
Dissolved Metals by ICP-MS	15-Jun-2021	15-Jun-2021
EPH	16-Jun-2021	16-Jun-2021
EPH by GCxGC-FID	16-Jun-2021	16-Jun-2021
EPH CWG GC (S)	15-Jun-2021	15-Jun-2021
GRO by GC-FID (S)	14-Jun-2021	14-Jun-2021
Hexavalent Chromium (s)	16-Jun-2021	16-Jun-2021
Hexavalent Chromium (w)	16-Jun-2021	16-Jun-2021
Mercury Dissolved	15-Jun-2021	15-Jun-2021
Metals in solid samples by OES	18-Jun-2021	17-Jun-2021
Moisture at 105C	12-Jun-2021	12-Jun-2021
PAH by GCMS	14-Jun-2021	14-Jun-2021
PCBs by GCMS	14-Jun-2021	14-Jun-2021
pH	14-Jun-2021	14-Jun-2021
pH Value of Filtered Water	14-Jun-2021	14-Jun-2021
Phenols by HPLC (S)	16-Jun-2021	17-Jun-2021
Sample description	11-Jun-2021	11-Jun-2021
Semi Volatile Organic Compounds	17-Jun-2021	17-Jun-2021
Sulphide	17-Jun-2021	17-Jun-2021
Total Organic Carbon	17-Jun-2021	17-Jun-2021
TPH CWG GC (S)	15-Jun-2021	15-Jun-2021
VOC MS (S)	16-Jun-2021	16-Jun-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2477
Ammoniacal Nitrogen as N	TM099	**96.8** 88.02 : 104.70

Ammonium Soil by Titration

Component	Method Code	QC 2493
Exchangeable Ammonium as NH4	TM024	**99.5** 74.04 : 103.44

Anions by Kone (soil)

Component	Method Code	QC 2496	QC 2436
Chloride (soluble)	TM243	**146.63** 80.93 : 111.66	**146.63** 80.93 : 111.66
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**153.74** 70.00 : 130.00	**157.48** 70.00 : 130.00

Boron Water Soluble

Component	Method Code	QC 2409	QC 2482
Water Soluble Boron	TM222	**102.5** 84.00 : 111.00	**102.5** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2474	QC 2497	QC 2440
Free Cyanide	TM153	**94.16** 78.00 : 114.00	**94.75** 78.00 : 114.00	
Free Cyanide (W)	TM227			**80.25** 90.67 : 122.67
Thiocyanate	TM153	**99.36** 94.53 : 113.33	**98.08** 94.53 : 113.33	
Thiocyanate (W)	TM227			**106.5** 92.25 : 117.75
Total Cyanide	TM153	**100.0** 77.13 : 111.53	**100.0** 77.13 : 111.53	
Total Cyanide (W)	TM227			**100.25** 88.75 : 111.25

Dissolved Metals by ICP-MS

CERTIFICATE OF ANALYSIS

SDG:	210611-44	**Client Reference:**	784-B026948	**Report Number:**	602481
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Dissolved Metals by ICP-MS

Component	Method Code	QC 2455
Aluminium	TM152	**96.0** 94.21 : 111.52
Antimony	TM152	**109.5** 88.37 : 130.57
Arsenic	TM152	**103.5** 92.62 : 113.52
Barium	TM152	**100.17** 88.62 : 113.14
Beryllium	TM152	**96.33** 87.08 : 111.38
Bismuth	TM152	**98.83** 92.62 : 115.02
Boron	TM152	**98.33** 86.31 : 120.88
Cadmium	TM152	**101.33** 93.85 : 111.65
Calcium	TM152	**101.33** 89.20 : 126.91
Chromium	TM152	**100.0** 92.50 : 113.03
Cobalt	TM152	**101.17** 85.01 : 114.87
Copper	TM152	**102.33** 89.87 : 119.73
Iron	TM152	**102.0** 93.02 : 113.86
Lead	TM152	**97.5** 91.11 : 116.98
Lithium	TM152	**96.83** 87.70 : 115.90
Magnesium	TM152	**103.33** 89.60 : 116.61
Manganese	TM152	**102.17** 93.97 : 112.46
Molybdenum	TM152	**104.83** 89.07 : 110.96
Nickel	TM152	**101.33** 93.70 : 112.15
Phosphorus	TM152	**99.17** 89.24 : 114.18
Potassium	TM152	**101.33** 93.20 : 115.55
Selenium	TM152	**103.67** 91.69 : 117.12
Silver	TM152	**105.33** 90.93 : 121.73
Sodium	TM152	**102.0** 92.42 : 113.24
Strontium	TM152	**104.0** 92.14 : 116.24
Tellurium	TM152	**106.33** 89.88 : 111.78
Thallium	TM152	**95.0** 82.43 : 113.83

CERTIFICATE OF ANALYSIS

SDG:	210611-44	**Client Reference:**	784-B026948	**Report Number:**	602481
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Dissolved Metals by ICP-MS

		QC 2455
Tin	TM152	**101.0** 94.62 : 107.79
Titanium	TM152	**95.83** 90.29 : 115.23
Tungsten	TM152	**102.67** 77.61 : 132.31
Uranium	TM152	**99.5** 86.97 : 115.76
Vanadium	TM152	**100.83** 89.61 : 115.48
Zinc	TM152	**101.0** 87.51 : 116.26

GRO by GC-FID (S)

Component	Method Code	QC 2489
QC	TM089	**84.96** 68.78 : 110.61

Hexavalent Chromium (s)

Component	Method Code	QC 2436	QC 2428
Hexavalent Chromium	TM151	**106.0** 91.40 : 115.40	**104.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2459
Hexavalent Chromium	TM241	**98.0** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2400	QC 2415
Mercury Dissolved (CVAF)	TM183	**94.6** 0.00 : 0.00	**111.0** 69.30 : 128.70

Metals in solid samples by OES

CERTIFICATE OF ANALYSIS

SDG:	210611-44	**Client Reference:**	784-B026948	**Report Number:**	602481
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Metals in solid samples by OES

Component	Method Code	QC 2404	QC 2468	QC 2490
Aluminium	TM181	**89.38** 73.56 : 108.85	**109.73** 73.56 : 108.85	**103.54** 73.56 : 108.85
Antimony	TM181	**93.5** 76.89 : 111.24	**93.9** 76.89 : 111.24	**94.72** 76.89 : 111.24
Arsenic	TM181	**96.22** 88.53 : 111.01	**95.93** 88.53 : 111.01	**96.8** 88.53 : 111.01
Barium	TM181	**95.41** 77.67 : 105.35	**100.0** 77.67 : 105.35	**99.08** 77.67 : 105.35
Beryllium	TM181	**97.39** 85.44 : 109.61	**97.39** 85.44 : 109.61	**97.76** 85.44 : 109.61
Boron	TM181	**84.81** 73.51 : 104.66	**97.13** 73.51 : 104.66	**93.41** 73.51 : 104.66
Cadmium	TM181	**88.89** 77.67 : 104.12	**92.18** 77.67 : 104.12	**89.71** 77.67 : 104.12
Chromium	TM181	**87.63** 79.64 : 105.83	**90.06** 79.64 : 105.83	**88.03** 79.64 : 105.83
Cobalt	TM181	**87.74** 84.60 : 104.13	**100.63** 84.60 : 104.13	**98.11** 84.60 : 104.13
Copper	TM181	**96.83** 82.40 : 105.45	**95.95** 82.40 : 105.45	**95.77** 82.40 : 105.45
Iron	TM181	**91.27** 82.95 : 110.58	**102.38** 82.95 : 110.58	**99.21** 82.95 : 110.58
Lead	TM181	**112.61** 78.24 : 104.05	**93.92** 78.24 : 104.05	**89.41** 78.24 : 104.05
Manganese	TM181	**104.44** 94.29 : 119.51	**106.94** 94.29 : 119.51	**106.67** 94.29 : 119.51
Mercury	TM181	**91.55** 83.16 : 107.81	**87.44** 83.16 : 107.81	**87.44** 83.16 : 107.81
Molybdenum	TM181	**96.3** 87.11 : 106.87	**97.94** 87.11 : 106.87	**97.53** 87.11 : 106.87
Nickel	TM181	**89.49** 80.26 : 102.28	**89.98** 80.26 : 102.28	**89.24** 80.26 : 102.28
Phosphorus	TM181	**103.84** 94.56 : 124.28	**105.86** 94.56 : 124.28	**105.66** 94.56 : 124.28
Selenium	TM181	**98.04** 82.28 : 110.48	**97.65** 82.28 : 110.48	**97.65** 82.28 : 110.48
Strontium	TM181	**93.76** 79.13 : 102.79	**98.66** 79.13 : 102.79	**96.21** 79.13 : 102.79
Thallium	TM181	**86.73** 82.94 : 111.86	**82.3** 82.94 : 111.86	**84.96** 82.94 : 111.86
Tin	TM181	**96.58** 86.72 : 110.03	**96.2** 86.72 : 110.03	**96.2** 86.72 : 110.03
Titanium	TM181	**82.44** 66.23 : 102.06	**103.82** 66.23 : 102.06	**94.66** 66.23 : 102.06
Vanadium	TM181	**94.87** 86.19 : 109.45	**102.93** 86.19 : 109.45	**100.73** 86.19 : 109.45
Zinc	TM181	**95.89** 84.68 : 113.99	**96.71** 84.68 : 113.99	**96.51** 84.68 : 113.99

PAH by GCMS

PAH by GCMS

Component	Method Code	QC 2494
Acenaphthene	TM218	**91.0** 78.59 : 112.16
Acenaphthylene	TM218	**90.0** 75.11 : 109.01
Anthracene	TM218	**83.5** 73.99 : 113.85
Benz(a)anthracene	TM218	**94.0** 69.31 : 119.18
Benzo(a)pyrene	TM218	**93.0** 66.97 : 114.92
Benzo(b)fluoranthene	TM218	**91.5** 67.41 : 114.46
Benzo(ghi)perylene	TM218	**94.0** 62.92 : 114.36
Benzo(k)fluoranthene	TM218	**94.0** 69.98 : 116.49
Chrysene	TM218	**91.0** 69.86 : 114.50
Dibenzo(ah)anthracene	TM218	**94.0** 64.54 : 115.22
Fluoranthene	TM218	**87.5** 72.56 : 111.70
Fluorene	TM218	**90.0** 79.13 : 111.49
Indeno(123cd)pyrene	TM218	**90.5** 61.22 : 113.25
Naphthalene	TM218	**94.5** 77.96 : 110.91
Phenanthrene	TM218	**88.0** 76.83 : 113.25
Pyrene	TM218	**87.0** 72.45 : 110.77

PCBs by GCMS

Component	Method Code	QC 2408
PCB congener 101	TM168	**97.2** 65.66 : 110.06
PCB congener 105	TM168	**95.8** 58.10 : 106.34
PCB congener 114	TM168	**97.6** 59.38 : 106.48
PCB congener 118	TM168	**100.0** 60.02 : 106.23
PCB congener 123	TM168	**98.3** 65.01 : 99.81
PCB congener 126	TM168	**99.4** 59.31 : 109.23
PCB congener 138	TM168	**104.0** 63.95 : 107.63
PCB congener 153	TM168	**104.0** 62.65 : 108.85
PCB congener 156	TM168	**101.0** 61.69 : 112.27

PCBs by GCMS

		QC 2408
PCB congener 157	TM168	**97.1** 55.37 : 104.81
PCB congener 167	TM168	**97.7** 65.58 : 109.14
PCB congener 169	TM168	**102.0** 56.84 : 112.10
PCB congener 180	TM168	**105.0** 66.99 : 111.63
PCB congener 189	TM168	**103.0** 57.75 : 112.59
PCB congener 28	TM168	**95.8** 73.68 : 105.96
PCB congener 52	TM168	**96.3** 67.24 : 107.62
PCB congener 77	TM168	**101.0** 64.87 : 108.49
PCB congener 81	TM168	**101.0** 70.78 : 110.80

pH

Component	Method Code	QC 2462
pH	TM133	**99.27** 98.09 : 101.62

pH Value of Filtered Water

Component	Method Code	QC 2442
pH	TM256	**100.53** 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2491	QC 2409
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**49.35** 69.38 : 125.27	**51.95** 69.38 : 125.27
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**43.86** 69.79 : 122.84	**46.78** 69.79 : 122.84
Cresols by HPLC (S)	TM062 (S)	**46.97** 77.98 : 111.41	**50.73** 77.98 : 111.41
Phenol by HPLC (S)	TM062 (S)	**47.68** 67.94 : 117.69	**52.98** 67.94 : 117.69
Xylenols by HPLC (S)	TM062 (S)	**47.4** 88.23 : 104.42	**51.04** 88.23 : 104.42

Semi Volatile Organic Compounds

Semi Volatile Organic Compounds

Component	Method Code	QC 2400
4-Bromophenylphenylether (Soil)	TM157	**88.5** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**92.0** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**88.5** 68.25 : 126.75
Naphthalene (Soil)	TM157	**89.5** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**89.5** 66.50 : 123.50
Phenol (Soil)	TM157	**96.5** 69.92 : 114.02

Sulphide

Component	Method Code	QC 2463
Sulphide	TM101	**97.33** 88.90 : 112.50

Total Organic Carbon

Component	Method Code	QC 2428
Total Organic Carbon	TM132	**101.95** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2411	QC 2451
1,1,1,2-tetrachloroethane	TM116	**103.8** 84.84 : 116.25	**101.6** 86.59 : 118.97
1,1,1-Trichloroethane	TM116	**95.2** 73.73 : 118.05	**100.4** 86.26 : 117.53
1,1,2-Trichloroethane	TM116	**96.8** 77.12 : 116.04	**101.8** 75.16 : 112.70
1,1-Dichloroethane	TM116	**93.6** 74.46 : 129.15	**107.4** 83.27 : 122.16
1,2-Dichloroethane	TM116	**109.0** 92.38 : 131.65	**113.6** 89.30 : 133.10
1,4-Dichlorobenzene	TM116	**95.4** 83.64 : 126.18	**94.0** 82.59 : 123.23
2-Chlorotoluene	TM116	**90.2** 76.03 : 113.25	**88.8** 66.81 : 118.43
4-Chlorotoluene	TM116	**84.8** 66.90 : 112.46	**87.2** 65.88 : 114.76
Benzene	TM116	**97.0** 88.60 : 113.80	**99.6** 93.16 : 123.63
Carbon Disulphide	TM116	**91.4** 74.91 : 122.14	**102.8** 75.11 : 124.81

VOC MS (S)

		QC 2411	QC 2451
Carbontetrachloride	TM116	**101.4** 80.31 : 124.50	**101.8** 82.35 : 126.46
Chlorobenzene	TM116	**102.0** 83.81 : 114.18	**99.2** 85.07 : 118.13
Chloroform	TM116	**99.0** 87.40 : 122.49	**109.6** 88.13 : 122.71
Chloromethane	TM116	**88.4** 65.89 : 136.93	**81.2** 61.62 : 145.66
Cis-1,2-Dichloroethene	TM116	**98.8** 80.67 : 126.72	**104.2** 88.41 : 121.33
Dibromomethane	TM116	**105.4** 73.23 : 118.35	**105.0** 77.47 : 121.29
Dichloromethane	TM116	**105.2** 81.11 : 133.25	**119.0** 87.89 : 134.72
Ethylbenzene	TM116	**89.2** 75.92 : 110.41	**86.8** 76.29 : 106.31
Hexachlorobutadiene	TM116	**61.4** 12.82 : 152.73	**42.8** 16.78 : 153.29
Isopropylbenzene	TM116	**70.6** 54.30 : 105.91	**71.4** 59.16 : 110.07
Naphthalene	TM116	**102.6** 80.86 : 128.81	**104.2** 79.29 : 125.59
o-Xylene	TM116	**84.0** 69.99 : 108.74	**78.6** 72.86 : 102.10
p/m-Xylene	TM116	**84.8** 68.32 : 108.91	**80.1** 68.99 : 102.40
Sec-Butylbenzene	TM116	**59.2** 38.50 : 101.50	**53.2** 44.71 : 117.87
Tetrachloroethene	TM116	**101.8** 76.95 : 121.02	**97.8** 77.82 : 125.00
Toluene	TM116	**91.4** 74.24 : 107.42	**94.0** 87.82 : 116.21
Trichloroethene	TM116	**96.8** 85.28 : 109.36	**95.4** 79.80 : 112.33
Trichlorofluoromethane	TM116	**98.2** 81.46 : 120.52	**109.2** 80.52 : 132.12
Vinyl Chloride	TM116	**92.0** 68.02 : 143.37	**103.6** 74.57 : 146.88

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

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[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	29 June 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210612-20
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	603726

This report has been revised and directly supersedes 602912 in its entirety.

We received 7 samples on Friday June 11, 2021 and 2 of these samples were scheduled for analysis which was completed on Tuesday June 29, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

So

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210612-20	**Client Reference:**	784-B026948	**Report Number:**	603726
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	602912

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24434843	BH28	ES1	0.40	09/06/2021
24434850	BH28	ES4	1.00	09/06/2021
24434831	BH60	ES1	0.30	09/06/2021
24434837	BH60	ES2	1.30	09/06/2021
24434813	TP11	ES1	0.20	09/06/2021
24434819	TP11	ES2	0.90	09/06/2021
24434825	TP11	ES3	1.50	09/06/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210612-20	**Client Reference:**	784-B026948	**Report Number:**	603726
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	602912

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	2434850	2434831
			Customer Sample Reference	BH28	BH60
			AGS Reference	ES4	ES1
			Depth (m)	1.00	0.30
			Container	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)
			Sample Type	S	S	S	S
Acid herbicides*	All	NDPs: 0 Tests: 1				X
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 1		X		
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1	X			
Ammonium Soil by Titration	All	NDPs: 0 Tests: 1		X		
Anions by Kone (soil)	All	NDPs: 0 Tests: 1		X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1	X			
Boron Water Soluble	All	NDPs: 0 Tests: 1		X		
CEN Readings	All	NDPs: 0 Tests: 1	X			
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2	X	X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1	X			
EPH	All	NDPs: 0 Tests: 1		X		
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1		X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 1		X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1			X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1		X		

CERTIFICATE OF ANALYSIS

SDG:	210612-20	**Client Reference:**	784-B026948	**Report Number:**	603726
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	602912

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			2443850	2443831		
Customer Sample Reference			BH28	BH60		
AGS Reference			ES4	ES1		
Depth (m)			1.00	0.30		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1	X			
Mercury Dissolved	All	NDPs: 0 Tests: 1	X			
Metals in solid samples by OES	All	NDPs: 0 Tests: 1		X		
OC OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 1				X
PAH by GCMS	All	NDPs: 0 Tests: 1		X		
pH	All	NDPs: 0 Tests: 1		X		
pH Value of Filtered Water	All	NDPs: 0 Tests: 1	X			
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1		X		
Sample description	All	NDPs: 0 Tests: 2		X		X
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1		X		
Sulphide	All	NDPs: 0 Tests: 1	X			
Total Organic Carbon	All	NDPs: 0 Tests: 1		X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 1		X		
VOC MS (S)	All	NDPs: 0 Tests: 1			X	

CERTIFICATE OF ANALYSIS

SDG:	210612-20	**Client Reference:**	784-B026948	**Report Number:**	603726
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	602912

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24434850	BH28	1.00	Light Brown	Sand	Stones	None
24434831	BH60	0.30	Dark Brown	Clay Loam	Vegetation	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210612-20	**Client Reference:**	784-B026948	**Report Number:**	603726
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	602912

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.					
			BH28	BH60				
			Depth (m) 1.00	0.30				
			Sample Type Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled 09/06/2021	09/06/2021				
			Sample Time .	.				
			Date Received 11/06/2021	11/06/2021				
			SDG Ref 210612-20	210612-20				
			Lab Sample No.(s) 24434850	24434831				
			AGS Reference ES4	ES1				
Moisture Content Ratio (% of as received sample)	%	PM024	3.4	25				
2,4,5-T*	<0.01 mg/kg	SUB		<0.01				
2,4,5-TP (Fenoprop)*	<0.01 mg/kg	SUB		<0.01				
2,4-D*	<0.01 mg/kg	SUB		<0.01				
2,4-DB*	<0.01 mg/kg	SUB		<0.01				
2,4-Dichloroprop (2,4 DP)*	<0.01 mg/kg	SUB		<0.01				
4-Chlorophenoxyacetic acid (4-CPA)*	<0.01 mg/kg	SUB		<0.01				
Acifluorfen*	<0.01 mg/kg	SUB		<0.01				
Bentazone*	<0.01 mg/kg	SUB		<0.01				
Bromoxynil*	<0.01 mg/kg	SUB		<0.01				
Dicamba*	<0.01 mg/kg	SUB		<0.01				
Diclofop*	<0.01 mg/kg	SUB		<0.01				
Dinoseb*	<0.01 mg/kg	SUB		<0.01				
DNOC*	<0.01 mg/kg	SUB		<0.01				
Fluroxypyr*	<0.01 mg/kg	SUB		<0.01				
Ioxynil*	<0.01 mg/kg	SUB		<0.01				
2-methyl-4-Chlorophenoxyacetic acid (MCPA)*	<0.01 mg/kg	SUB		<0.01				
4-(4-Chloro-o-tolyloxy) butyric acid (MCPB)*	<0.01 mg/kg	SUB		<0.01				
Mecoprop (MCPP)*	<0.01 mg/kg	SUB		<0.01				
Propoxycarbazone-sodium*	<0.01 mg/kg	SUB		<0.01				
Triclopyr*	<0.01 mg/kg	SUB		<0.01				
Triclosan*	<0.01 mg/kg	SUB		<0.01				
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12 M					
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M					
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M					
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M					
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M					
Soil Organic Matter (SOM)	<0.35 %	TM132	<0.35 #					
pH	1 pH Units	TM133	8.51 M					
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #					
Cyanide, Total	<1 mg/kg	TM153	<1 M					
Arsenic	<0.6 mg/kg	TM181	4.23 M					
Cadmium	<0.02 mg/kg	TM181	0.22 M					

Validated

CERTIFICATE OF ANALYSIS

SDG:	210612-20	**Client Reference:**	784-B026948	**Report Number:**	603726
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	602912

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH28	BH60				
			Depth (m)	1.00	0.30				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	09/06/2021	09/06/2021				
			Sample Time	.	.				
			Date Received	11/06/2021	11/06/2021				
			SDG Ref	210612-20	210612-20				
			Lab Sample No.(s)	24434850	24434831				
			AGS Reference	ES4	ES1				
Chromium	<0.9 mg/kg	TM181		2.22 M					
Copper	<1.4 mg/kg	TM181		6.67 M					
Iron	<1000 mg/kg	TM181		19400 #					
Lead	<0.7 mg/kg	TM181		7.25 M					
Mercury	<0.1 mg/kg	TM181		<0.1 M					
Nickel	<0.2 mg/kg	TM181		23.3 M					
Selenium	<1 mg/kg	TM181		<1 #					
Vanadium	<0.2 mg/kg	TM181		9.31 #					
Zinc	<1.9 mg/kg	TM181		82 M					
Boron, water soluble	<1 mg/kg	TM222		<1 M					
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.0845 M					
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248		8.22					
EPH (C5-C40)	<35 mg/kg	TM415		<35					
EPH Surrogate % recovery**	%	TM415		90.1					
EPH >C10-C40	<35 mg/kg	TM415		<35 M					

CERTIFICATE OF ANALYSIS

SDG:	210612-20	**Client Reference:**	784-B026948	**Report Number:**	603726
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	602912

OC OP Pesticides and Triazine Herb

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH60
Depth (m)	0.30
Sample Type	Soil/Solid (S)
Date Sampled	09/06/2021
Sample Time	.
Date Received	11/06/2021
SDG Ref	210612-20
Lab Sample No.(s)	24434831
AGS Reference	ES1

Component	LOD/Units	Method	
Dichlorvos	<0.05 mg/kg	TM073	<0.05
Mevinphos	<0.05 mg/kg	TM073	<0.05
Phorate	<0.05 mg/kg	TM073	<0.05
alpha-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073	<0.05
Diazinon	<0.05 mg/kg	TM073	<0.05
gamma-Hexachlorocyclohexane (HCH / Lindane)	<0.05 mg/kg	TM073	<0.05
Disulfoton	<0.05 mg/kg	TM073	<0.1
Heptachlor	<0.05 mg/kg	TM073	<0.05
Aldrin	<0.05 mg/kg	TM073	<0.05
beta-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073	<0.05
Methyl parathion	<0.05 mg/kg	TM073	<0.05
Malathion	<0.05 mg/kg	TM073	<0.05
Fenitrothion	<0.05 mg/kg	TM073	<0.05
Heptachlor epoxide	<0.05 mg/kg	TM073	<0.05
Parathion	<0.05 mg/kg	TM073	<0.05
Endosulphan I	<0.05 mg/kg	TM073	<0.05
p,p-DDE	<0.05 mg/kg	TM073	<0.05
Dieldrin	<0.05 mg/kg	TM073	<0.05
Endrin	<0.05 mg/kg	TM073	<0.05
p,p-TDE (DDD)	<0.05 mg/kg	TM073	<0.05
Ethion	<0.05 mg/kg	TM073	<0.05
Endosulphan II	<0.05 mg/kg	TM073	<0.05
p,p-DDT	<0.05 mg/kg	TM073	<0.05
p,p-Methoxychlor	<0.05 mg/kg	TM073	<0.05
Endosulphan sulphate	<0.05 mg/kg	TM073	<0.05
Azinphos-methyl	<0.05 mg/kg	TM073	<0.05

Validated

CERTIFICATE OF ANALYSIS

SDG:	210612-20	**Client Reference:**	784-B026948	**Report Number:**	603726
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	602912

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref. BH28
			Depth (m) 1.00
			Sample Type Soil/Solid (S)
			Date Sampled 09/06/2021
			Sample Time .
			Date Received 11/06/2021
			SDG Ref 210612-20
			Lab Sample No.(s) 24434850
			AGS Reference ES4
Naphthalene-d8 % recovery**	%	TM218	86.3
Acenaphthene-d10 % recovery**	%	TM218	77
Phenanthrene-d10 % recovery**	%	TM218	88.9
Chrysene-d12 % recovery**	%	TM218	87.8
Perylene-d12 % recovery**	%	TM218	78.8
Naphthalene	<0.009 mg/kg	TM218	<0.009 M
Acenaphthylene	<0.012 mg/kg	TM218	<0.012 M
Acenaphthene	<0.008 mg/kg	TM218	<0.008 M
Fluorene	<0.01 mg/kg	TM218	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218	<0.015 M
Anthracene	<0.016 mg/kg	TM218	<0.016 M
Fluoranthene	<0.017 mg/kg	TM218	<0.017 M
Pyrene	<0.015 mg/kg	TM218	<0.015 M
Benz(a)anthracene	<0.014 mg/kg	TM218	<0.014 M
Chrysene	<0.01 mg/kg	TM218	<0.01 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	<0.015 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	<0.014 M
Benzo(a)pyrene	<0.015 mg/kg	TM218	<0.015 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	<0.018 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	<0.023 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	<0.024 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	<0.118

CERTIFICATE OF ANALYSIS

SDG:	210612-20	**Client Reference:**	784-B026948	**Report Number:**	603726
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	602912

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH28
Depth (m)	1.00
Sample Type	Soil/Solid (S)
Date Sampled	09/06/2021
Sample Time	.
Date Received	11/06/2021
SDG Ref	210612-20
Lab Sample No.(s)	24434850
AGS Reference	ES4

Component	LOD/Units	Method	
Phenol	<0.1 mg/kg	TM157	<0.1
Pentachlorophenol	<0.1 mg/kg	TM157	<0.1
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157	<0.1
Nitrobenzene	<0.1 mg/kg	TM157	<0.1
Isophorone	<0.1 mg/kg	TM157	<0.1
Hexachloroethane	<0.1 mg/kg	TM157	<0.1
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157	<0.1
Hexachlorobutadiene	<0.1 mg/kg	TM157	<0.1
Hexachlorobenzene	<0.1 mg/kg	TM157	<0.1
n-Dioctyl phthalate	<0.1 mg/kg	TM157	<0.1
Dimethyl phthalate	<0.1 mg/kg	TM157	<0.1
Diethyl phthalate	<0.1 mg/kg	TM157	<0.1
n-Dibutyl phthalate	<0.1 mg/kg	TM157	<0.1
Dibenzofuran	<0.1 mg/kg	TM157	<0.1
Carbazole	<0.1 mg/kg	TM157	<0.1
Butylbenzyl phthalate	<0.1 mg/kg	TM157	<0.1
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157	<0.1
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157	<0.1
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157	<0.1
Azobenzene	<0.1 mg/kg	TM157	<0.1
4-Nitrophenol	<0.1 mg/kg	TM157	<0.5
4-Nitroaniline	<0.1 mg/kg	TM157	<0.5
4-Methylphenol	<0.1 mg/kg	TM157	<0.1
4-Chlorophenylphenylether	<0.1 mg/kg	TM157	<0.1
4-Chloroaniline	<0.1 mg/kg	TM157	<0.1
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157	<0.1
4-Bromophenylphenylether	<0.1 mg/kg	TM157	<0.1
3-Nitroaniline	<0.1 mg/kg	TM157	<0.1
2-Nitrophenol	<0.1 mg/kg	TM157	<0.1
2-Nitroaniline	<0.1 mg/kg	TM157	<0.1
2-Methylphenol	<0.1 mg/kg	TM157	<0.1
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157	<0.1
2-Chlorophenol	<0.1 mg/kg	TM157	<0.1

CERTIFICATE OF ANALYSIS

SDG:	210612-20	**Client Reference:**	784-B026948	**Report Number:**	603726
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	602912

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BH28	1.00	Soil/Solid (S)	09/06/2021	.	11/06/2021	210612-20	24434850	ES4
2,6-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1								
2,4-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1								
2,4-Dimethylphenol	<0.1 mg/kg	TM157	<0.1								
2,4-Dichlorophenol	<0.1 mg/kg	TM157	<0.1								
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157	<0.1								
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157	<0.1								
1,4-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1								
1,3-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1								
1,2-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1								
2-Chloronaphthalene	<0.1 mg/kg	TM157	<0.1								
2-Methylnaphthalene	<0.1 mg/kg	TM157	<0.1								
Acenaphthylene	<0.1 mg/kg	TM157	<0.1								
Acenaphthene	<0.1 mg/kg	TM157	<0.1								
Anthracene	<0.1 mg/kg	TM157	<0.1								
Benzo(a)anthracene	<0.1 mg/kg	TM157	<0.1								
Benzo(b)fluoranthene	<0.1 mg/kg	TM157	<0.1								
Benzo(k)fluoranthene	<0.1 mg/kg	TM157	<0.1								
Benzo(a)pyrene	<0.1 mg/kg	TM157	<0.1								
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157	<0.1								
Chrysene	<0.1 mg/kg	TM157	<0.1								
Fluoranthene	<0.1 mg/kg	TM157	<0.1								
Fluorene	<0.1 mg/kg	TM157	<0.1								
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157	<0.1								
Phenanthrene	<0.1 mg/kg	TM157	<0.1								
Pyrene	<0.1 mg/kg	TM157	<0.1								
Naphthalene	<0.1 mg/kg	TM157	<0.1								
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157	<0.1								
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157	<0.1								

CERTIFICATE OF ANALYSIS

SDG:	210612-20	**Client Reference:**	784-B026948	**Report Number:**	603726
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	602912

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH28
Depth (m)	1.00
Sample Type	Soil/Solid (S)
Date Sampled	09/06/2021
Sample Time	.
Date Received	11/06/2021
SDG Ref	210612-20
Lab Sample No.(s)	24434850
AGS Reference	ES4

Component	LOD/Units	Method	
GRO Surrogate % recovery**	%	TM089	122
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01
Aliphatics >C10-C12	<1 mg/kg	TM414	<1 #
Aliphatics >C12-C16	<1 mg/kg	TM414	<1 #
Aliphatics >C16-C21	<1 mg/kg	TM414	<1 #
Aliphatics >C21-C35	<1 mg/kg	TM414	<1 #
Aliphatics >C35-C44	<1 mg/kg	TM414	3.08
Total Aliphatics >C10-C44	<5 mg/kg	TM414	<5
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414	<10
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	<0.01
Aromatics > EC10-EC12	<1 mg/kg	TM414	<1 #
Aromatics > EC12-EC16	<1 mg/kg	TM414	<1 #
Aromatics > EC16-EC21	<1 mg/kg	TM414	<1 #
Aromatics > EC21-EC35	<1 mg/kg	TM414	<1 #
Aromatics >EC35-EC44	<1 mg/kg	TM414	1.49
Aromatics > EC40-EC44	<1 mg/kg	TM414	<1
Total Aromatics > EC10-EC44	<5 mg/kg	TM414	<5
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414	<10
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089	<0.05
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089	<0.05
GRO >C5-C10	<0.02 mg/kg	TM089	<0.02

CERTIFICATE OF ANALYSIS

SDG:	210612-20	**Client Reference:**	784-B026948	**Report Number:**	603726
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	602912

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH28
			Depth (m)	1.00
			Sample Type	Soil/Solid (S)
			Date Sampled	09/06/2021
			Sample Time	.
			Date Received	11/06/2021
			SDG Ref	210612-20
			Lab Sample No.(s)	24434850
			AGS Reference	ES4
Dibromofluoromethane**	%	TM116		112
Toluene-d8**	%	TM116		96.2
4-Bromofluorobenzene**	%	TM116		90.9
Dichlorodifluoromethane	<0.006 mg/kg	TM116		<0.006 M
Chloromethane	<0.007 mg/kg	TM116		<0.007 #
Vinyl Chloride	<0.006 mg/kg	TM116		<0.006 M
Bromomethane	<0.01 mg/kg	TM116		<0.01 M
Chloroethane	<0.01 mg/kg	TM116		<0.01 M
Trichlorofluorormethane	<0.006 mg/kg	TM116		<0.006 M
1,1-Dichloroethene	<0.01 mg/kg	TM116		<0.01 #
Carbon Disulphide	<0.007 mg/kg	TM116		<0.007 M
Dichloromethane	<0.01 mg/kg	TM116		<0.01 #
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.01 M
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116		<0.01 M
1,1-Dichloroethane	<0.008 mg/kg	TM116		<0.008 M
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116		<0.006 M
2,2-Dichloropropane	<0.01 mg/kg	TM116		<0.01
Bromochloromethane	<0.01 mg/kg	TM116		<0.01 M
Chloroform	<0.008 mg/kg	TM116		<0.008 M
1,1,1-Trichloroethane	<0.007 mg/kg	TM116		<0.007 M
1,1-Dichloropropene	<0.01 mg/kg	TM116		<0.01 M
Carbontetrachloride	<0.01 mg/kg	TM116		<0.01 M
1,2-Dichloroethane	<0.005 mg/kg	TM116		<0.005 M
Benzene	<0.009 mg/kg	TM116		<0.009 M
Trichloroethene	<0.009 mg/kg	TM116		<0.009 #
1,2-Dichloropropane	<0.01 mg/kg	TM116		<0.01 M
Dibromomethane	<0.009 mg/kg	TM116		<0.009 M
Bromodichloromethane	<0.007 mg/kg	TM116		<0.007 M
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.01 M
Toluene	<0.007 mg/kg	TM116		<0.007 M
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.01
1,1,2-Trichloroethane	<0.01 mg/kg	TM116		<0.01 M
1,3-Dichloropropane	<0.007 mg/kg	TM116		<0.007 M

CERTIFICATE OF ANALYSIS

SDG:	210612-20	**Client Reference:**	784-B026948	**Report Number:**	603726
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	602912

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref. BH28	Depth (m) 1.00	Sample Type Soil/Solid (S)	Date Sampled 09/06/2021	Sample Time .	Date Received 11/06/2021	SDG Ref 210612-20	Lab Sample No.(s) 24434850	AGS Reference ES4
Tetrachloroethene	<0.005 mg/kg	TM116	<0.005 M								
Dibromochloromethane	<0.01 mg/kg	TM116	<0.01 M								
1,2-Dibromoethane	<0.01 mg/kg	TM116	<0.01 M								
Chlorobenzene	<0.005 mg/kg	TM116	<0.005 M								
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.01 M								
Ethylbenzene	<0.004 mg/kg	TM116	<0.004 M								
p/m-Xylene	<0.01 mg/kg	TM116	<0.01 #								
o-Xylene	<0.01 mg/kg	TM116	<0.01 M								
Styrene	<0.01 mg/kg	TM116	<0.01 #								
Bromoform	<0.01 mg/kg	TM116	<0.01 M								
Isopropylbenzene	<0.005 mg/kg	TM116	<0.005 #								
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.01 #								
1,2,3-Trichloropropane	<0.016 mg/kg	TM116	<0.016 M								
Bromobenzene	<0.01 mg/kg	TM116	<0.01 M								
Propylbenzene	<0.01 mg/kg	TM116	<0.01 M								
2-Chlorotoluene	<0.009 mg/kg	TM116	<0.009 M								
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116	<0.008 M								
4-Chlorotoluene	<0.01 mg/kg	TM116	<0.01 M								
tert-Butylbenzene	<0.014 mg/kg	TM116	<0.014 M								
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116	<0.009 #								
sec-Butylbenzene	<0.01 mg/kg	TM116	<0.01								
4-Isopropyltoluene	<0.01 mg/kg	TM116	<0.01 M								
1,3-Dichlorobenzene	<0.008 mg/kg	TM116	<0.008 M								
1,4-Dichlorobenzene	<0.005 mg/kg	TM116	<0.005 M								
n-Butylbenzene	<0.011 mg/kg	TM116	<0.011								
1,2-Dichlorobenzene	<0.01 mg/kg	TM116	<0.01 M								
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116	<0.014 M								
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.01 #								
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116	<0.02								
Hexachlorobutadiene	<0.02 mg/kg	TM116	<0.02								
Naphthalene	<0.013 mg/kg	TM116	<0.013 M								
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116	<0.02 #								
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116	<0.02								

Validated

CERTIFICATE OF ANALYSIS

SDG:	210612-20	**Client Reference:**	784-B026948	**Report Number:**	603726
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	602912

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.	BH28
Depth (m)	1.00
Sample Type	Soil/Solid (S)
Date Sampled	09/06/2021
Sample Time	.
Date Received	11/06/2021
SDG Ref	210612-20
Lab Sample No.(s)	24434850
AGS Reference	ES4

Component	LOD/Units	Method	
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.02
Sum of BTEX	<0.04 mg/kg	TM116	<0.04

CERTIFICATE OF ANALYSIS

SDG:	210612-20	**Client Reference:**	784-B026948	**Report Number:**	603726
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	602912

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref.	BH28ES4	15.06.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	1.00										
Sample Type	SOLID										
Date Sampled	09/06/2021 00:00:00										
Date Receieved	11/06/2021 05:00:00										
SDG	210612-20										
Original Sample	24434850										
Method Number	TM048										

CERTIFICATE OF ANALYSIS

SDG:	210612-20	**Client Reference:**	784-B026948	**Report Number:**	603726
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	602912

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.098	**Natural Moisture Content (%)**	9.4
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	91.4
Particle Size <4mm	>95%		

Case	
SDG	210612-20
Lab Sample Number(s)	24434850
Sampled Date	09-Jun-2021
Customer Sample Ref.	BH28 ES4
Depth (m)	1.00

Eluate Analysis	**C_2 Conc^n in 10:1 eluate (mg/l)**		**A_2 10:1 conc^n leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.00106	<0.0005	0.0106	<0.005	-	-	-
Boron	<0.01	<0.01	<0.1	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00137	<0.0003	0.0137	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.38	<0.019	3.8	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	0.000499	<0.0004	0.00499	<0.004	-	-	-
Selenium	0.00136	<0.001	0.0136	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	<0.001	<0.001	<0.01	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	14-Jun-2021
pH (pH Units)	8.45
Conductivity (µS/cm)	220.00
Temperature (°C)	21.00
Volume Leachant (Litres)	0.892

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210612-20	**Client Reference:**	784-B026948	**Report Number:**	603726
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	602912

Test Completion Dates

Lab Sample No(s)	24434850	24434831
Customer Sample Ref.	BH28	BH60
AGS Ref.	ES4	ES1
Depth	1.00	0.30
Type	Soil/Solid (S)	Soil/Solid (S)
Acid herbicides*		29-Jun-2021
Ammoniacal N as NH4 in 2:1 extract	14-Jun-2021	
Ammoniacal Nitrogen	17-Jun-2021	
Ammonium Soil by Titration	16-Jun-2021	
Anions by Kone (soil)	16-Jun-2021	
Asbestos ID in Solid Samples	15-Jun-2021	
Boron Water Soluble	16-Jun-2021	
CEN 10:1 Leachate (1 Stage)	14-Jun-2021	
CEN Readings	15-Jun-2021	
Cyanide Comp/Free/Total/Thiocyanate	16-Jun-2021	
Dissolved Metals by ICP-MS	16-Jun-2021	
EPH	17-Jun-2021	
EPH by GCxGC-FID	16-Jun-2021	
EPH CWG GC (S)	15-Jun-2021	
GRO by GC-FID (S)	16-Jun-2021	
Hexavalent Chromium (s)	16-Jun-2021	
Hexavalent Chromium (w)	18-Jun-2021	
Mercury Dissolved	16-Jun-2021	
Metals in solid samples by OES	17-Jun-2021	
Moisture at 105C	14-Jun-2021	
OC OP Pesticides and Triazine Herb		22-Jun-2021
PAH by GCMS	14-Jun-2021	
pH	14-Jun-2021	
pH Value of Filtered Water	16-Jun-2021	
Phenols by HPLC (S)	17-Jun-2021	
Sample description	12-Jun-2021	12-Jun-2021
Semi Volatile Organic Compounds	15-Jun-2021	
Sulphide	17-Jun-2021	
Total Organic Carbon	18-Jun-2021	
TPH CWG GC (S)	17-Jun-2021	
VOC MS (S)	16-Jun-2021	

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2477
Ammoniacal Nitrogen as N	TM099	**96.8** 88.02 : 104.70

Ammonium Soil by Titration

Component	Method Code	QC 2493
Exchangeable Ammonium as NH4	TM024	**99.5** 74.04 : 103.44

Anions by Kone (soil)

Component	Method Code	QC 2496
Chloride (soluble)	TM243	**146.63** 80.93 : 111.66
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**153.74** 70.00 : 130.00

Boron Water Soluble

Component	Method Code	QC 2482
Water Soluble Boron	TM222	**102.5** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2423	QC 2481
Free Cyanide	TM153	**93.66** 78.00 : 114.00	
Free Cyanide (W)	TM227		**81.25** 90.67 : 122.67
Thiocyanate	TM153	**100.0** 94.53 : 113.33	
Thiocyanate (W)	TM227		**106.25** 92.25 : 117.75
Total Cyanide	TM153	**100.7** 77.13 : 111.53	
Total Cyanide (W)	TM227		**100.75** 88.75 : 111.25

Dissolved Metals by ICP-MS

Dissolved Metals by ICP-MS

Component	Method Code	QC 2496
Aluminium	TM152	**94.33** 94.21 : 111.52
Antimony	TM152	**106.5** 88.37 : 130.57
Arsenic	TM152	**99.67** 92.62 : 113.52
Barium	TM152	**99.33** 88.62 : 113.14
Beryllium	TM152	**97.17** 87.08 : 111.38
Bismuth	TM152	**101.5** 92.62 : 115.02
Boron	TM152	**95.0** 86.31 : 120.88
Cadmium	TM152	**98.17** 93.85 : 111.65
Calcium	TM152	**96.67** 89.20 : 126.91
Chromium	TM152	**95.17** 92.50 : 113.03
Cobalt	TM152	**96.33** 85.01 : 114.87
Copper	TM152	**97.33** 89.87 : 119.73
Iron	TM152	**97.33** 93.02 : 113.86
Lead	TM152	**97.83** 91.11 : 116.98
Lithium	TM152	**96.17** 87.70 : 115.90
Magnesium	TM152	**100.67** 89.60 : 116.61
Manganese	TM152	**97.67** 93.97 : 112.46
Molybdenum	TM152	**100.17** 89.07 : 110.96
Nickel	TM152	**96.5** 93.70 : 112.15
Phosphorus	TM152	**97.33** 89.24 : 114.18
Potassium	TM152	**99.33** 93.20 : 115.55
Selenium	TM152	**97.17** 91.69 : 117.12
Silver	TM152	**100.67** 90.93 : 121.73
Sodium	TM152	**100.67** 92.42 : 113.24
Strontium	TM152	**100.0** 92.14 : 116.24
Tellurium	TM152	**102.5** 89.88 : 111.78
Thallium	TM152	**91.17** 82.43 : 113.83

Dissolved Metals by ICP-MS

		QC 2496
Tin	TM152	**98.0** 94.62 : 107.79
Titanium	TM152	**98.33** 90.29 : 115.23
Tungsten	TM152	**100.33** 77.61 : 132.31
Uranium	TM152	**97.0** 86.97 : 115.76
Vanadium	TM152	**95.17** 89.61 : 115.48
Zinc	TM152	**97.0** 87.51 : 116.26

EPH by GCxGC-FID

Component	Method Code	QC 2413
EPH >C10-C40 Raw	TM415	**89.47** 63.71 : 122.01

GRO by GC-FID (S)

Component	Method Code	QC 2462
QC	TM089	**79.52** 70.34 : 111.95

Hexavalent Chromium (s)

Component	Method Code	QC 2444
Hexavalent Chromium	TM151	**110.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2419
Hexavalent Chromium	TM241	**99.8** 94.17 : 106.17

Mercury Dissolved

Mercury Dissolved

Component	Method Code	QC 2441
Mercury Dissolved (CVAF)	TM183	**104.0** 0.00 : 0.00

Metals in solid samples by OES

Component	Method Code	QC 2426
Aluminium	TM181	**102.65** 73.56 : 108.85
Antimony	TM181	**97.97** 76.89 : 111.24
Arsenic	TM181	**100.58** 88.53 : 111.01
Barium	TM181	**102.75** 77.67 : 105.35
Beryllium	TM181	**100.75** 85.44 : 109.61
Boron	TM181	**94.56** 73.51 : 104.66
Cadmium	TM181	**90.53** 77.67 : 104.12
Chromium	TM181	**92.29** 79.64 : 105.83
Cobalt	TM181	**91.19** 84.60 : 104.13
Copper	TM181	**100.7** 82.40 : 105.45
Iron	TM181	**98.41** 82.95 : 110.58
Lead	TM181	**92.34** 78.24 : 104.05
Manganese	TM181	**108.06** 94.29 : 119.51
Mercury	TM181	**94.69** 83.16 : 107.81
Molybdenum	TM181	**99.18** 87.11 : 106.87
Nickel	TM181	**93.15** 80.26 : 102.28
Phosphorus	TM181	**107.27** 94.56 : 124.28
Selenium	TM181	**101.18** 82.28 : 110.48
Strontium	TM181	**101.78** 79.13 : 102.79
Thallium	TM181	**89.82** 82.94 : 111.86
Tin	TM181	**100.38** 86.72 : 110.03
Titanium	TM181	**90.08** 66.23 : 102.06

Metals in solid samples by OES

		QC 2426
Vanadium	TM181	**101.83** 86.19 : 109.45
Zinc	TM181	**101.44** 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2481
Acenaphthene	TM218	**91.5** 73.47 : 109.80
Acenaphthylene	TM218	**89.5** 70.00 : 130.00
Anthracene	TM218	**93.0** 68.68 : 111.89
Benz(a)anthracene	TM218	**87.0** 68.12 : 118.39
Benzo(a)pyrene	TM218	**87.0** 71.72 : 115.31
Benzo(b)fluoranthene	TM218	**98.0** 66.89 : 120.40
Benzo(ghi)perylene	TM218	**70.5** 67.82 : 118.49
Benzo(k)fluoranthene	TM218	**95.5** 73.10 : 117.03
Chrysene	TM218	**89.0** 69.58 : 115.47
Dibenzo(ah)anthracene	TM218	**71.0** 67.32 : 121.35
Fluoranthene	TM218	**83.5** 75.16 : 117.28
Fluorene	TM218	**92.5** 73.81 : 108.66
Indeno(123cd)pyrene	TM218	**69.5** 68.91 : 117.62
Naphthalene	TM218	**91.5** 72.12 : 106.18
Phenanthrene	TM218	**90.5** 69.01 : 113.72
Pyrene	TM218	**87.5** 64.28 : 115.75

pH

Component	Method Code	QC 2419
pH	TM133	**99.12** 98.09 : 101.62

pH Value of Filtered Water

pH Value of Filtered Water

Component	Method Code	QC 2404
pH	TM256	**100.67** 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2409
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**51.95** 69.38 : 125.27
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**46.78** 69.79 : 122.84
Cresols by HPLC (S)	TM062 (S)	**50.73** 77.98 : 111.41
Phenol by HPLC (S)	TM062 (S)	**52.98** 67.94 : 117.69
Xylenols by HPLC (S)	TM062 (S)	**51.04** 88.23 : 104.42

Semi Volatile Organic Compounds

Component	Method Code	QC 2425
4-Bromophenylphenylether (Soil)	TM157	**88.5** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**96.0** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**90.0** 68.25 : 126.75
Naphthalene (Soil)	TM157	**90.5** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**85.0** 66.50 : 123.50
Phenol (Soil)	TM157	**101.0** 69.92 : 114.02

Sulphide

Component	Method Code	QC 2495
Sulphide	TM101	**99.33** 88.90 : 112.50

Total Organic Carbon

Component	Method Code	QC 2418
Total Organic Carbon	TM132	**100.78** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2485
1,1,1,2-tetrachloroethane	TM116	**102.0** 86.59 : 118.97
1,1,1-Trichloroethane	TM116	**100.8** 86.26 : 117.53
1,1,2-Trichloroethane	TM116	**95.2** 75.16 : 112.70
1,1-Dichloroethane	TM116	**109.8** 83.27 : 122.16
1,2-Dichloroethane	TM116	**106.2** 89.30 : 133.10
1,4-Dichlorobenzene	TM116	**98.4** 82.59 : 123.23
2-Chlorotoluene	TM116	**97.8** 66.81 : 118.43
4-Chlorotoluene	TM116	**94.2** 65.88 : 114.76
Benzene	TM116	**98.4** 93.16 : 123.63
Carbon Disulphide	TM116	**99.8** 75.11 : 124.81
Carbontetrachloride	TM116	**100.2** 82.35 : 126.46
Chlorobenzene	TM116	**98.6** 85.07 : 118.13
Chloroform	TM116	**108.4** 88.13 : 122.71
Chloromethane	TM116	**88.4** 61.62 : 145.66
Cis-1,2-Dichloroethene	TM116	**104.0** 88.41 : 121.33
Dibromomethane	TM116	**96.0** 77.47 : 121.29
Dichloromethane	TM116	**116.0** 87.89 : 134.72
Ethylbenzene	TM116	**91.6** 76.29 : 106.31
Hexachlorobutadiene	TM116	**92.4** 16.78 : 153.29
Isopropylbenzene	TM116	**88.6** 59.16 : 110.07
Naphthalene	TM116	**107.4** 79.29 : 125.59
o-Xylene	TM116	**83.8** 72.86 : 102.10
p/m-Xylene	TM116	**87.2** 68.99 : 102.40
Sec-Butylbenzene	TM116	**94.6** 44.71 : 117.87
Tetrachloroethene	TM116	**103.0** 77.82 : 125.00
Toluene	TM116	**91.8** 87.82 : 116.21
Trichloroethene	TM116	**95.2** 79.80 : 112.33

VOC MS (S)

		QC 2485
Trichlorofluoromethane	TM116	**106.8** 80.52 : 132.12
Vinyl Chloride	TM116	**106.4** 74.57 : 146.88

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

Work Order	: **PR2155564**	Issue Date	: 29-Jun-2021
Customer	: **ALS Life Sciences Ltd**	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: euhdnsubconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 210612-20	Page	: 1 of 2
Order number	: ----	Date Samples Received	: 15-Jun-2021
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 21-Jun-2021 - 29-Jun-2021
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories		*Position*
Zdeněk Jirák	[redacted]	Environmental Business Unit Manager

The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)

Analytical Results

Sub-Matrix: **SOIL**			Client sample ID	**24437586 BH60**		----		----	
			Laboratory sample ID	*PR2155564-001*		----		----	
			Client sampling date / time	12-Jun-2021 11:32		----		----	
Parameter	*Method*	*LOR*	*Unit*	**Result**	**MU**	**Result**	**MU**	**Result**	**MU**
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	**73.0**	± 6.0%	**----**	----	**----**	----
Pesticides									
2.4.5-T	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4.5-TP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-D	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
4-CPP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bentazone	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dinoseb	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Fluroxypyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPA	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Acifluorfen	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bromoxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
DNOC	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dicamba	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Diclofop	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Ioxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Propoxycarbazone-sodium	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclopyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclosan	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.
Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	*Method Descriptions*
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PESLMSA1	CZ_SOP_D06_03_182.B (CSN EN 15637, US EPA 1694) Determination of acidic herbicides and drug residues by liquid chromatography method with MS/MS detection.

A "*" symbol preceding any method indicates laboratory or subcontractor non-accredited test. If the UNICO-SUB code is stated in the method table, this only informs that the tests have been performed by a subcontractor and the results are given in an annex to the test report, including information on test accreditation. In the case when a procedure specified in an accredited method was used for non-accredited matrix, the reported results are non-accredited; please refer to information in General Comment section on the front page. If the report contains subcontracted analyses, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.
The calculation methods of summation parameters are available on request in the client service.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	22 June 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210615-61
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	602933

We received 10 samples on Tuesday June 15, 2021 and 4 of these samples were scheduled for analysis which was completed on Tuesday June 22, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210615-61	**Client Reference:**	784-B026948	**Report Number:**	602933
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24447400	BH06	ES1	0.40	10/06/2021
24447330	BH06	ES2	1.30	10/06/2021
24447382	BH27	ES1	0.40	10/06/2021
24447390	BH27	ES4	1.00	10/06/2021
24447363	TP13	ES1	0.20	10/06/2021
24447370	TP13	ES2	0.80	10/06/2021
24447347	TP20	ES1	0.20	10/06/2021
24447354	TP20	ES2	0.70	10/06/2021
24447322	TP30	ES1	0.20	10/06/2021
24447338	TP30	ES2	0.80	10/06/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210615-61	**Client Reference:**	784-B026948	**Report Number:**	602933
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)											
			24447400			24447330			24447363			24447370		
			Customer Sample Reference			BH06			BH06			TP13			TP13		
			AGS Reference			ES1			ES2			ES1			ES2		
			Depth (m)			0.40			1.30			0.20			0.80		
			Container	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
			Sample Type	S	S	S	S	S	S	S	S	S	S	S	S
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 3		X			X			X				
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 3	X			X			X					
Ammonium Soil by Titration	All	NDPs: 0 Tests: 3		X			X			X				
Anions by Kone (soil)	All	NDPs: 0 Tests: 3		X			X			X				
Anions by Kone (w)	All	NDPs: 0 Tests: 1										X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 3	X			X			X					
Boron Water Soluble	All	NDPs: 0 Tests: 3		X			X			X				
CEN Readings	All	NDPs: 0 Tests: 4	X			X			X			X		
Coronene	All	NDPs: 0 Tests: 1											X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 6	X	X		X	X		X	X				
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 4	X			X			X			X		
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1										X		
EPH	All	NDPs: 0 Tests: 3		X			X			X				
EPH by GCxGC-FID	All	NDPs: 0 Tests: 4		X			X			X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 3		X			X			X				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210615-61	**Client Reference:**	784-B026948	**Report Number:**	602933
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24447400			24447330			24447363			24447370	
Customer Sample Reference			BH06			BH06			TP13			TP13	
AGS Reference			ES1			ES2			ES1			ES2	
Depth (m)			0.40			1.30			0.20			0.80	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S
Fluoride	All	NDPs: 0 Tests: 1										X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 3			X			X			X			
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 3		X			X			X				
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 3	X			X			X					
Mercury Dissolved	All	NDPs: 0 Tests: 4	X			X			X			X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 3		X			X			X				
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1											X	
PAH by GCMS	All	NDPs: 0 Tests: 4		X			X			X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 1											X	
pH	All	NDPs: 0 Tests: 3		X			X			X				
pH Value of Filtered Water	All	NDPs: 0 Tests: 3	X			X			X					
Phenols by HPLC (S)	All	NDPs: 0 Tests: 3		X			X			X				
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1										X		
Sample description	All	NDPs: 0 Tests: 4		X			X			X			X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 3		X			X			X				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210615-61	**Client Reference:**	784-B026948	**Report Number:**	602933
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			2444740			2444733			2444736			2444737	
Customer Sample Reference			BH06			BH06			TP13			TP13	
AGS Reference			ES1			ES2			ES1			ES2	
Depth (m)			0.40			1.30			0.20			0.80	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S
Sulphide	All	NDPs: 0 Tests: 3	X			X			X					
Total Dissolved Solids	All	NDPs: 0 Tests: 1										X		
Total Organic Carbon	All	NDPs: 0 Tests: 4		X			X			X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 3		X			X			X				
VOC MS (S)	All	NDPs: 0 Tests: 4			X			X			X			X

CERTIFICATE OF ANALYSIS

SDG:	210615-61	**Client Reference:**	784-B026948	**Report Number:**	602933
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24447330	BH06	1.30	Dark Brown	Sandy Silt Loam	Stones	None
24447400	BH06	0.40	Cream	Silty Sand	Stones	None
24447363	TP13	0.20	Cream	Silty Sand	Stones	Vegetation
24447370	TP13	0.80	Dark Brown	Sandy Silt Loam	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210615-61	**Client Reference:**	784-B026948	**Report Number:**	602933
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH06	BH06	TP13	TP13		
			Depth (m)	0.40	1.30	0.20	0.80		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	10/06/2021	10/06/2021	10/06/2021	10/06/2021		
			Sample Time	.	.	.	.		
			Date Received	15/06/2021	15/06/2021	15/06/2021	15/06/2021		
			SDG Ref	210615-61	210615-61	210615-61	210615-61		
			Lab Sample No.(s)	24447400	24447330	24447363	24447370		
			AGS Reference	ES1	ES2	ES1	ES2		
Moisture Content Ratio (% of as received sample)	%	PM024		10	19	4.1	12		
Exchangeable Ammonia as N	<12 mg/kg	TM024		<12 M	<12 M	<12 M			
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 M	<0.01 M	<0.01 M			
Cresols	<0.01 mg/kg	TM062 (S)		<0.01 M	<0.01 M	<0.01 M			
Xylenols	<0.015 mg/kg	TM062 (S)		<0.015 M	<0.015 M	<0.015 M			
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 M	<0.035 M	<0.035 M			
Organic Carbon, Total	<0.2 %	TM132					1.4 M		
Soil Organic Matter (SOM)	<0.35 %	TM132		<0.35 #	0.85 #	<0.35 #			
pH	1 pH Units	TM133		8.91 M	8.2 M	8.82 M			
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #			
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M	<1 M			
PCB congener 28	<0.003 mg/kg	TM168					<0.003 M		
PCB congener 52	<0.003 mg/kg	TM168					<0.003 M		
PCB congener 101	<0.003 mg/kg	TM168					<0.003 M		
PCB congener 118	<0.003 mg/kg	TM168					<0.003 M		
PCB congener 138	<0.003 mg/kg	TM168					<0.003 M		
PCB congener 153	<0.003 mg/kg	TM168					<0.003 M		
PCB congener 180	<0.003 mg/kg	TM168					<0.003 M		
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168					<0.021		
Arsenic	<0.6 mg/kg	TM181		2.08 M	8.52 M	1.2 M			
Cadmium	<0.02 mg/kg	TM181		0.312 M	0.791 M	0.347 M			
Chromium	<0.9 mg/kg	TM181		2.6 M	13.1 M	2.93 M			
Copper	<1.4 mg/kg	TM181		4.81 M	13.1 M	5.83 M			
Iron	<1000 mg/kg	TM181		3460 #	21400 #	3000 #			
Lead	<0.7 mg/kg	TM181		4.33 M	40.6 M	4.86 M			
Mercury	<0.1 mg/kg	TM181		<0.1 M	<0.1 M	<0.1 M			
Nickel	<0.2 mg/kg	TM181		2.06 M	16.9 M	1.95 M			
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #			
Vanadium	<0.2 mg/kg	TM181		4.48 #	29.1 #	3.77 #			
Zinc	<1.9 mg/kg	TM181		29.9 M	123 M	34.4 M			
Boron, water soluble	<1 mg/kg	TM222		<1 M	<1 M	<1 M			
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.0176 M	0.0379 M	0.0086 M			
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248		5.57	4.19	5.59			

Validated

CERTIFICATE OF ANALYSIS

SDG:	210615-61	**Client Reference:**	784-B026948	**Report Number:**	602933
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH06	BH06	TP13	TP13		
			Depth (m)	0.40	1.30	0.20	0.80		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	10/06/2021	10/06/2021	10/06/2021	10/06/2021		
			Sample Time	.	.	.	.		
			Date Received	15/06/2021	15/06/2021	15/06/2021	15/06/2021		
			SDG Ref	210615-61	210615-61	210615-61	210615-61		
			Lab Sample No.(s)	24447400	24447330	24447363	24447370		
			AGS Reference	ES1	ES2	ES1	ES2		
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410					<10		
Coronene	<0.2 mg/kg	TM410					0.23		
EPH (C5-C40)	<35 mg/kg	TM415	<35	<35	<35				
EPH Surrogate % recovery**	%	TM415	88.6	95.5	97.6	104			
EPH >C10-C40	<35 mg/kg	TM415	<35 M	<35 M	<35 M				
Mineral Oil >C10-C40	<5 mg/kg	TM415				14.1			

Validated

CERTIFICATE OF ANALYSIS

SDG:	210615-61	**Client Reference:**	784-B026948	**Report Number:**	602933
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH06	BH06	TP13			
			Depth (m)	0.40	1.30	0.20			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	10/06/2021	10/06/2021	10/06/2021			
			Sample Time	.	.	.			
			Date Received	15/06/2021	15/06/2021	15/06/2021			
			SDG Ref	210615-61	210615-61	210615-61			
			Lab Sample No.(s)	24447400	24447330	24447363			
			AGS Reference	ES1	ES2	ES1			
Naphthalene-d8 % recovery**	%	TM218		85.2	84.9	87.3			
Acenaphthene-d10 % recovery**	%	TM218		84.2	83.3	86.3			
Phenanthrene-d10 % recovery**	%	TM218		103	100	101			
Chrysene-d12 % recovery**	%	TM218		87	80.8	86.5			
Perylene-d12 % recovery**	%	TM218		82.2	78.8	82.4			
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	<0.009 M	<0.009 M			
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 M	<0.012 M	<0.012 M			
Acenaphthene	<0.008 mg/kg	TM218		<0.008 M	<0.008 M	<0.008 M			
Fluorene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M	<0.01 M			
Phenanthrene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M	<0.015 M			
Anthracene	<0.016 mg/kg	TM218		<0.016 M	<0.016 M	<0.016 M			
Fluoranthene	<0.017 mg/kg	TM218		<0.017 M	<0.017 M	<0.017 M			
Pyrene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M	<0.015 M			
Benz(a)anthracene	<0.014 mg/kg	TM218		<0.014 M	<0.014 M	<0.014 M			
Chrysene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M	<0.01 M			
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M	<0.015 M			
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		<0.014 M	<0.014 M	<0.014 M			
Benzo(a)pyrene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M	<0.015 M			
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		<0.018 M	<0.018 M	<0.018 M			
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	<0.023 M	<0.023 M			
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		<0.024 M	<0.024 M	<0.024 M			
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		<0.118	<0.118	<0.118			

CERTIFICATE OF ANALYSIS

SDG:	210615-61	**Client Reference:**	784-B026948	**Report Number:**	602933
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH06	BH06	TP13			
			Depth (m)	0.40	1.30	0.20			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	10/06/2021	10/06/2021	10/06/2021			
			Sample Time	.	.	.			
			Date Received	15/06/2021	15/06/2021	15/06/2021			
			SDG Ref	210615-61	210615-61	210615-61			
			Lab Sample No.(s)	24447400	24447330	24447363			
			AGS Reference	ES1	ES2	ES1			
Phenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Pentachlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Nitrobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Isophorone	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Hexachloroethane	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Hexachlorobutadiene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Hexachlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
n-Dioctyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Dimethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Diethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
n-Dibutyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Dibenzofuran	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Carbazole	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Butylbenzyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Azobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Nitrophenol	<0.1 mg/kg	TM157		<0.5	<0.5	<0.5			
4-Nitroaniline	<0.1 mg/kg	TM157		<0.5	<0.5	<0.5			
4-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Chlorophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Chloroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Bromophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
3-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2-Chlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			

CERTIFICATE OF ANALYSIS

SDG:	210615-61	**Client Reference:**	784-B026948	**Report Number:**	602933
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH06	BH06	TP13			
			Depth (m)	0.40	1.30	0.20			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	10/06/2021	10/06/2021	10/06/2021			
			Sample Time	.	.	.			
			Date Received	15/06/2021	15/06/2021	15/06/2021			
			SDG Ref	210615-61	210615-61	210615-61			
			Lab Sample No.(s)	24447400	24447330	24447363			
			AGS Reference	ES1	ES2	ES1			
2,6-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2,4-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2,4-Dimethylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2,4-Dichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
1,4-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
1,3-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
1,2-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2-Chloronaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2-Methylnaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Acenaphthylene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Acenaphthene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Anthracene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Benzo(a)anthracene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Benzo(b)fluoranthene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Benzo(k)fluoranthene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Benzo(a)pyrene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Chrysene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Fluoranthene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Fluorene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Phenanthrene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Pyrene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Naphthalene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			

Validated

CERTIFICATE OF ANALYSIS

SDG:	210615-61	**Client Reference:**	784-B026948	**Report Number:**	602933
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH06	BH06	TP13			
			Depth (m)	0.40	1.30	0.20			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	10/06/2021	10/06/2021	10/06/2021			
			Sample Time	.	.	.			
			Date Received	15/06/2021	15/06/2021	15/06/2021			
			SDG Ref	210615-61	210615-61	210615-61			
			Lab Sample No.(s)	24447400	24447330	24447363			
			AGS Reference	ES1	ES2	ES1			
GRO Surrogate % recovery**	%	TM089		117	95.9	110			
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01			
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	0.0554	<0.01			
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	0.317	<0.01			
Aliphatics >C10-C12	<1 mg/kg	TM414		<1 #	<1 #	<1 #			
Aliphatics >C12-C16	<1 mg/kg	TM414		<1 #	2.17 #	<1 #			
Aliphatics >C16-C21	<1 mg/kg	TM414		<1 #	<1 #	<1 #			
Aliphatics >C21-C35	<1 mg/kg	TM414		<1 #	<1 #	1.97 #			
Aliphatics >C35-C44	<1 mg/kg	TM414		<1	<1	<1			
Total Aliphatics >C10-C44	<5 mg/kg	TM414		<5	<5	<5			
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		<10	<10	<10			
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01			
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01			
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	0.212	<0.01			
Aromatics > EC10-EC12	<1 mg/kg	TM414		<1 #	<1 #	<1 #			
Aromatics > EC12-EC16	<1 mg/kg	TM414		<1 #	<1 #	<1 #			
Aromatics > EC16-EC21	<1 mg/kg	TM414		<1 #	<1 #	<1 #			
Aromatics > EC21-EC35	<1 mg/kg	TM414		<1 #	<1 #	1.68 #			
Aromatics >EC35-EC44	<1 mg/kg	TM414		<1	<1	<1			
Aromatics > EC40-EC44	<1 mg/kg	TM414		<1	<1	<1			
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		<5	<5	<5			
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		<10	<10	<10			
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		<0.05	0.373	<0.05			
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		<0.05	0.212	<0.05			
GRO >C5-C10	<0.02 mg/kg	TM089		<0.02	0.584	<0.02			

CERTIFICATE OF ANALYSIS

SDG:	210615-61	**Client Reference:**	784-B026948	**Report Number:**	602933
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH06	BH06	TP13	TP13		
			Depth (m)	0.40	1.30	0.20	0.80		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	10/06/2021	10/06/2021	10/06/2021	10/06/2021		
			Sample Time	.	.	.	.		
			Date Received	15/06/2021	15/06/2021	15/06/2021	15/06/2021		
			SDG Ref	210615-61	210615-61	210615-61	210615-61		
			Lab Sample No.(s)	24447400	24447330	24447363	24447370		
			AGS Reference	ES1	ES2	ES1	ES2		
Dibromofluoromethane**	%	TM116		112	116	119	110		
Toluene-d8**	%	TM116		99.5	98.5	99.7	101		
4-Bromofluorobenzene**	%	TM116		105	104	106	99.3		
Dichlorodifluoromethane	<0.006 mg/kg	TM116		<0.12 M	<0.12 M	<0.12 M			
Chloromethane	<0.007 mg/kg	TM116		<0.14 #	<0.14 #	<0.14 #			
Vinyl Chloride	<0.006 mg/kg	TM116		<0.12 M	<0.12 M	<0.12 M			
Bromomethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
Chloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
Trichlorofluorormethane	<0.006 mg/kg	TM116		<0.12 M	<0.12 M	<0.12 M			
1,1-Dichloroethene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #	<0.2 #			
Carbon Disulphide	<0.007 mg/kg	TM116		<0.14 M	<0.14 M	<0.14 M			
Dichloromethane	<0.01 mg/kg	TM116		<0.2 #	<0.2 #	<0.2 #			
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M	<0.2 M		
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
1,1-Dichloroethane	<0.008 mg/kg	TM116		<0.16 M	<0.16 M	<0.16 M			
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116		<0.12 M	<0.12 M	<0.12 M			
2,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2	<0.2	<0.2			
Bromochloromethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
Chloroform	<0.008 mg/kg	TM116		<0.16 M	<0.16 M	<0.16 M			
1,1,1-Trichloroethane	<0.007 mg/kg	TM116		<0.14 M	<0.14 M	<0.14 M			
1,1-Dichloropropene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
Carbontetrachloride	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
1,2-Dichloroethane	<0.005 mg/kg	TM116		<0.1 M	<0.1 M	<0.1 M			
Benzene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M	<0.18 M	<0.18 M		
Trichloroethene	<0.009 mg/kg	TM116		<0.18 #	<0.18 #	<0.18 #			
1,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
Dibromomethane	<0.009 mg/kg	TM116		<0.18 M	<0.18 M	<0.18 M			
Bromodichloromethane	<0.007 mg/kg	TM116		<0.14 M	<0.14 M	<0.14 M			
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
Toluene	<0.007 mg/kg	TM116		<0.14 M	<0.14 M	<0.14 M	<0.14 M		
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2	<0.2	<0.2			
1,1,2-Trichloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
1,3-Dichloropropane	<0.007 mg/kg	TM116		<0.14 M	<0.14 M	<0.14 M			

Validated

CERTIFICATE OF ANALYSIS

SDG:	210615-61	**Client Reference:**	784-B026948	**Report Number:**	602933
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH06	BH06	TP13	TP13		
			Depth (m)	0.40	1.30	0.20	0.80		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	10/06/2021	10/06/2021	10/06/2021	10/06/2021		
			Sample Time	.	.	.	.		
			Date Received	15/06/2021	15/06/2021	15/06/2021	15/06/2021		
			SDG Ref	210615-61	210615-61	210615-61	210615-61		
			Lab Sample No.(s)	24447400	24447330	24447363	24447370		
			AGS Reference	ES1	ES2	ES1	ES2		
Tetrachloroethene	<0.005 mg/kg	TM116		<0.1 M	<0.1 M	<0.1 M			
Dibromochloromethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
1,2-Dibromoethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
Chlorobenzene	<0.005 mg/kg	TM116		<0.1 M	<0.1 M	<0.1 M			
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 M	<0.08 M	<0.08 M	<0.08 M		
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #	<0.2 #	<0.2 #		
o-Xylene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M	<0.2 M		
Styrene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #	<0.2 #			
Bromoform	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
Isopropylbenzene	<0.005 mg/kg	TM116		<0.1 #	<0.1 #	<0.1 #			
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 #	<0.2 #	<0.2 #			
1,2,3-Trichloropropane	<0.016 mg/kg	TM116		<0.32 M	<0.32 M	<0.32 M			
Bromobenzene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
Propylbenzene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
2-Chlorotoluene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M	<0.18 M			
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116		<0.16 M	<0.16 M	<0.16 M			
4-Chlorotoluene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
tert-Butylbenzene	<0.014 mg/kg	TM116		<0.28 M	<0.28 M	<0.28 M			
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116		<0.18 #	<0.18 #	<0.18 #			
sec-Butylbenzene	<0.01 mg/kg	TM116		<0.2	<0.2	<0.2			
4-Isopropyltoluene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
1,3-Dichlorobenzene	<0.008 mg/kg	TM116		<0.16 M	<0.16 M	<0.16 M			
1,4-Dichlorobenzene	<0.005 mg/kg	TM116		<0.1 M	<0.1 M	<0.1 M			
n-Butylbenzene	<0.011 mg/kg	TM116		<0.22	<0.22	<0.22			
1,2-Dichlorobenzene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116		<0.28 M	<0.28 M	<0.28 M			
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.2 #	<0.2 #	<0.2 #			
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4	<0.4	<0.4			
Hexachlorobutadiene	<0.02 mg/kg	TM116		<0.4	<0.4	<0.4			
Naphthalene	<0.013 mg/kg	TM116		<0.26 M	<0.26 M	<0.26 M			
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4 #	<0.4 #	<0.4 #			
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4	<0.4	<0.4			

Validated

CERTIFICATE OF ANALYSIS

SDG:	210615-61	**Client Reference:**	784-B026948	**Report Number:**	602933
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH06	BH06	TP13	TP13		
			Depth (m)	0.40	1.30	0.20	0.80		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	10/06/2021	10/06/2021	10/06/2021	10/06/2021		
			Sample Time	.	.	.	.		
			Date Received	15/06/2021	15/06/2021	15/06/2021	15/06/2021		
			SDG Ref	210615-61	210615-61	210615-61	210615-61		
			Lab Sample No.(s)	24447400	24447330	24447363	24447370		
			AGS Reference	ES1	ES2	ES1	ES2		
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4	<0.4	<0.4			
Sum of BTEX	<0.04 mg/kg	TM116		<0.8	<0.8	<0.8			

CERTIFICATE OF ANALYSIS

SDG:	210615-61	**Client Reference:**	784-B026948	**Report Number:**	602933
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH06ES1 0.40 SOLID 10/06/2021 00:00:00 15/06/2021 05:00:00 210615-61 24447400 TM048	16.06.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH06ES2 1.30 SOLID 10/06/2021 00:00:00 15/06/2021 05:00:00 210615-61 24447330 TM048	16.06.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP13ES1 0.20 SOLID 10/06/2021 00:00:00 15/06/2021 05:00:00 210615-61 24447363 TM048	17.06.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Validated

CERTIFICATE OF ANALYSIS

SDG:	210615-61	**Client Reference:**	784-B026948	**Report Number:**	602933
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.107	**Natural Moisture Content (%)**	19.6
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	83.6
Particle Size <4mm	>95%		

Case	
SDG	210615-61
Lab Sample Number(s)	24447370
Sampled Date	10-Jun-2021
Customer Sample Ref.	TP13 ES2
Depth (m)	0.80

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	1.4	3	5	6
Loss on Ignition (%)	-	-	-	-
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	14.1	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	-	-	-	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00256	<0.0005	0.0256	<0.005	0.5	2	25
Barium	0.0122	<0.0002	0.122	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00167	<0.0003	0.0167	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000706	<0.0004	0.00706	<0.004	0.4	10	40
Lead	0.00055	<0.0002	0.0055	<0.002	0.5	10	50
Antimony	0.00123	<0.001	0.0123	<0.01	0.06	0.7	5
Selenium	0.00106	<0.001	0.0106	<0.01	0.1	0.5	7
Zinc	0.161	<0.001	1.61	<0.01	4	50	200
Chloride	5	<2	50	<20	800	15000	25000
Fluoride	0.982	<0.5	9.82	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	129	<5	1290	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	8.42	<3	84.2	<30	500	800	1000

Leach Test Information

Date Prepared	16-Jun-2021
pH (pH Units)	8.73
Conductivity (µS/cm)	168.00
Temperature (°C)	20.00
Volume Leachant (Litres)	0.883

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation

22/06/2021 15:54:01

15:53:42 22/06/2021

CERTIFICATE OF ANALYSIS

SDG:	210615-61	**Client Reference:**	784-B026948	**Report Number:**	602933
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.111	**Natural Moisture Content (%)**	23.2
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	81.2
Particle Size <4mm	>95%		

Case	
SDG	210615-61
Lab Sample Number(s)	24447330
Sampled Date	10-Jun-2021
Customer Sample Ref.	BH06 ES2
Depth (m)	1.30

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Boron	0.0174	<0.01	0.174	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.19	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0529	<0.001	0.529	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	17-Jun-2021
pH (pH Units)	8.46
Conductivity (µS/cm)	198.00
Temperature (°C)	18.70
Volume Leachant (Litres)	0.879

CERTIFICATE OF ANALYSIS

SDG:	210615-61	**Client Reference:**	784-B026948	**Report Number:**	602933
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.094	**Natural Moisture Content (%)**	4.75
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	95.5
Particle Size <4mm	>95%		

Case	
SDG	210615-61
Lab Sample Number(s)	24447363
Sampled Date	10-Jun-2021
Customer Sample Ref.	TP13 ES1
Depth (m)	0.20

Eluate Analysis	**C_2 Conc^n in 10:1 eluate (mg/l)**		**A_2 10:1 conc^n leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Boron	<0.01	<0.01	<0.1	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00169	<0.0003	0.0169	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.453	<0.019	4.53	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00709	<0.001	0.0709	<0.01	-	-	-
Sulphide	0.193	<0.05	1.93	<0.5	-	-	-

Leach Test Information

Date Prepared	16-Jun-2021
pH (pH Units)	8.80
Conductivity (µS/cm)	88.80
Temperature (°C)	20.00
Volume Leachant (Litres)	0.896

CERTIFICATE OF ANALYSIS

SDG:	210615-61	**Client Reference:**	784-B026948	**Report Number:**	602933
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.100	**Natural Moisture Content (%)**	10.5
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	90.5
Particle Size <4mm	>95%		

Case	
SDG	210615-61
Lab Sample Number(s)	24447400
Sampled Date	10-Jun-2021
Customer Sample Ref.	BH06 ES1
Depth (m)	0.40

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Boron	0.0111	<0.01	0.111	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.000326	<0.0003	0.00326	<0.003	-	-	-
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.19	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	0.000475	<0.0004	0.00475	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	<0.001	<0.001	<0.01	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	17-Jun-2021
pH (pH Units)	9.39
Conductivity (µS/cm)	120.00
Temperature (°C)	19.60
Volume Leachant (Litres)	0.891

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210615-61	**Client Reference:**	784-B026948	**Report Number:**	602933
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24447330	24447400	24447363	24447370
Customer Sample Ref.	BH06	BH06	TP13	TP13
AGS Ref.	ES2	ES1	ES1	ES2
Depth	1.30	0.40	0.20	0.80
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	16-Jun-2021	16-Jun-2021	16-Jun-2021	
Ammoniacal Nitrogen	22-Jun-2021	22-Jun-2021	22-Jun-2021	
Ammonium Soil by Titration	22-Jun-2021	22-Jun-2021	22-Jun-2021	
Anions by Kone (soil)	21-Jun-2021	21-Jun-2021	21-Jun-2021	
Anions by Kone (w)				18-Jun-2021
Asbestos ID in Solid Samples	16-Jun-2021	16-Jun-2021	17-Jun-2021	
Boron Water Soluble	21-Jun-2021	21-Jun-2021	21-Jun-2021	
CEN 10:1 Leachate (1 Stage)	17-Jun-2021	17-Jun-2021	16-Jun-2021	16-Jun-2021
CEN Readings	18-Jun-2021	18-Jun-2021	18-Jun-2021	18-Jun-2021
Coronene				16-Jun-2021
Cyanide Comp/Free/Total/Thiocyanate	22-Jun-2021	22-Jun-2021	21-Jun-2021	
Dissolved Metals by ICP-MS	19-Jun-2021	19-Jun-2021	19-Jun-2021	19-Jun-2021
Dissolved Organic/Inorganic Carbon				21-Jun-2021
EPH	18-Jun-2021	18-Jun-2021	18-Jun-2021	
EPH by GCxGC-FID	17-Jun-2021	18-Jun-2021	17-Jun-2021	17-Jun-2021
EPH CWG GC (S)	17-Jun-2021	17-Jun-2021	17-Jun-2021	
Fluoride				18-Jun-2021
GRO by GC-FID (S)	17-Jun-2021	17-Jun-2021	17-Jun-2021	
Hexavalent Chromium (s)	18-Jun-2021	18-Jun-2021	18-Jun-2021	
Hexavalent Chromium (w)	21-Jun-2021	21-Jun-2021	18-Jun-2021	
Mercury Dissolved	21-Jun-2021	21-Jun-2021	21-Jun-2021	21-Jun-2021
Metals in solid samples by OES	21-Jun-2021	21-Jun-2021	21-Jun-2021	
Moisture at 105C	17-Jun-2021	17-Jun-2021	16-Jun-2021	16-Jun-2021
PAH 16 & 17 Calc				17-Jun-2021
PAH by GCMS	17-Jun-2021	17-Jun-2021	17-Jun-2021	16-Jun-2021
PCBs by GCMS				17-Jun-2021
pH	17-Jun-2021	17-Jun-2021	17-Jun-2021	
pH Value of Filtered Water	18-Jun-2021	18-Jun-2021	21-Jun-2021	
Phenols by HPLC (S)	17-Jun-2021	17-Jun-2021	17-Jun-2021	
Phenols by HPLC (W)				21-Jun-2021
Sample description	15-Jun-2021	15-Jun-2021	15-Jun-2021	15-Jun-2021
Semi Volatile Organic Compounds	17-Jun-2021	17-Jun-2021	17-Jun-2021	
Sulphide	22-Jun-2021	22-Jun-2021	18-Jun-2021	
Total Dissolved Solids				18-Jun-2021
Total Organic Carbon	22-Jun-2021	22-Jun-2021	22-Jun-2021	21-Jun-2021
TPH CWG GC (S)	17-Jun-2021	17-Jun-2021	17-Jun-2021	
VOC MS (S)	17-Jun-2021	17-Jun-2021	17-Jun-2021	16-Jun-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2400
Ammoniacal Nitrogen as N	TM099	**90.0** 88.02 : 104.70

Ammonium Soil by Titration

Component	Method Code	QC 2448
Exchangeable Ammonium as NH4	TM024	**95.02** 74.04 : 103.44

Anions by Kone (soil)

Component	Method Code	QC 2488
Chloride (soluble)	TM243	**155.96** 80.93 : 111.66
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**160.28** 70.00 : 130.00

Boron Water Soluble

Component	Method Code	QC 2461
Water Soluble Boron	TM222	**101.0** 84.00 : 111.00

Coronene

Component	Method Code	QC 2492
Coronene RAW	TM410	**101.5** 79.43 : 137.78

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2415	QC 2435	QC 2497
Free Cyanide	TM153	**96.93** 78.00 : 114.00		
Free Cyanide (W)	TM227		**87.25** 90.67 : 122.67	**83.25** 90.67 : 122.67
Thiocyanate	TM153	**100.64** 94.53 : 113.33		

Cyanide Comp/Free/Total/Thiocyanate

		QC 2415	QC 2435	QC 2497
Thiocyanate (W)	TM227		**112.75** 92.25 : 117.75	**111.75** 92.25 : 117.75
Total Cyanide	TM153	**100.7** 77.13 : 111.53		
Total Cyanide (W)	TM227		**108.5** 88.75 : 111.25	**106.25** 88.75 : 111.25

Dissolved Metals by ICP-MS

Component	Method Code	QC 2435	QC 2427
Aluminium	TM152	**103.0** 94.21 : 111.52	**100.67** 94.21 : 111.52
Antimony	TM152	**100.33** 88.37 : 130.57	**99.83** 88.37 : 130.57
Arsenic	TM152	**101.83** 92.62 : 113.52	**98.5** 92.62 : 113.52
Barium	TM152	**97.33** 88.62 : 113.14	**100.83** 88.62 : 113.14
Beryllium	TM152	**102.83** 87.08 : 111.38	**103.33** 87.08 : 111.38
Bismuth	TM152	**100.33** 92.62 : 115.02	**98.5** 92.62 : 115.02
Boron	TM152	**102.67** 86.31 : 120.88	**101.0** 86.31 : 120.88
Cadmium	TM152	**100.0** 93.85 : 111.65	**99.33** 93.85 : 111.65
Calcium	TM152	**106.0** 89.20 : 126.91	**105.33** 89.20 : 126.91
Chromium	TM152	**101.67** 92.50 : 113.03	**98.83** 92.50 : 113.03
Cobalt	TM152	**101.17** 85.01 : 114.87	**97.83** 85.01 : 114.87
Copper	TM152	**102.83** 89.87 : 119.73	**98.5** 89.87 : 119.73
Iron	TM152	**102.0** 93.02 : 113.86	**98.67** 93.02 : 113.86
Lead	TM152	**100.17** 91.11 : 116.98	**100.5** 91.11 : 116.98
Lithium	TM152	**103.33** 87.70 : 115.90	**101.0** 87.70 : 115.90
Magnesium	TM152	**110.67** 89.60 : 116.61	**108.0** 89.60 : 116.61
Manganese	TM152	**101.67** 93.97 : 112.46	**99.17** 93.97 : 112.46
Molybdenum	TM152	**97.17** 89.07 : 110.96	**94.83** 89.07 : 110.96
Nickel	TM152	**101.67** 93.70 : 112.15	**98.33** 93.70 : 112.15
Phosphorus	TM152	**101.5** 89.24 : 114.18	**100.67** 89.24 : 114.18
Potassium	TM152	**110.0** 93.20 : 115.55	**106.0** 93.20 : 115.55
Selenium	TM152	**105.0** 91.69 : 117.12	**97.0** 91.69 : 117.12

Dissolved Metals by ICP-MS

		QC 2435	QC 2427
Silver	TM152	**98.67** 90.93 : 121.73	**96.67** 90.93 : 121.73
Sodium	TM152	**110.0** 92.42 : 113.24	**107.33** 92.42 : 113.24
Strontium	TM152	**100.0** 92.14 : 116.24	**100.0** 92.14 : 116.24
Tellurium	TM152	**97.17** 89.88 : 111.78	**96.17** 89.88 : 111.78
Thallium	TM152	**101.33** 82.43 : 113.83	**99.33** 82.43 : 113.83
Tin	TM152	**99.67** 94.62 : 107.79	**98.33** 94.62 : 107.79
Titanium	TM152	**100.83** 90.29 : 115.23	**100.67** 90.29 : 115.23
Tungsten	TM152	**101.0** 77.61 : 132.31	**98.5** 77.61 : 132.31
Uranium	TM152	**98.0** 86.97 : 115.76	**98.33** 86.97 : 115.76
Vanadium	TM152	**99.67** 89.61 : 115.48	**101.83** 89.61 : 115.48
Zinc	TM152	**103.0** 87.51 : 116.26	**100.0** 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2471
Dissolved Inorganic Carbon	TM090	**97.83** 93.58 : 112.28
Dissolved Organic Carbon	TM090	**101.0** 96.13 : 109.53

Fluoride

Component	Method Code	QC 2439
Fluoride	TM104	**103.33** 96.67 : 108.67

GRO by GC-FID (S)

Component	Method Code	QC 2422	QC 2412
QC	TM089	**77.05** 70.34 : 111.95	**81.02** 68.78 : 110.61

Hexavalent Chromium (s)

Hexavalent Chromium (s)

Component	Method Code	QC 2404
Hexavalent Chromium	TM151	**110.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2401	QC 2484
Hexavalent Chromium	TM241	**101.6** 94.17 : 106.17	**99.2** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2477	QC 2485
Mercury Dissolved (CVAF)	TM183	**93.4** 0.00 : 0.00	**95.3** 0.00 : 0.00

Metals in solid samples by OES

Component	Method Code	QC 2438
Aluminium	TM181	**110.62** 73.56 : 108.85
Antimony	TM181	**97.97** 76.89 : 111.24
Arsenic	TM181	**102.33** 88.53 : 111.01
Barium	TM181	**103.67** 77.67 : 105.35
Beryllium	TM181	**103.73** 85.44 : 109.61
Boron	TM181	**99.43** 73.51 : 104.66
Cadmium	TM181	**97.12** 77.67 : 104.12
Chromium	TM181	**96.96** 79.64 : 105.83
Cobalt	TM181	**100.94** 84.60 : 104.13
Copper	TM181	**103.17** 82.40 : 105.45
Iron	TM181	**105.56** 82.95 : 110.58
Lead	TM181	**95.95** 78.24 : 104.05
Manganese	TM181	**111.94** 94.29 : 119.51

Metals in solid samples by OES

		QC 2438
Mercury	TM181	**92.03** 83.16 : 107.81
Molybdenum	TM181	**102.47** 87.11 : 106.87
Nickel	TM181	**96.58** 80.26 : 102.28
Phosphorus	TM181	**110.1** 94.56 : 124.28
Selenium	TM181	**102.35** 82.28 : 110.48
Strontium	TM181	**102.67** 79.13 : 102.79
Thallium	TM181	**92.48** 82.94 : 111.86
Tin	TM181	**101.9** 86.72 : 110.03
Titanium	TM181	**96.18** 66.23 : 102.06
Vanadium	TM181	**105.86** 86.19 : 109.45
Zinc	TM181	**102.05** 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2466	QC 2411
Acenaphthene	TM218	**88.0** 76.79 : 103.90	**89.0** 78.59 : 112.16
Acenaphthylene	TM218	**85.5** 74.19 : 106.17	**88.0** 75.11 : 109.01
Anthracene	TM218	**86.0** 70.90 : 109.22	**89.5** 73.99 : 113.85
Benz(a)anthracene	TM218	**75.5** 73.77 : 119.26	**86.5** 69.31 : 119.18
Benzo(a)pyrene	TM218	**73.5** 73.20 : 114.18	**75.5** 66.97 : 114.92
Benzo(b)fluoranthene	TM218	**76.0** 75.36 : 117.58	**77.5** 67.41 : 114.46
Benzo(ghi)perylene	TM218	**74.5** 70.73 : 116.12	**76.0** 62.92 : 114.36
Benzo(k)fluoranthene	TM218	**76.5** 75.98 : 116.59	**78.0** 69.98 : 116.49
Chrysene	TM218	**75.5** 74.82 : 114.18	**80.5** 69.86 : 114.50
Dibenzo(ah)anthracene	TM218	**70.5** 69.17 : 115.30	**78.5** 64.54 : 115.22
Fluoranthene	TM218	**86.5** 66.06 : 114.63	**88.5** 72.56 : 111.70
Fluorene	TM218	**88.0** 76.66 : 107.56	**91.0** 79.13 : 111.49
Indeno(123cd)pyrene	TM218	**73.5** 70.26 : 117.95	**75.0** 61.22 : 113.25
Naphthalene	TM218	**85.0** 74.70 : 101.83	**85.5** 77.96 : 110.91

PAH by GCMS

		QC 2466	QC 2411
Phenanthrene	TM218	**87.0** 73.62 : 109.34	**91.0** 76.83 : 113.25
Pyrene	TM218	**84.0** 71.46 : 117.00	**86.0** 72.45 : 110.77

PCBs by GCMS

Component	Method Code	QC 2475
PCB congener 101	TM168	**90.2** 65.66 : 110.06
PCB congener 105	TM168	**85.6** 58.10 : 106.34
PCB congener 114	TM168	**87.8** 59.38 : 106.48
PCB congener 118	TM168	**86.6** 60.02 : 106.23
PCB congener 123	TM168	**90.3** 65.01 : 99.81
PCB congener 126	TM168	**87.6** 59.31 : 109.23
PCB congener 138	TM168	**92.1** 63.95 : 107.63
PCB congener 153	TM168	**93.8** 62.65 : 108.85
PCB congener 156	TM168	**88.1** 61.69 : 112.27
PCB congener 157	TM168	**83.7** 55.37 : 104.81
PCB congener 167	TM168	**88.4** 65.58 : 109.14
PCB congener 169	TM168	**85.8** 56.84 : 112.10
PCB congener 180	TM168	**91.4** 66.99 : 111.63
PCB congener 189	TM168	**88.0** 57.75 : 112.59
PCB congener 28	TM168	**92.2** 73.68 : 105.96
PCB congener 52	TM168	**90.2** 67.24 : 107.62
PCB congener 77	TM168	**90.8** 64.87 : 108.49
PCB congener 81	TM168	**90.2** 70.78 : 110.80

pH

Component	Method Code	QC 2410
pH	TM133	**100.15** 98.09 : 101.62

pH Value of Filtered Water

Component	Method Code	QC 2481	QC 2478
pH	TM256	**100.27** 99.33 : 102.54	**100.0** 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2481	QC 2490
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**52.6** 69.38 : 125.27	**49.35** 69.38 : 125.27
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**40.94** 69.79 : 122.84	**43.27** 69.79 : 122.84
Cresols by HPLC (S)	TM062 (S)	**49.9** 77.98 : 111.41	**47.18** 77.98 : 111.41
Phenol by HPLC (S)	TM062 (S)	**50.33** 67.94 : 117.69	**47.68** 67.94 : 117.69
Xylenols by HPLC (S)	TM062 (S)	**49.9** 88.23 : 104.42	**47.6** 88.23 : 104.42

Phenols by HPLC (W)

Component	Method Code	QC 2486
2.3.5 Trimethyl-Phenol by HPLC (W)	TM259	**95.7** 76.00 : 124.00
2-Isopropyl Phenol by HPLC (W)	TM259	**89.87** 76.00 : 124.00
Cresols by HPLC (W)	TM259	**95.39** 76.00 : 124.00
Napthol by HPLC (W)	TM259	**99.61** 76.00 : 124.00
Phenol by HPLC (W)	TM259	**92.63** 76.00 : 124.00
Xylenols by HPLC (W)	TM259	**94.3** 76.00 : 124.00

Semi Volatile Organic Compounds

Component	Method Code	QC 2422
4-Bromophenylphenylether (Soil)	TM157	**89.5** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**89.5** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**89.0** 68.25 : 126.75
Naphthalene (Soil)	TM157	**90.0** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**85.0** 66.50 : 123.50
Phenol (Soil)	TM157	**99.0** 69.92 : 114.02

Sulphide

Sulphide

Component	Method Code	QC 2403	QC 2464
Sulphide	TM101	**106.67** 88.90 : 112.50	**106.67** 88.90 : 112.50

Total Organic Carbon

Component	Method Code	QC 2440	QC 2447	QC 2496
Total Organic Carbon	TM132	**107.81** 87.02 : 113.45	**105.86** 87.02 : 113.45	**98.05** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2483
1,1,1,2-tetrachloroethane	TM116	**105.0** 86.59 : 118.97
1,1,1-Trichloroethane	TM116	**99.8** 86.26 : 117.53
1,1,2-Trichloroethane	TM116	**97.0** 75.16 : 112.70
1,1-Dichloroethane	TM116	**105.6** 83.27 : 122.16
1,2-Dichloroethane	TM116	**109.0** 89.30 : 133.10
1,4-Dichlorobenzene	TM116	**106.8** 82.59 : 123.23
2-Chlorotoluene	TM116	**96.6** 66.81 : 118.43
4-Chlorotoluene	TM116	**92.4** 65.88 : 114.76
Benzene	TM116	**96.2** 93.16 : 123.63
Carbon Disulphide	TM116	**94.6** 75.11 : 124.81
Carbontetrachloride	TM116	**102.2** 82.35 : 126.46
Chlorobenzene	TM116	**101.4** 85.07 : 118.13
Chloroform	TM116	**107.6** 88.13 : 122.71
Chloromethane	TM116	**84.8** 61.62 : 145.66
Cis-1,2-Dichloroethene	TM116	**103.2** 88.41 : 121.33
Dibromomethane	TM116	**101.2** 77.47 : 121.29
Dichloromethane	TM116	**116.2** 87.89 : 134.72
Ethylbenzene	TM116	**91.0** 76.29 : 106.31

		QC 2483
Hexachlorobutadiene	TM116	**74.2** 16.78 : 153.29
Isopropylbenzene	TM116	**85.0** 59.16 : 110.07
Naphthalene	TM116	**112.6** 79.29 : 125.59
o-Xylene	TM116	**82.0** 72.86 : 102.10
p/m-Xylene	TM116	**85.3** 68.99 : 102.40
Sec-Butylbenzene	TM116	**79.8** 44.71 : 117.87
Tetrachloroethene	TM116	**104.0** 77.82 : 125.00
Toluene	TM116	**90.8** 87.82 : 116.21
Trichloroethene	TM116	**94.4** 79.80 : 112.33
Trichlorofluoromethane	TM116	**107.4** 80.52 : 132.12
Vinyl Chloride	TM116	**95.8** 74.57 : 146.88

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	22 June 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210616-17
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	602937

We received 2 samples on Tuesday June 15, 2021 and 1 of these samples were scheduled for analysis which was completed on Tuesday June 22, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210616-17	**Client Reference:**	784-B026948	**Report Number:**	602937
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24450674	BH26	ES1	0.40	11/06/2021
24450681	BH26	ES4	0.90	11/06/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	210616-17	**Client Reference:**	784-B026948	**Report Number:**	602937
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24450681			
Customer Sample Reference			BH26			
AGS Reference			ES4			
Depth (m)			0.90			
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 1		X		
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1	X			
Ammonium Soil by Titration	All	NDPs: 0 Tests: 1		X		
Anions by Kone (soil)	All	NDPs: 0 Tests: 1		X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1	X			
Boron Water Soluble	All	NDPs: 0 Tests: 1		X		
CEN Readings	All	NDPs: 0 Tests: 1	X			
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2	X	X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1	X			
EPH	All	NDPs: 0 Tests: 1		X		
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1		X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 1		X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1			X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1		X		
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1	X			

CERTIFICATE OF ANALYSIS

SDG:	210616-17	**Client Reference:**	784-B026948	**Report Number:**	602937
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
			2445068	BH26	ES4	0.90	1kg TUB with Handle (ALE260)	S
							250g Amber Jar (ALE210)	S
							60g VOC (ALE215)	S
Mercury Dissolved	All	NDPs: 0 Tests: 1	X					
Metals in solid samples by OES	All	NDPs: 0 Tests: 1		X				
PAH by GCMS	All	NDPs: 0 Tests: 1		X				
pH	All	NDPs: 0 Tests: 1		X				
pH Value of Filtered Water	All	NDPs: 0 Tests: 1	X					
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1		X				
Sample description	All	NDPs: 0 Tests: 1		X				
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1		X				
Sulphide	All	NDPs: 0 Tests: 1	X					
Total Organic Carbon	All	NDPs: 0 Tests: 1		X				
TPH CWG GC (S)	All	NDPs: 0 Tests: 1		X				
VOC MS (S)	All	NDPs: 0 Tests: 1					X	

CERTIFICATE OF ANALYSIS

SDG:	210616-17	**Client Reference:**	784-B026948	**Report Number:**	602937
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24450681	BH26	0.90	Light Brown	Sandy Silt Loam	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210616-17	**Client Reference:**	784-B026948	**Report Number:**	602937
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref. BH26				
			Depth (m) 0.90				
			Sample Type Soil/Solid (S)				
			Date Sampled 11/06/2021				
			Sample Time .				
			Date Received 15/06/2021				
			SDG Ref 210616-17				
			Lab Sample No.(s) 24450681				
			AGS Reference ES4				
Moisture Content Ratio (% of as received sample)	%	PM024	5.4				
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12 M				
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M				
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M				
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M				
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M				
Soil Organic Matter (SOM)	<0.35 %	TM132	<0.35 #				
pH	1 pH Units	TM133	9.03 M				
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #				
Cyanide, Total	<1 mg/kg	TM153	<1 M				
Arsenic	<0.6 mg/kg	TM181	5.31 M				
Cadmium	<0.02 mg/kg	TM181	0.452 M				
Chromium	<0.9 mg/kg	TM181	1.81 M				
Copper	<1.4 mg/kg	TM181	7.46 M				
Iron	<1000 mg/kg	TM181	15400 #				
Lead	<0.7 mg/kg	TM181	11.2 M				
Mercury	<0.1 mg/kg	TM181	<0.1 M				
Nickel	<0.2 mg/kg	TM181	7.63 M				
Selenium	<1 mg/kg	TM181	<1 #				
Vanadium	<0.2 mg/kg	TM181	9.89 #				
Zinc	<1.9 mg/kg	TM181	47.9 M				
Boron, water soluble	<1 mg/kg	TM222	<1 M				
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0233 M				
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248	5.87				
EPH (C5-C40)	<35 mg/kg	TM415	<35				
EPH Surrogate % recovery**	%	TM415	92.5				
EPH >C10-C40	<35 mg/kg	TM415	<35 M				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210616-17	**Client Reference:**	784-B026948	**Report Number:**	602937
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref. BH26	Depth (m) 0.90	Sample Type Soil/Solid (S)	Date Sampled 11/06/2021	Sample Time .	Date Received 15/06/2021	SDG Ref 210616-17	Lab Sample No.(s) 24450681	AGS Reference ES4
Naphthalene-d8 % recovery**	%	TM218	93								
Acenaphthene-d10 % recovery**	%	TM218	88.3								
Phenanthrene-d10 % recovery**	%	TM218	101								
Chrysene-d12 % recovery**	%	TM218	104								
Perylene-d12 % recovery**	%	TM218	101								
Naphthalene	<0.009 mg/kg	TM218	<0.009 M								
Acenaphthylene	<0.012 mg/kg	TM218	<0.012 M								
Acenaphthene	<0.008 mg/kg	TM218	<0.008 M								
Fluorene	<0.01 mg/kg	TM218	<0.01 M								
Phenanthrene	<0.015 mg/kg	TM218	<0.015 M								
Anthracene	<0.016 mg/kg	TM218	<0.016 M								
Fluoranthene	<0.017 mg/kg	TM218	0.0225 M								
Pyrene	<0.015 mg/kg	TM218	0.0214 M								
Benz(a)anthracene	<0.014 mg/kg	TM218	0.0149 M								
Chrysene	<0.01 mg/kg	TM218	0.0141 M								
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	0.0166 M								
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	<0.014 M								
Benzo(a)pyrene	<0.015 mg/kg	TM218	0.018 M								
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	<0.018 M								
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	<0.023 M								
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	<0.024 M								
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	<0.118								

CERTIFICATE OF ANALYSIS

SDG:	210616-17	**Client Reference:**	784-B026948	**Report Number:**	602937
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BH26	0.90	Soil/Solid (S)	11/06/2021	.	15/06/2021	210616-17	24450681	ES4
Phenol	<0.1 mg/kg	TM157	<0.1								
Pentachlorophenol	<0.1 mg/kg	TM157	<0.1								
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157	<0.1								
Nitrobenzene	<0.1 mg/kg	TM157	<0.1								
Isophorone	<0.1 mg/kg	TM157	<0.1								
Hexachloroethane	<0.1 mg/kg	TM157	<0.1								
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157	<0.1								
Hexachlorobutadiene	<0.1 mg/kg	TM157	<0.1								
Hexachlorobenzene	<0.1 mg/kg	TM157	<0.1								
n-Dioctyl phthalate	<0.1 mg/kg	TM157	<0.1								
Dimethyl phthalate	<0.1 mg/kg	TM157	<0.1								
Diethyl phthalate	<0.1 mg/kg	TM157	<0.1								
n-Dibutyl phthalate	<0.1 mg/kg	TM157	<0.1								
Dibenzofuran	<0.1 mg/kg	TM157	<0.1								
Carbazole	<0.1 mg/kg	TM157	<0.1								
Butylbenzyl phthalate	<0.1 mg/kg	TM157	<0.1								
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157	<0.1								
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157	<0.1								
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157	<0.1								
Azobenzene	<0.1 mg/kg	TM157	<0.1								
4-Nitrophenol	<0.1 mg/kg	TM157	<0.1								
4-Nitroaniline	<0.1 mg/kg	TM157	<0.1								
4-Methylphenol	<0.1 mg/kg	TM157	<0.1								
4-Chlorophenylphenylether	<0.1 mg/kg	TM157	<0.1								
4-Chloroaniline	<0.1 mg/kg	TM157	<0.1								
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157	<0.1								
4-Bromophenylphenylether	<0.1 mg/kg	TM157	<0.1								
3-Nitroaniline	<0.1 mg/kg	TM157	<0.1								
2-Nitrophenol	<0.1 mg/kg	TM157	<0.1								
2-Nitroaniline	<0.1 mg/kg	TM157	<0.1								
2-Methylphenol	<0.1 mg/kg	TM157	<0.1								
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157	<0.1								
2-Chlorophenol	<0.1 mg/kg	TM157	<0.1								

CERTIFICATE OF ANALYSIS

SDG:	210616-17	**Client Reference:**	784-B026948	**Report Number:**	602937
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

		Customer Sample Ref.	BH26
		Depth (m)	0.90
		Sample Type	Soil/Solid (S)
		Date Sampled	11/06/2021
		Sample Time	.
		Date Received	15/06/2021
		SDG Ref	210616-17
		Lab Sample No.(s)	24450681
		AGS Reference	ES4
Component	**LOD/Units**	**Method**	
2,6-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1
2,4-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1
2,4-Dimethylphenol	<0.1 mg/kg	TM157	<0.1
2,4-Dichlorophenol	<0.1 mg/kg	TM157	<0.1
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157	<0.1
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157	<0.1
1,4-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1
1,3-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1
1,2-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1
2-Chloronaphthalene	<0.1 mg/kg	TM157	<0.1
2-Methylnaphthalene	<0.1 mg/kg	TM157	<0.1
Acenaphthylene	<0.1 mg/kg	TM157	<0.1
Acenaphthene	<0.1 mg/kg	TM157	<0.1
Anthracene	<0.1 mg/kg	TM157	<0.1
Benzo(a)anthracene	<0.1 mg/kg	TM157	<0.1
Benzo(b)fluoranthene	<0.1 mg/kg	TM157	<0.1
Benzo(k)fluoranthene	<0.1 mg/kg	TM157	<0.1
Benzo(a)pyrene	<0.1 mg/kg	TM157	<0.1
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157	<0.1
Chrysene	<0.1 mg/kg	TM157	<0.1
Fluoranthene	<0.1 mg/kg	TM157	<0.1
Fluorene	<0.1 mg/kg	TM157	<0.1
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157	<0.1
Phenanthrene	<0.1 mg/kg	TM157	<0.1
Pyrene	<0.1 mg/kg	TM157	<0.1
Naphthalene	<0.1 mg/kg	TM157	<0.1
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157	<0.1
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157	<0.1

Validated

CERTIFICATE OF ANALYSIS

SDG:	210616-17	**Client Reference:**	784-B026948	**Report Number:**	602937
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH26
Depth (m)	0.90
Sample Type	Soil/Solid (S)
Date Sampled	11/06/2021
Sample Time	.
Date Received	15/06/2021
SDG Ref	210616-17
Lab Sample No.(s)	24450681
AGS Reference	ES4

Component	LOD/Units	Method	
GRO Surrogate % recovery**	%	TM089	111
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089	0.0106
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01
Aliphatics >C10-C12	<1 mg/kg	TM414	<1 #
Aliphatics >C12-C16	<1 mg/kg	TM414	<1 #
Aliphatics >C16-C21	<1 mg/kg	TM414	<1 #
Aliphatics >C21-C35	<1 mg/kg	TM414	<1 #
Aliphatics >C35-C44	<1 mg/kg	TM414	<1
Total Aliphatics >C10-C44	<5 mg/kg	TM414	<5
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414	<10
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	<0.01
Aromatics > EC10-EC12	<1 mg/kg	TM414	<1 #
Aromatics > EC12-EC16	<1 mg/kg	TM414	<1 #
Aromatics > EC16-EC21	<1 mg/kg	TM414	<1 #
Aromatics > EC21-EC35	<1 mg/kg	TM414	<1 #
Aromatics >EC35-EC44	<1 mg/kg	TM414	<1
Aromatics > EC40-EC44	<1 mg/kg	TM414	<1
Total Aromatics > EC10-EC44	<5 mg/kg	TM414	<5
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414	<10
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089	<0.05
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089	<0.05
GRO >C5-C10	<0.02 mg/kg	TM089	<0.02

CERTIFICATE OF ANALYSIS

SDG:	210616-17	**Client Reference:**	784-B026948	**Report Number:**	602937
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH26
Depth (m)	0.90
Sample Type	Soil/Solid (S)
Date Sampled	11/06/2021
Sample Time	.
Date Received	15/06/2021
SDG Ref	210616-17
Lab Sample No.(s)	24450681
AGS Reference	ES4

Component	LOD/Units	Method					
Dibromofluoromethane**	%	TM116	125				
Toluene-d8**	%	TM116	96.9				
4-Bromofluorobenzene**	%	TM116	104				
Dichlorodifluoromethane	<0.006 mg/kg	TM116	<0.12 M				
Chloromethane	<0.007 mg/kg	TM116	<0.14 #				
Vinyl Chloride	<0.006 mg/kg	TM116	<0.12 M				
Bromomethane	<0.01 mg/kg	TM116	<0.2 M				
Chloroethane	<0.01 mg/kg	TM116	<0.2 M				
Trichlorofluorormethane	<0.006 mg/kg	TM116	<0.12 M				
1,1-Dichloroethene	<0.01 mg/kg	TM116	<0.2 #				
Carbon Disulphide	<0.007 mg/kg	TM116	<0.14 M				
Dichloromethane	<0.01 mg/kg	TM116	<0.2 #				
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.2 M				
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116	<0.2 M				
1,1-Dichloroethane	<0.008 mg/kg	TM116	<0.16 M				
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116	<0.12 M				
2,2-Dichloropropane	<0.01 mg/kg	TM116	<0.2				
Bromochloromethane	<0.01 mg/kg	TM116	<0.2 M				
Chloroform	<0.008 mg/kg	TM116	<0.16 M				
1,1,1-Trichloroethane	<0.007 mg/kg	TM116	<0.14 M				
1,1-Dichloropropene	<0.01 mg/kg	TM116	<0.2 M				
Carbontetrachloride	<0.01 mg/kg	TM116	<0.2 M				
1,2-Dichloroethane	<0.005 mg/kg	TM116	<0.1 M				
Benzene	<0.009 mg/kg	TM116	<0.18 M				
Trichloroethene	<0.009 mg/kg	TM116	<0.18 #				
1,2-Dichloropropane	<0.01 mg/kg	TM116	<0.2 M				
Dibromomethane	<0.009 mg/kg	TM116	<0.18 M				
Bromodichloromethane	<0.007 mg/kg	TM116	<0.14 M				
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.2 M				
Toluene	<0.007 mg/kg	TM116	<0.14 M				
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.2				
1,1,2-Trichloroethane	<0.01 mg/kg	TM116	<0.2 M				
1,3-Dichloropropane	<0.007 mg/kg	TM116	<0.14 M				

CERTIFICATE OF ANALYSIS

SDG:	210616-17	**Client Reference:**	784-B026948	**Report Number:**	602937
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref. BH26	Depth (m) 0.90	Sample Type Soil/Solid (S)	Date Sampled 11/06/2021	Sample Time .	Date Received 15/06/2021	SDG Ref 210616-17	Lab Sample No.(s) 24450681	AGS Reference ES4
Tetrachloroethene	<0.005 mg/kg	TM116	<0.1 M								
Dibromochloromethane	<0.01 mg/kg	TM116	<0.2 M								
1,2-Dibromoethane	<0.01 mg/kg	TM116	<0.2 M								
Chlorobenzene	<0.005 mg/kg	TM116	<0.1 M								
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.2 M								
Ethylbenzene	<0.004 mg/kg	TM116	<0.08 M								
p/m-Xylene	<0.01 mg/kg	TM116	<0.2 #								
o-Xylene	<0.01 mg/kg	TM116	<0.2 M								
Styrene	<0.01 mg/kg	TM116	<0.2 #								
Bromoform	<0.01 mg/kg	TM116	<0.2 M								
Isopropylbenzene	<0.005 mg/kg	TM116	<0.1 #								
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.2 #								
1,2,3-Trichloropropane	<0.016 mg/kg	TM116	<0.32 M								
Bromobenzene	<0.01 mg/kg	TM116	<0.2 M								
Propylbenzene	<0.01 mg/kg	TM116	<0.2 M								
2-Chlorotoluene	<0.009 mg/kg	TM116	<0.18 M								
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116	<0.16 M								
4-Chlorotoluene	<0.01 mg/kg	TM116	<0.2 M								
tert-Butylbenzene	<0.014 mg/kg	TM116	<0.28 M								
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116	<0.18 #								
sec-Butylbenzene	<0.01 mg/kg	TM116	<0.2								
4-Isopropyltoluene	<0.01 mg/kg	TM116	<0.2 M								
1,3-Dichlorobenzene	<0.008 mg/kg	TM116	<0.16 M								
1,4-Dichlorobenzene	<0.005 mg/kg	TM116	<0.1 M								
n-Butylbenzene	<0.011 mg/kg	TM116	<0.22								
1,2-Dichlorobenzene	<0.01 mg/kg	TM116	<0.2 M								
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116	<0.28 M								
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.2 #								
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116	<0.4								
Hexachlorobutadiene	<0.02 mg/kg	TM116	<0.4								
Naphthalene	<0.013 mg/kg	TM116	<0.26 M								
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116	<0.4 #								
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116	<0.4								

Validated

CERTIFICATE OF ANALYSIS

SDG:	210616-17	**Client Reference:**	784-B026948	**Report Number:**	602937
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BH26	0.90	Soil/Solid (S)	11/06/2021	.	15/06/2021	210616-17	24450681	ES4
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4								
Sum of BTEX	<0.04 mg/kg	TM116	<0.8								

CERTIFICATE OF ANALYSIS

SDG:	210616-17	**Client Reference:**	784-B026948	**Report Number:**	602937
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref.	BH26ES4	18.06.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	0.90										
Sample Type	SOLID										
Date Sampled	11/06/2021 00:00:00										
Date Receieved	15/06/2021 05:00:00										
SDG	210616-17										
Original Sample	24450681										
Method Number	TM048										

CERTIFICATE OF ANALYSIS

SDG:	210616-17	**Client Reference:**	784-B026948	**Report Number:**	602937
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.100	**Natural Moisture Content (%)**	11.1
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	90
Particle Size <4mm	>95%		

Case	
SDG	210616-17
Lab Sample Number(s)	24450681
Sampled Date	11-Jun-2021
Customer Sample Ref.	BH26 ES4
Depth (m)	0.90

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.00133	<0.0005	0.0133	<0.005	-	-	-
Boron	0.0102	<0.01	0.102	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.19	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	0.00238	<0.001	0.0238	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	<0.001	<0.001	<0.01	<0.01	-	-	-
Sulphide	0.0187	<0.01	0.187	<0.1	-	-	-

Leach Test Information

Date Prepared	17-Jun-2021
pH (pH Units)	9.23
Conductivity (µS/cm)	136.00
Temperature (°C)	17.70
Volume Leachant (Litres)	0.890

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210616-17	**Client Reference:**	784-B026948	**Report Number:**	602937
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24450681
Customer Sample Ref.	BH26
AGS Ref.	ES4
Depth	0.90
Type	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	22-Jun-2021
Ammoniacal Nitrogen	22-Jun-2021
Ammonium Soil by Titration	22-Jun-2021
Anions by Kone (soil)	22-Jun-2021
Asbestos ID in Solid Samples	18-Jun-2021
Boron Water Soluble	21-Jun-2021
CEN 10:1 Leachate (1 Stage)	17-Jun-2021
CEN Readings	18-Jun-2021
Cyanide Comp/Free/Total/Thiocyanate	22-Jun-2021
Dissolved Metals by ICP-MS	21-Jun-2021
EPH	18-Jun-2021
EPH by GCxGC-FID	18-Jun-2021
EPH CWG GC (S)	18-Jun-2021
GRO by GC-FID (S)	17-Jun-2021
Hexavalent Chromium (s)	22-Jun-2021
Hexavalent Chromium (w)	21-Jun-2021
Mercury Dissolved	21-Jun-2021
Metals in solid samples by OES	22-Jun-2021
Moisture at 105C	17-Jun-2021
PAH by GCMS	17-Jun-2021
pH	17-Jun-2021
pH Value of Filtered Water	21-Jun-2021
Phenols by HPLC (S)	17-Jun-2021
Sample description	16-Jun-2021
Semi Volatile Organic Compounds	17-Jun-2021
Sulphide	22-Jun-2021
Total Organic Carbon	22-Jun-2021
TPH CWG GC (S)	18-Jun-2021
VOC MS (S)	17-Jun-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2406
Ammoniacal Nitrogen as N	TM099	**98.8** 88.02 : 104.70

Ammonium Soil by Titration

Component	Method Code	QC 2448
Exchangeable Ammonium as NH4	TM024	**95.02** 74.04 : 103.44

Boron Water Soluble

Component	Method Code	QC 2461
Water Soluble Boron	TM222	**101.0** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2409	QC 2486
Free Cyanide	TM153	**90.5** 78.00 : 114.00	
Free Cyanide (W)	TM227		**82.75** 90.67 : 122.67
Thiocyanate	TM153	**97.44** 94.53 : 113.33	
Thiocyanate (W)	TM227		**112.0** 92.25 : 117.75
Total Cyanide	TM153	**94.41** 77.13 : 111.53	
Total Cyanide (W)	TM227		**106.25** 88.75 : 111.25

Dissolved Metals by ICP-MS

Component	Method Code	QC 2414
Aluminium	TM152	**101.0** 94.21 : 111.52
Antimony	TM152	**95.17** 88.37 : 130.57
Arsenic	TM152	**95.67** 92.62 : 113.52
Barium	TM152	**97.33** 88.62 : 113.14

Dissolved Metals by ICP-MS

		QC 2414
Beryllium	TM152	**100.83** 87.08 : 111.38
Bismuth	TM152	**99.67** 92.62 : 115.02
Boron	TM152	**103.0** 86.31 : 120.88
Cadmium	TM152	**97.83** 93.85 : 111.65
Calcium	TM152	**103.33** 89.20 : 126.91
Chromium	TM152	**96.33** 92.50 : 113.03
Cobalt	TM152	**96.17** 85.01 : 114.87
Copper	TM152	**96.17** 89.87 : 119.73
Iron	TM152	**96.0** 93.02 : 113.86
Lead	TM152	**98.83** 91.11 : 116.98
Lithium	TM152	**102.17** 87.70 : 115.90
Magnesium	TM152	**104.67** 89.60 : 116.61
Manganese	TM152	**96.17** 93.97 : 112.46
Molybdenum	TM152	**91.33** 89.07 : 110.96
Nickel	TM152	**96.83** 93.70 : 112.15
Phosphorus	TM152	**94.17** 89.24 : 114.18
Potassium	TM152	**102.67** 93.20 : 115.55
Selenium	TM152	**98.83** 91.69 : 117.12
Silver	TM152	**94.33** 90.93 : 121.73
Sodium	TM152	**100.67** 92.42 : 113.24
Strontium	TM152	**97.33** 92.14 : 116.24
Tellurium	TM152	**94.0** 89.88 : 111.78
Thallium	TM152	**98.17** 82.43 : 113.83
Tin	TM152	**96.17** 94.62 : 107.79
Titanium	TM152	**99.83** 90.29 : 115.23
Tungsten	TM152	**97.33** 77.61 : 132.31
Uranium	TM152	**100.5** 86.97 : 115.76

Dissolved Metals by ICP-MS

		QC 2414
Vanadium	TM152	**97.67** 89.61 : 115.48
Zinc	TM152	**98.0** 87.51 : 116.26

GRO by GC-FID (S)

Component	Method Code	QC 2419
QC	TM089	**74.54** 70.34 : 111.95

Hexavalent Chromium (s)

Component	Method Code	QC 2496
Hexavalent Chromium	TM151	**100.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2493
Hexavalent Chromium	TM241	**99.0** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2485
Mercury Dissolved (CVAF)	TM183	**95.3** 0.00 : 0.00

Metals in solid samples by OES

Component	Method Code	QC 2447
Aluminium	TM181	**86.02** 73.56 : 108.85
Antimony	TM181	**93.5** 76.89 : 111.24
Arsenic	TM181	**95.93** 88.53 : 111.01
Barium	TM181	**93.58** 77.67 : 105.35
Beryllium	TM181	**97.01** 85.44 : 109.61

Metals in solid samples by OES

		QC 2447
Boron	TM181	**91.4** 73.51 : 104.66
Cadmium	TM181	**90.12** 77.67 : 104.12
Chromium	TM181	**88.84** 79.64 : 105.83
Cobalt	TM181	**95.28** 84.60 : 104.13
Copper	TM181	**95.95** 82.40 : 105.45
Iron	TM181	**91.27** 82.95 : 110.58
Lead	TM181	**93.02** 78.24 : 104.05
Manganese	TM181	**102.78** 94.29 : 119.51
Mercury	TM181	**88.16** 83.16 : 107.81
Molybdenum	TM181	**94.65** 87.11 : 106.87
Nickel	TM181	**89.98** 80.26 : 102.28
Phosphorus	TM181	**104.04** 94.56 : 124.28
Selenium	TM181	**97.65** 82.28 : 110.48
Strontium	TM181	**92.87** 79.13 : 102.79
Thallium	TM181	**99.12** 82.94 : 111.86
Tin	TM181	**97.34** 86.72 : 110.03
Titanium	TM181	**88.55** 66.23 : 102.06
Vanadium	TM181	**96.7** 86.19 : 109.45
Zinc	TM181	**97.54** 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2496
Acenaphthene	TM218	**90.5** 78.59 : 112.16
Acenaphthylene	TM218	**90.0** 75.11 : 109.01
Anthracene	TM218	**83.0** 73.99 : 113.85
Benz(a)anthracene	TM218	**89.0** 69.31 : 119.18
Benzo(a)pyrene	TM218	**87.5** 66.97 : 114.92
Benzo(b)fluoranthene	TM218	**87.5** 67.41 : 114.46

PAH by GCMS

		QC 2496
Benzo(ghi)perylene	TM218	**91.0** 62.92 : 114.36
Benzo(k)fluoranthene	TM218	**88.0** 69.98 : 116.49
Chrysene	TM218	**90.5** 69.86 : 114.50
Dibenzo(ah)anthracene	TM218	**88.0** 64.54 : 115.22
Fluoranthene	TM218	**87.0** 72.56 : 111.70
Fluorene	TM218	**89.5** 79.13 : 111.49
Indeno(123cd)pyrene	TM218	**89.0** 61.22 : 113.25
Naphthalene	TM218	**92.5** 77.96 : 110.91
Phenanthrene	TM218	**87.5** 76.83 : 113.25
Pyrene	TM218	**85.0** 72.45 : 110.77

pH

Component	Method Code	QC 2410
pH	TM133	**100.15** 98.09 : 101.62

pH Value of Filtered Water

Component	Method Code	QC 2423
pH	TM256	**100.8** 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2425
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**48.7** 69.38 : 125.27
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**42.69** 69.79 : 122.84
Cresols by HPLC (S)	TM062 (S)	**45.93** 77.98 : 111.41
Phenol by HPLC (S)	TM062 (S)	**47.02** 67.94 : 117.69
Xylenols by HPLC (S)	TM062 (S)	**46.77** 88.23 : 104.42

Semi Volatile Organic Compounds

Semi Volatile Organic Compounds

Component	Method Code	QC 2436
4-Bromophenylphenylether (Soil)	TM157	**91.0** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**90.5** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**93.0** 68.25 : 126.75
Naphthalene (Soil)	TM157	**93.0** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**92.0** 66.50 : 123.50
Phenol (Soil)	TM157	**95.5** 69.92 : 114.02

Sulphide

Component	Method Code	QC 2494
Sulphide	TM101	**104.0** 88.90 : 112.50

Total Organic Carbon

Component	Method Code	QC 2442
Total Organic Carbon	TM132	**101.17** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2478
1,1,1,2-tetrachloroethane	TM116	**112.4** 86.59 : 118.97
1,1,1-Trichloroethane	TM116	**102.0** 86.26 : 117.53
1,1,2-Trichloroethane	TM116	**98.0** 75.16 : 112.70
1,1-Dichloroethane	TM116	**106.6** 83.27 : 122.16
1,2-Dichloroethane	TM116	**110.0** 89.30 : 133.10
1,4-Dichlorobenzene	TM116	**115.8** 82.59 : 123.23
2-Chlorotoluene	TM116	**104.2** 66.81 : 118.43
4-Chlorotoluene	TM116	**108.6** 65.88 : 114.76
Benzene	TM116	**99.6** 93.16 : 123.63
Carbon Disulphide	TM116	**100.6** 75.11 : 124.81

VOC MS (S)

		QC 2478
Carbontetrachloride	TM116	**106.6** 82.35 : 126.46
Chlorobenzene	TM116	**109.2** 85.07 : 118.13
Chloroform	TM116	**110.0** 88.13 : 122.71
Chloromethane	TM116	**90.6** 61.62 : 145.66
Cis-1,2-Dichloroethene	TM116	**107.2** 88.41 : 121.33
Dibromomethane	TM116	**103.0** 77.47 : 121.29
Dichloromethane	TM116	**116.4** 87.89 : 134.72
Ethylbenzene	TM116	**99.2** 76.29 : 106.31
Hexachlorobutadiene	TM116	**86.8** 16.78 : 153.29
Isopropylbenzene	TM116	**94.4** 59.16 : 110.07
Naphthalene	TM116	**121.0** 79.29 : 125.59
o-Xylene	TM116	**93.0** 72.86 : 102.10
p/m-Xylene	TM116	**94.6** 68.99 : 102.40
Sec-Butylbenzene	TM116	**93.0** 44.71 : 117.87
Tetrachloroethene	TM116	**111.2** 77.82 : 125.00
Toluene	TM116	**93.6** 87.82 : 116.21
Trichloroethene	TM116	**100.2** 79.80 : 112.33
Trichlorofluoromethane	TM116	**110.0** 80.52 : 132.12
Vinyl Chloride	TM116	**102.2** 74.57 : 146.88

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
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Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	23 June 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210616-24
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	603029

We received 5 samples on Friday June 11, 2021 and 1 of these samples were scheduled for analysis which was completed on Wednesday June 23, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

So

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210616-24	**Client Reference:**	784-B026948	**Report Number:**	603029
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24450872	BH28	ES7	1.50 - 1.60	10/06/2021
24450877	BH28	ES9	2.50 - 2.60	10/06/2021
24450881	BH28	ES11	4.30 - 4.40	10/06/2021
24450885	BH28	ES12	6.40 - 6.50	10/06/2021
24450889	BH28	ES14	7.80 - 7.90	10/06/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	210616-24	**Client Reference:**	784-B026948	**Report Number:**	603029
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24450885			
Customer Sample Reference			BH28			
AGS Reference			ES12			
Depth (m)			6.40 - 6.50			
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 1		X		
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1	X			
Ammonium Soil by Titration	All	NDPs: 0 Tests: 1		X		
Anions by Kone (soil)	All	NDPs: 0 Tests: 1		X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1	X			
Boron Water Soluble	All	NDPs: 0 Tests: 1		X		
CEN Readings	All	NDPs: 0 Tests: 1	X			
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2	X	X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1	X			
EPH	All	NDPs: 0 Tests: 1		X		
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1		X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 1		X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1			X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1		X		
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1	X			

CERTIFICATE OF ANALYSIS

SDG:	210616-24	**Client Reference:**	784-B026948	**Report Number:**	603029
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
			2445088	BH28	ES12	6.40 - 6.50	1kg TUB with Handle (ALE260)	S
							250g Amber Jar (ALE210)	S
							60g VOC (ALE215)	S
Mercury Dissolved	All	NDPs: 0 Tests: 1	X					
Metals in solid samples by OES	All	NDPs: 0 Tests: 1		X				
PAH by GCMS	All	NDPs: 0 Tests: 1		X				
pH	All	NDPs: 0 Tests: 1		X				
pH Value of Filtered Water	All	NDPs: 0 Tests: 1	X					
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1		X				
Sample description	All	NDPs: 0 Tests: 1		X				
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1		X				
Sulphide	All	NDPs: 0 Tests: 1	X					
Total Organic Carbon	All	NDPs: 0 Tests: 1		X				
TPH CWG GC (S)	All	NDPs: 0 Tests: 1		X				
VOC MS (S)	All	NDPs: 0 Tests: 1					X	

CERTIFICATE OF ANALYSIS

SDG:	210616-24	**Client Reference:**	784-B026948	**Report Number:**	603029
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24450885	BH28	6.40 - 6.50	Dark Brown	Sandy Silt Loam	None	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210616-24	**Client Reference:**	784-B026948	**Report Number:**	603029
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH28
Depth (m)	6.40 - 6.50
Sample Type	Soil/Solid (S)
Date Sampled	10/06/2021
Sample Time	.
Date Received	11/06/2021
SDG Ref	210616-24
Lab Sample No.(s)	24450885
AGS Reference	ES12

Component	LOD/Units	Method	
Moisture Content Ratio (% of as received sample)	%	PM024	23
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12 M
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M
Soil Organic Matter (SOM)	<0.35 %	TM132	1.37 #
pH	1 pH Units	TM133	7.03 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #
Cyanide, Total	<1 mg/kg	TM153	<1 M
Arsenic	<0.6 mg/kg	TM181	14.5 M
Cadmium	<0.02 mg/kg	TM181	1.65 M
Chromium	<0.9 mg/kg	TM181	10.5 M
Copper	<1.4 mg/kg	TM181	14.4 M
Iron	<1000 mg/kg	TM181	22700 #
Lead	<0.7 mg/kg	TM181	42.4 M
Mercury	<0.1 mg/kg	TM181	<0.1 M
Nickel	<0.2 mg/kg	TM181	24.8 M
Selenium	<1 mg/kg	TM181	<1 #
Vanadium	<0.2 mg/kg	TM181	24.8 #
Zinc	<1.9 mg/kg	TM181	189 M
Boron, water soluble	<1 mg/kg	TM222	<1 M
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.227 M
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248	6.23
EPH (C5-C40)	<35 mg/kg	TM415	<35
EPH Surrogate % recovery**	%	TM415	86.9
EPH >C10-C40	<35 mg/kg	TM415	<35 M

Validated

CERTIFICATE OF ANALYSIS

SDG:	210616-24	**Client Reference:**	784-B026948	**Report Number:**	603029
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH28
Depth (m)	6.40 - 6.50
Sample Type	Soil/Solid (S)
Date Sampled	10/06/2021
Sample Time	.
Date Received	11/06/2021
SDG Ref	210616-24
Lab Sample No.(s)	24450885
AGS Reference	ES12

Component	LOD/Units	Method	
Naphthalene-d8 % recovery**	%	TM218	86.6
Acenaphthene-d10 % recovery**	%	TM218	84.3
Phenanthrene-d10 % recovery**	%	TM218	95
Chrysene-d12 % recovery**	%	TM218	93
Perylene-d12 % recovery**	%	TM218	88.2
Naphthalene	<0.009 mg/kg	TM218	<0.009 M
Acenaphthylene	<0.012 mg/kg	TM218	<0.012 M
Acenaphthene	<0.008 mg/kg	TM218	<0.008 M
Fluorene	<0.01 mg/kg	TM218	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218	<0.015 M
Anthracene	<0.016 mg/kg	TM218	<0.016 M
Fluoranthene	<0.017 mg/kg	TM218	<0.017 M
Pyrene	<0.015 mg/kg	TM218	<0.015 M
Benz(a)anthracene	<0.014 mg/kg	TM218	<0.014 M
Chrysene	<0.01 mg/kg	TM218	<0.01 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	<0.015 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	<0.014 M
Benzo(a)pyrene	<0.015 mg/kg	TM218	<0.015 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	<0.018 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	<0.023 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	<0.024 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	<0.118

CERTIFICATE OF ANALYSIS

SDG:	210616-24	**Client Reference:**	784-B026948	**Report Number:**	603029
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH28
Depth (m)	6.40 - 6.50
Sample Type	Soil/Solid (S)
Date Sampled	10/06/2021
Sample Time	.
Date Received	11/06/2021
SDG Ref	210616-24
Lab Sample No.(s)	24450885
AGS Reference	ES12

Component	LOD/Units	Method	
Phenol	<0.1 mg/kg	TM157	<0.1
Pentachlorophenol	<0.1 mg/kg	TM157	<0.1
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157	<0.1
Nitrobenzene	<0.1 mg/kg	TM157	<0.1
Isophorone	<0.1 mg/kg	TM157	<0.1
Hexachloroethane	<0.1 mg/kg	TM157	<0.1
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157	<0.1
Hexachlorobutadiene	<0.1 mg/kg	TM157	<0.1
Hexachlorobenzene	<0.1 mg/kg	TM157	<0.1
n-Dioctyl phthalate	<0.1 mg/kg	TM157	<0.1
Dimethyl phthalate	<0.1 mg/kg	TM157	<0.1
Diethyl phthalate	<0.1 mg/kg	TM157	<0.1
n-Dibutyl phthalate	<0.1 mg/kg	TM157	<0.1
Dibenzofuran	<0.1 mg/kg	TM157	<0.1
Carbazole	<0.1 mg/kg	TM157	<0.1
Butylbenzyl phthalate	<0.1 mg/kg	TM157	<0.1
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157	<0.1
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157	<0.1
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157	<0.1
Azobenzene	<0.1 mg/kg	TM157	<0.1
4-Nitrophenol	<0.1 mg/kg	TM157	<0.1
4-Nitroaniline	<0.1 mg/kg	TM157	<0.1
4-Methylphenol	<0.1 mg/kg	TM157	<0.1
4-Chlorophenylphenylether	<0.1 mg/kg	TM157	<0.1
4-Chloroaniline	<0.1 mg/kg	TM157	<0.1
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157	<0.1
4-Bromophenylphenylether	<0.1 mg/kg	TM157	<0.1
3-Nitroaniline	<0.1 mg/kg	TM157	<0.1
2-Nitrophenol	<0.1 mg/kg	TM157	<0.1
2-Nitroaniline	<0.1 mg/kg	TM157	<0.1
2-Methylphenol	<0.1 mg/kg	TM157	<0.1
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157	<0.1
2-Chlorophenol	<0.1 mg/kg	TM157	<0.1

CERTIFICATE OF ANALYSIS

SDG:	210616-24	**Client Reference:**	784-B026948	**Report Number:**	603029
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH28
			Depth (m)	6.40 - 6.50
			Sample Type	Soil/Solid (S)
			Date Sampled	10/06/2021
			Sample Time	.
			Date Received	11/06/2021
			SDG Ref	210616-24
			Lab Sample No.(s)	24450885
			AGS Reference	ES12
2,6-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1
2,4-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1
2,4-Dimethylphenol	<0.1 mg/kg	TM157		<0.1
2,4-Dichlorophenol	<0.1 mg/kg	TM157		<0.1
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157		<0.1
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157		<0.1
1,4-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1
1,3-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1
1,2-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1
2-Chloronaphthalene	<0.1 mg/kg	TM157		<0.1
2-Methylnaphthalene	<0.1 mg/kg	TM157		<0.1
Acenaphthylene	<0.1 mg/kg	TM157		<0.1
Acenaphthene	<0.1 mg/kg	TM157		<0.1
Anthracene	<0.1 mg/kg	TM157		<0.1
Benzo(a)anthracene	<0.1 mg/kg	TM157		<0.1
Benzo(b)fluoranthene	<0.1 mg/kg	TM157		<0.1
Benzo(k)fluoranthene	<0.1 mg/kg	TM157		<0.1
Benzo(a)pyrene	<0.1 mg/kg	TM157		<0.1
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157		<0.1
Chrysene	<0.1 mg/kg	TM157		<0.1
Fluoranthene	<0.1 mg/kg	TM157		<0.1
Fluorene	<0.1 mg/kg	TM157		<0.1
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157		<0.1
Phenanthrene	<0.1 mg/kg	TM157		<0.1
Pyrene	<0.1 mg/kg	TM157		<0.1
Naphthalene	<0.1 mg/kg	TM157		<0.1
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157		<0.1
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157		<0.1

Validated

CERTIFICATE OF ANALYSIS

SDG:	210616-24	**Client Reference:**	784-B026948	**Report Number:**	603029
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH28
Depth (m)	6.40 - 6.50
Sample Type	Soil/Solid (S)
Date Sampled	10/06/2021
Sample Time	.
Date Received	11/06/2021
SDG Ref	210616-24
Lab Sample No.(s)	24450885
AGS Reference	ES12

Component	LOD/Units	Method	
GRO Surrogate % recovery**	%	TM089	103
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01
Aliphatics >C10-C12	<1 mg/kg	TM414	<1 #
Aliphatics >C12-C16	<1 mg/kg	TM414	<1 #
Aliphatics >C16-C21	<1 mg/kg	TM414	1.17 #
Aliphatics >C21-C35	<1 mg/kg	TM414	8.19 #
Aliphatics >C35-C44	<1 mg/kg	TM414	1.31
Total Aliphatics >C10-C44	<5 mg/kg	TM414	10.7
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414	16.4
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	<0.01
Aromatics > EC10-EC12	<1 mg/kg	TM414	<1 #
Aromatics > EC12-EC16	<1 mg/kg	TM414	<1 #
Aromatics > EC16-EC21	<1 mg/kg	TM414	<1 #
Aromatics > EC21-EC35	<1 mg/kg	TM414	4.6 #
Aromatics >EC35-EC44	<1 mg/kg	TM414	<1
Aromatics > EC40-EC44	<1 mg/kg	TM414	<1
Total Aromatics > EC10-EC44	<5 mg/kg	TM414	5.73
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414	16.4
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089	<0.05
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089	<0.05
GRO >C5-C10	<0.02 mg/kg	TM089	<0.02

CERTIFICATE OF ANALYSIS

SDG:	210616-24	**Client Reference:**	784-B026948	**Report Number:**	603029
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH28
Depth (m)	6.40 - 6.50
Sample Type	Soil/Solid (S)
Date Sampled	10/06/2021
Sample Time	.
Date Received	11/06/2021
SDG Ref	210616-24
Lab Sample No.(s)	24450885
AGS Reference	ES12

Component	LOD/Units	Method	
Dibromofluoromethane**	%	TM116	112
Toluene-d8**	%	TM116	102
4-Bromofluorobenzene**	%	TM116	103
Dichlorodifluoromethane	<0.006 mg/kg	TM116	<0.12 M
Chloromethane	<0.007 mg/kg	TM116	<0.14 #
Vinyl Chloride	<0.006 mg/kg	TM116	<0.12 M
Bromomethane	<0.01 mg/kg	TM116	<0.2 M
Chloroethane	<0.01 mg/kg	TM116	<0.2 M
Trichlorofluorormethane	<0.006 mg/kg	TM116	<0.12 M
1,1-Dichloroethene	<0.01 mg/kg	TM116	<0.2 #
Carbon Disulphide	<0.007 mg/kg	TM116	<0.14 M
Dichloromethane	<0.01 mg/kg	TM116	<0.2 #
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.2 M
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116	<0.2 M
1,1-Dichloroethane	<0.008 mg/kg	TM116	<0.16 M
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116	<0.12 M
2,2-Dichloropropane	<0.01 mg/kg	TM116	<0.2
Bromochloromethane	<0.01 mg/kg	TM116	<0.2 M
Chloroform	<0.008 mg/kg	TM116	<0.16 M
1,1,1-Trichloroethane	<0.007 mg/kg	TM116	<0.14 M
1,1-Dichloropropene	<0.01 mg/kg	TM116	<0.2 M
Carbontetrachloride	<0.01 mg/kg	TM116	<0.2 M
1,2-Dichloroethane	<0.005 mg/kg	TM116	<0.1 M
Benzene	<0.009 mg/kg	TM116	<0.18 M
Trichloroethene	<0.009 mg/kg	TM116	<0.18 #
1,2-Dichloropropane	<0.01 mg/kg	TM116	<0.2 M
Dibromomethane	<0.009 mg/kg	TM116	<0.18 M
Bromodichloromethane	<0.007 mg/kg	TM116	<0.14 M
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.2 M
Toluene	<0.007 mg/kg	TM116	<0.14 M
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.2
1,1,2-Trichloroethane	<0.01 mg/kg	TM116	<0.2 M
1,3-Dichloropropane	<0.007 mg/kg	TM116	<0.14 M

CERTIFICATE OF ANALYSIS

SDG:	210616-24	**Client Reference:**	784-B026948	**Report Number:**	603029
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.	BH28
Depth (m)	6.40 - 6.50
Sample Type	Soil/Solid (S)
Date Sampled	10/06/2021
Sample Time	.
Date Received	11/06/2021
SDG Ref	210616-24
Lab Sample No.(s)	24450885
AGS Reference	ES12

Component	LOD/Units	Method	
Tetrachloroethene	<0.005 mg/kg	TM116	<0.1 M
Dibromochloromethane	<0.01 mg/kg	TM116	<0.2 M
1,2-Dibromoethane	<0.01 mg/kg	TM116	<0.2 M
Chlorobenzene	<0.005 mg/kg	TM116	<0.1 M
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.2 M
Ethylbenzene	<0.004 mg/kg	TM116	<0.08 M
p/m-Xylene	<0.01 mg/kg	TM116	<0.2 #
o-Xylene	<0.01 mg/kg	TM116	<0.2 M
Styrene	<0.01 mg/kg	TM116	<0.2 #
Bromoform	<0.01 mg/kg	TM116	<0.2 M
Isopropylbenzene	<0.005 mg/kg	TM116	<0.1 #
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.2 #
1,2,3-Trichloropropane	<0.016 mg/kg	TM116	<0.32 M
Bromobenzene	<0.01 mg/kg	TM116	<0.2 M
Propylbenzene	<0.01 mg/kg	TM116	<0.2 M
2-Chlorotoluene	<0.009 mg/kg	TM116	<0.18 M
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116	<0.16 M
4-Chlorotoluene	<0.01 mg/kg	TM116	<0.2 M
tert-Butylbenzene	<0.014 mg/kg	TM116	<0.28 M
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116	<0.18 #
sec-Butylbenzene	<0.01 mg/kg	TM116	<0.2
4-Isopropyltoluene	<0.01 mg/kg	TM116	<0.2 M
1,3-Dichlorobenzene	<0.008 mg/kg	TM116	<0.16 M
1,4-Dichlorobenzene	<0.005 mg/kg	TM116	<0.1 M
n-Butylbenzene	<0.011 mg/kg	TM116	<0.22
1,2-Dichlorobenzene	<0.01 mg/kg	TM116	<0.2 M
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116	<0.28 M
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.2 #
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116	<0.4
Hexachlorobutadiene	<0.02 mg/kg	TM116	<0.4
Naphthalene	<0.013 mg/kg	TM116	<0.26 M
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116	<0.4 #
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116	<0.4

Validated

CERTIFICATE OF ANALYSIS

SDG:	210616-24	**Client Reference:**	784-B026948	**Report Number:**	603029
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

		Customer Sample Ref.	BH28
		Depth (m)	6.40 - 6.50
		Sample Type	Soil/Solid (S)
		Date Sampled	10/06/2021
		Sample Time	.
		Date Received	11/06/2021
		SDG Ref	210616-24
		Lab Sample No.(s)	24450885
		AGS Reference	ES12
Component	**LOD/Units**	**Method**	
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4
Sum of BTEX	<0.04 mg/kg	TM116	<0.8

CERTIFICATE OF ANALYSIS

SDG:	210616-24	**Client Reference:**	784-B026948	**Report Number:**	603029
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref.	BH28ES12	18.06.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	6.40 - 6.50										
Sample Type	SOLID										
Date Sampled	10/06/2021 00:00:00										
Date Receieved	11/06/2021 05:00:00										
SDG	210616-24										
Original Sample	24450885										
Method Number	TM048										

CERTIFICATE OF ANALYSIS

SDG:	210616-24	**Client Reference:**	784-B026948	**Report Number:**	603029
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.120	**Natural Moisture Content (%)**	33.1
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	75.1
Particle Size <4mm	>95%		

Case	
SDG	210616-24
Lab Sample Number(s)	24450885
Sampled Date	10-Jun-2021
Customer Sample Ref.	BH28 ES12
Depth (m)	6.40 - 6.50

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.00511	<0.0005	0.0511	<0.005	-	-	-
Boron	0.121	<0.01	1.21	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.517	<0.019	5.17	<0.19	-	-	-
Lead	0.000315	<0.0002	0.00315	<0.002	-	-	-
Nickel	0.00272	<0.0004	0.0272	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0386	<0.001	0.386	<0.01	-	-	-
Sulphide	0.0712	<0.01	0.712	<0.1	-	-	-

Leach Test Information

Date Prepared	17-Jun-2021
pH (pH Units)	7.66
Conductivity (µS/cm)	138.00
Temperature (°C)	18.30
Volume Leachant (Litres)	0.870

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210616-24	**Client Reference:**	784-B026948	**Report Number:**	603029
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24450885
Customer Sample Ref.	BH28
AGS Ref.	ES12
Depth	6.40 - 6.50
Type	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	22-Jun-2021
Ammoniacal Nitrogen	22-Jun-2021
Ammonium Soil by Titration	22-Jun-2021
Anions by Kone (soil)	22-Jun-2021
Asbestos ID in Solid Samples	18-Jun-2021
Boron Water Soluble	21-Jun-2021
CEN 10:1 Leachate (1 Stage)	17-Jun-2021
CEN Readings	18-Jun-2021
Cyanide Comp/Free/Total/Thiocyanate	23-Jun-2021
Dissolved Metals by ICP-MS	21-Jun-2021
EPH	19-Jun-2021
EPH by GCxGC-FID	18-Jun-2021
EPH CWG GC (S)	18-Jun-2021
GRO by GC-FID (S)	18-Jun-2021
Hexavalent Chromium (s)	22-Jun-2021
Hexavalent Chromium (w)	21-Jun-2021
Mercury Dissolved	21-Jun-2021
Metals in solid samples by OES	22-Jun-2021
Moisture at 105C	17-Jun-2021
PAH by GCMS	18-Jun-2021
pH	17-Jun-2021
pH Value of Filtered Water	21-Jun-2021
Phenols by HPLC (S)	18-Jun-2021
Sample description	16-Jun-2021
Semi Volatile Organic Compounds	18-Jun-2021
Sulphide	22-Jun-2021
Total Organic Carbon	22-Jun-2021
TPH CWG GC (S)	18-Jun-2021
VOC MS (S)	18-Jun-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2406
Ammoniacal Nitrogen as N	TM099	**98.8** 88.02 : 104.70

Ammonium Soil by Titration

Component	Method Code	QC 2448
Exchangeable Ammonium as NH4	TM024	**95.02** 74.04 : 103.44

Boron Water Soluble

Component	Method Code	QC 2461
Water Soluble Boron	TM222	**101.0** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2409	QC 2486
Free Cyanide	TM153	**90.5** 78.00 : 114.00	
Free Cyanide (W)	TM227		**82.75** 90.67 : 122.67
Thiocyanate	TM153	**97.44** 94.53 : 113.33	
Thiocyanate (W)	TM227		**112.0** 92.25 : 117.75
Total Cyanide	TM153	**94.41** 77.13 : 111.53	
Total Cyanide (W)	TM227		**106.25** 88.75 : 111.25

Dissolved Metals by ICP-MS

Component	Method Code	QC 2414
Aluminium	TM152	**101.0** 94.21 : 111.52
Antimony	TM152	**95.17** 88.37 : 130.57
Arsenic	TM152	**95.67** 92.62 : 113.52
Barium	TM152	**97.33** 88.62 : 113.14

CERTIFICATE OF ANALYSIS

SDG:	210616-24	**Client Reference:**	784-B026948	**Report Number:**	603029
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Dissolved Metals by ICP-MS

		QC 2414
Beryllium	TM152	**100.83** 87.08 : 111.38
Bismuth	TM152	**99.67** 92.62 : 115.02
Boron	TM152	**103.0** 86.31 : 120.88
Cadmium	TM152	**97.83** 93.85 : 111.65
Calcium	TM152	**103.33** 89.20 : 126.91
Chromium	TM152	**96.33** 92.50 : 113.03
Cobalt	TM152	**96.17** 85.01 : 114.87
Copper	TM152	**96.17** 89.87 : 119.73
Iron	TM152	**96.0** 93.02 : 113.86
Lead	TM152	**98.83** 91.11 : 116.98
Lithium	TM152	**102.17** 87.70 : 115.90
Magnesium	TM152	**104.67** 89.60 : 116.61
Manganese	TM152	**96.17** 93.97 : 112.46
Molybdenum	TM152	**91.33** 89.07 : 110.96
Nickel	TM152	**96.83** 93.70 : 112.15
Phosphorus	TM152	**94.17** 89.24 : 114.18
Potassium	TM152	**102.67** 93.20 : 115.55
Selenium	TM152	**98.83** 91.69 : 117.12
Silver	TM152	**94.33** 90.93 : 121.73
Sodium	TM152	**100.67** 92.42 : 113.24
Strontium	TM152	**97.33** 92.14 : 116.24
Tellurium	TM152	**94.0** 89.88 : 111.78
Thallium	TM152	**98.17** 82.43 : 113.83
Tin	TM152	**96.17** 94.62 : 107.79
Titanium	TM152	**99.83** 90.29 : 115.23
Tungsten	TM152	**97.33** 77.61 : 132.31
Uranium	TM152	**100.5** 86.97 : 115.76

Dissolved Metals by ICP-MS

		QC 2414
Vanadium	TM152	**97.67** 89.61 : 115.48
Zinc	TM152	**98.0** 87.51 : 116.26

GRO by GC-FID (S)

Component	Method Code	QC 2444
QC	TM089	**90.53** 70.34 : 111.95

Hexavalent Chromium (s)

Component	Method Code	QC 2408
Hexavalent Chromium	TM151	**110.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2493
Hexavalent Chromium	TM241	**99.0** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2485
Mercury Dissolved (CVAF)	TM183	**95.3** 0.00 : 0.00

Metals in solid samples by OES

Component	Method Code	QC 2447
Aluminium	TM181	**86.02** 73.56 : 108.85
Antimony	TM181	**93.5** 76.89 : 111.24
Arsenic	TM181	**95.93** 88.53 : 111.01
Barium	TM181	**93.58** 77.67 : 105.35
Beryllium	TM181	**97.01** 85.44 : 109.61

Metals in solid samples by OES

		QC 2447
Boron	TM181	**91.4** 73.51 : 104.66
Cadmium	TM181	**90.12** 77.67 : 104.12
Chromium	TM181	**88.84** 79.64 : 105.83
Cobalt	TM181	**95.28** 84.60 : 104.13
Copper	TM181	**95.95** 82.40 : 105.45
Iron	TM181	**91.27** 82.95 : 110.58
Lead	TM181	**93.02** 78.24 : 104.05
Manganese	TM181	**102.78** 94.29 : 119.51
Mercury	TM181	**88.16** 83.16 : 107.81
Molybdenum	TM181	**94.65** 87.11 : 106.87
Nickel	TM181	**89.98** 80.26 : 102.28
Phosphorus	TM181	**104.04** 94.56 : 124.28
Selenium	TM181	**97.65** 82.28 : 110.48
Strontium	TM181	**92.87** 79.13 : 102.79
Thallium	TM181	**99.12** 82.94 : 111.86
Tin	TM181	**97.34** 86.72 : 110.03
Titanium	TM181	**88.55** 66.23 : 102.06
Vanadium	TM181	**96.7** 86.19 : 109.45
Zinc	TM181	**97.54** 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2413
Acenaphthene	TM218	**88.0** 78.59 : 112.16
Acenaphthylene	TM218	**87.0** 75.11 : 109.01
Anthracene	TM218	**89.5** 73.99 : 113.85
Benz(a)anthracene	TM218	**99.0** 69.31 : 119.18
Benzo(a)pyrene	TM218	**92.5** 66.97 : 114.92
Benzo(b)fluoranthene	TM218	**93.5** 67.41 : 114.46

PAH by GCMS

		QC 2413
Benzo(ghi)perylene	TM218	**90.5** 62.92 : 114.36
Benzo(k)fluoranthene	TM218	**92.5** 69.98 : 116.49
Chrysene	TM218	**96.5** 69.86 : 114.50
Dibenzo(ah)anthracene	TM218	**91.0** 64.54 : 115.22
Fluoranthene	TM218	**91.5** 72.56 : 111.70
Fluorene	TM218	**90.0** 79.13 : 111.49
Indeno(123cd)pyrene	TM218	**92.5** 61.22 : 113.25
Naphthalene	TM218	**86.0** 77.96 : 110.91
Phenanthrene	TM218	**91.0** 76.83 : 113.25
Pyrene	TM218	**91.0** 72.45 : 110.77

pH

Component	Method Code	QC 2410
pH	TM133	**100.15** 98.09 : 101.62

pH Value of Filtered Water

Component	Method Code	QC 2423
pH	TM256	**100.8** 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2428
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**51.3** 70.71 : 116.42
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**43.27** 64.54 : 117.79
Cresols by HPLC (S)	TM062 (S)	**49.06** 74.40 : 108.98
Phenol by HPLC (S)	TM062 (S)	**52.32** 69.44 : 122.18
Xylenols by HPLC (S)	TM062 (S)	**50.21** 76.56 : 106.38

Semi Volatile Organic Compounds

Semi Volatile Organic Compounds

Component	Method Code	QC 2436
4-Bromophenylphenylether (Soil)	TM157	**91.0** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**90.5** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**93.0** 68.25 : 126.75
Naphthalene (Soil)	TM157	**93.0** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**92.0** 66.50 : 123.50
Phenol (Soil)	TM157	**95.5** 69.92 : 114.02

Sulphide

Component	Method Code	QC 2494
Sulphide	TM101	**104.0** 88.90 : 112.50

Total Organic Carbon

Component	Method Code	QC 2442
Total Organic Carbon	TM132	**101.17** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2478
1,1,1,2-tetrachloroethane	TM116	**112.4** 86.59 : 118.97
1,1,1-Trichloroethane	TM116	**102.0** 86.26 : 117.53
1,1,2-Trichloroethane	TM116	**98.0** 75.16 : 112.70
1,1-Dichloroethane	TM116	**106.6** 83.27 : 122.16
1,2-Dichloroethane	TM116	**110.0** 89.30 : 133.10
1,4-Dichlorobenzene	TM116	**115.8** 82.59 : 123.23
2-Chlorotoluene	TM116	**104.2** 66.81 : 118.43
4-Chlorotoluene	TM116	**108.6** 65.88 : 114.76
Benzene	TM116	**99.6** 93.16 : 123.63
Carbon Disulphide	TM116	**100.6** 75.11 : 124.81

VOC MS (S)

		QC 2478
Carbontetrachloride	TM116	**106.6** 82.35 : 126.46
Chlorobenzene	TM116	**109.2** 85.07 : 118.13
Chloroform	TM116	**110.0** 88.13 : 122.71
Chloromethane	TM116	**90.6** 61.62 : 145.66
Cis-1,2-Dichloroethene	TM116	**107.2** 88.41 : 121.33
Dibromomethane	TM116	**103.0** 77.47 : 121.29
Dichloromethane	TM116	**116.4** 87.89 : 134.72
Ethylbenzene	TM116	**99.2** 76.29 : 106.31
Hexachlorobutadiene	TM116	**86.8** 16.78 : 153.29
Isopropylbenzene	TM116	**94.4** 59.16 : 110.07
Naphthalene	TM116	**121.0** 79.29 : 125.59
o-Xylene	TM116	**93.0** 72.86 : 102.10
p/m-Xylene	TM116	**94.6** 68.99 : 102.40
Sec-Butylbenzene	TM116	**93.0** 44.71 : 117.87
Tetrachloroethene	TM116	**111.2** 77.82 : 125.00
Toluene	TM116	**93.6** 87.82 : 116.21
Trichloroethene	TM116	**100.2** 79.80 : 112.33
Trichlorofluoromethane	TM116	**110.0** 80.52 : 132.12
Vinyl Chloride	TM116	**102.2** 74.57 : 146.88

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	23 June 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210616-82
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	603035

We received 5 samples on Wednesday June 16, 2021 and 2 of these samples were scheduled for analysis which was completed on Wednesday June 23, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210616-82	**Client Reference:**	784-B026948	**Report Number:**	603035
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24454123	BH25	ES1	0.40	14/06/2021
24454134	BH25	ES2	1.00	14/06/2021
24454151	BH57	ES1	0.20	14/06/2021
24454161	BH57	ES2	0.70	14/06/2021
24454169	BH57	ES3	1.50	14/06/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	210616-82	**Client Reference:**	784-B026948	**Report Number:**	603035
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)						24454123						24454134
Customer Sample Reference						BH25						BH25
AGS Reference						ES1						ES2
Depth (m)						0.40						1.00
Container						1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type						S	S	S	S	S	S
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 1								X	
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1							X		
Ammonium Soil by Titration	All	NDPs: 0 Tests: 1								X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 1								X	
Anions by Kone (w)	All	NDPs: 0 Tests: 1				X					
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1							X		
Boron Water Soluble	All	NDPs: 0 Tests: 1								X	
CEN Readings	All	NDPs: 0 Tests: 2				X			X		
Coronene	All	NDPs: 0 Tests: 1					X				
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2							X	X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2				X			X		
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1				X					
EPH	All	NDPs: 0 Tests: 1								X	
EPH by GCxGC-FID	All	NDPs: 0 Tests: 2					X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 1								X	

CERTIFICATE OF ANALYSIS

SDG:	210616-82	**Client Reference:**	784-B026948	**Report Number:**	603035
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24454123				24454134					
Customer Sample Reference			BH25				BH25					
AGS Reference			ES1				ES2					
Depth (m)			0.40				1.00					
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)				
Sample Type			S	S	S	S	S	S				
Fluoride	All	NDPs: 0 Tests: 1	X									
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1						X				
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1					X					
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1				X						
Mercury Dissolved	All	NDPs: 0 Tests: 2	X			X						
Metals in solid samples by OES	All	NDPs: 0 Tests: 1					X					
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1		X								
PAH by GCMS	All	NDPs: 0 Tests: 2		X			X					
PCBs by GCMS	All	NDPs: 0 Tests: 1		X								
pH	All	NDPs: 0 Tests: 1					X					
pH Value of Filtered Water	All	NDPs: 0 Tests: 1				X						
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1					X					
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1	X									
Sample description	All	NDPs: 0 Tests: 2		X			X					
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1					X					

Validated

CERTIFICATE OF ANALYSIS

SDG:	210616-82	**Client Reference:**	784-B026948	**Report Number:**	603035
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			2445412 3				2445413 4					
Customer Sample Reference			BH25				BH25					
AGS Reference			ES1				ES2					
Depth (m)			0.40				1.00					
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)				
Sample Type			S	S	S	S	S	S				
Sulphide	All	NDPs: 0 Tests: 1				X						
Total Dissolved Solids	All	NDPs: 0 Tests: 1	X									
Total Organic Carbon	All	NDPs: 0 Tests: 2		X			X					
TPH CWG GC (S)	All	NDPs: 0 Tests: 1					X					
VOC MS (S)	All	NDPs: 0 Tests: 2			X			X				

CERTIFICATE OF ANALYSIS

SDG:	210616-82	**Client Reference:**	784-B026948	**Report Number:**	603035
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24454123	BH25	0.40	Cream	Stone/Soil	Stones	None
24454134	BH25	1.00	Light Brown	Sand	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210616-82	**Client Reference:**	784-B026948	**Report Number:**	603035
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH25	BH25				
			Depth (m)	0.40	1.00				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	14/06/2021	14/06/2021				
			Sample Time	.	.				
			Date Received	16/06/2021	16/06/2021				
			SDG Ref	210616-82	210616-82				
			Lab Sample No.(s)	24454123	24454134				
			AGS Reference	ES1	ES2				
Moisture Content Ratio (% of as received sample)	%	PM024		8.1	6.6				
Exchangeable Ammonia as N	<12 mg/kg	TM024			<12 M				
Phenol	<0.01 mg/kg	TM062 (S)			<0.01 M				
Cresols	<0.01 mg/kg	TM062 (S)			<0.01 M				
Xylenols	<0.015 mg/kg	TM062 (S)			<0.015 M				
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)			<0.035 M				
Organic Carbon, Total	<0.2 %	TM132		<0.2 #					
Soil Organic Matter (SOM)	<0.35 %	TM132			<0.35 #				
pH	1 pH Units	TM133			8.51 M				
Chromium, Hexavalent	<0.6 mg/kg	TM151			<0.6 #				
Cyanide, Total	<1 mg/kg	TM153			<1 M				
PCB congener 28	<0.003 mg/kg	TM168		<0.003 #					
PCB congener 52	<0.003 mg/kg	TM168		<0.003 #					
PCB congener 101	<0.003 mg/kg	TM168		<0.003 #					
PCB congener 118	<0.003 mg/kg	TM168		<0.003 #					
PCB congener 138	<0.003 mg/kg	TM168		<0.003 #					
PCB congener 153	<0.003 mg/kg	TM168		<0.003 #					
PCB congener 180	<0.003 mg/kg	TM168		<0.003 #					
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168		<0.021					
Arsenic	<0.6 mg/kg	TM181			4.21 M				
Cadmium	<0.02 mg/kg	TM181			0.446 M				
Chromium	<0.9 mg/kg	TM181			<0.9 M				
Copper	<1.4 mg/kg	TM181			4.15 M				
Iron	<1000 mg/kg	TM181			18200 #				
Lead	<0.7 mg/kg	TM181			7.7 M				
Mercury	<0.1 mg/kg	TM181			<0.1 M				
Nickel	<0.2 mg/kg	TM181			8.34 M				
Selenium	<1 mg/kg	TM181			<1 #				
Vanadium	<0.2 mg/kg	TM181			9.2 #				
Zinc	<1.9 mg/kg	TM181			37.5 M				
Boron, water soluble	<1 mg/kg	TM222			<1 M				
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243			0.0639 M				
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248			6.7				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210616-82	**Client Reference:**	784-B026948	**Report Number:**	603035
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH25	BH25				
			Depth (m)	0.40	1.00				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	14/06/2021	14/06/2021				
			Sample Time	.	.				
			Date Received	16/06/2021	16/06/2021				
			SDG Ref	210616-82	210616-82				
			Lab Sample No.(s)	24454123	24454134				
			AGS Reference	ES1	ES2				
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410		<10					
Coronene	<0.2 mg/kg	TM410		<0.2					
EPH (C5-C40)	<35 mg/kg	TM415			<35				
EPH Surrogate % recovery**	%	TM415		85.9	88.6				
EPH >C10-C40	<35 mg/kg	TM415			<35 M				
Mineral Oil >C10-C40	<5 mg/kg	TM415		<5					

Validated

CERTIFICATE OF ANALYSIS

SDG:	210616-82	**Client Reference:**	784-B026948	**Report Number:**	603035
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref. BH25
			Depth (m) 1.00
			Sample Type Soil/Solid (S)
			Date Sampled 14/06/2021
			Sample Time .
			Date Received 16/06/2021
			SDG Ref 210616-82
			Lab Sample No.(s) 24454134
			AGS Reference ES2
Naphthalene-d8 % recovery**	%	TM218	92.3
Acenaphthene-d10 % recovery**	%	TM218	86.9
Phenanthrene-d10 % recovery**	%	TM218	97.7
Chrysene-d12 % recovery**	%	TM218	103
Perylene-d12 % recovery**	%	TM218	96.7
Naphthalene	<0.009 mg/kg	TM218	<0.009 M
Acenaphthylene	<0.012 mg/kg	TM218	<0.012 M
Acenaphthene	<0.008 mg/kg	TM218	<0.008 M
Fluorene	<0.01 mg/kg	TM218	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218	<0.015 M
Anthracene	<0.016 mg/kg	TM218	<0.016 M
Fluoranthene	<0.017 mg/kg	TM218	<0.017 M
Pyrene	<0.015 mg/kg	TM218	<0.015 M
Benz(a)anthracene	<0.014 mg/kg	TM218	<0.014 M
Chrysene	<0.01 mg/kg	TM218	<0.01 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	<0.015 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	<0.014 M
Benzo(a)pyrene	<0.015 mg/kg	TM218	<0.015 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	<0.018 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	<0.023 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	<0.024 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	<0.118

CERTIFICATE OF ANALYSIS

SDG:	210616-82	**Client Reference:**	784-B026948	**Report Number:**	603035
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH25
Depth (m)	1.00
Sample Type	Soil/Solid (S)
Date Sampled	14/06/2021
Sample Time	.
Date Received	16/06/2021
SDG Ref	210616-82
Lab Sample No.(s)	24454134
AGS Reference	ES2

Component	LOD/Units	Method	
Phenol	<0.1 mg/kg	TM157	<0.1
Pentachlorophenol	<0.1 mg/kg	TM157	<0.1
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157	<0.1
Nitrobenzene	<0.1 mg/kg	TM157	<0.1
Isophorone	<0.1 mg/kg	TM157	<0.1
Hexachloroethane	<0.1 mg/kg	TM157	<0.1
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157	<0.1
Hexachlorobutadiene	<0.1 mg/kg	TM157	<0.1
Hexachlorobenzene	<0.1 mg/kg	TM157	<0.1
n-Dioctyl phthalate	<0.1 mg/kg	TM157	<0.1
Dimethyl phthalate	<0.1 mg/kg	TM157	<0.1
Diethyl phthalate	<0.1 mg/kg	TM157	<0.1
n-Dibutyl phthalate	<0.1 mg/kg	TM157	<0.1
Dibenzofuran	<0.1 mg/kg	TM157	<0.1
Carbazole	<0.1 mg/kg	TM157	<0.1
Butylbenzyl phthalate	<0.1 mg/kg	TM157	<0.1
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157	<0.1
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157	<0.1
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157	<0.1
Azobenzene	<0.1 mg/kg	TM157	<0.1
4-Nitrophenol	<0.1 mg/kg	TM157	<0.1
4-Nitroaniline	<0.1 mg/kg	TM157	<0.1
4-Methylphenol	<0.1 mg/kg	TM157	<0.1
4-Chlorophenylphenylether	<0.1 mg/kg	TM157	<0.1
4-Chloroaniline	<0.1 mg/kg	TM157	<0.1
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157	<0.1
4-Bromophenylphenylether	<0.1 mg/kg	TM157	<0.1
3-Nitroaniline	<0.1 mg/kg	TM157	<0.1
2-Nitrophenol	<0.1 mg/kg	TM157	<0.1
2-Nitroaniline	<0.1 mg/kg	TM157	<0.1
2-Methylphenol	<0.1 mg/kg	TM157	<0.1
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157	<0.1
2-Chlorophenol	<0.1 mg/kg	TM157	<0.1

CERTIFICATE OF ANALYSIS

SDG:	210616-82	**Client Reference:**	784-B026948	**Report Number:**	603035
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH25
			Depth (m)	1.00
			Sample Type	Soil/Solid (S)
			Date Sampled	14/06/2021
			Sample Time	.
			Date Received	16/06/2021
			SDG Ref	210616-82
			Lab Sample No.(s)	24454134
			AGS Reference	ES2
2,6-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1
2,4-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1
2,4-Dimethylphenol	<0.1 mg/kg	TM157		<0.1
2,4-Dichlorophenol	<0.1 mg/kg	TM157		<0.1
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157		<0.1
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157		<0.1
1,4-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1
1,3-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1
1,2-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1
2-Chloronaphthalene	<0.1 mg/kg	TM157		<0.1
2-Methylnaphthalene	<0.1 mg/kg	TM157		<0.1
Acenaphthylene	<0.1 mg/kg	TM157		<0.1
Acenaphthene	<0.1 mg/kg	TM157		<0.1
Anthracene	<0.1 mg/kg	TM157		<0.1
Benzo(a)anthracene	<0.1 mg/kg	TM157		<0.1
Benzo(b)fluoranthene	<0.1 mg/kg	TM157		<0.1
Benzo(k)fluoranthene	<0.1 mg/kg	TM157		<0.1
Benzo(a)pyrene	<0.1 mg/kg	TM157		<0.1
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157		<0.1
Chrysene	<0.1 mg/kg	TM157		<0.1
Fluoranthene	<0.1 mg/kg	TM157		<0.1
Fluorene	<0.1 mg/kg	TM157		<0.1
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157		<0.1
Phenanthrene	<0.1 mg/kg	TM157		<0.1
Pyrene	<0.1 mg/kg	TM157		<0.1
Naphthalene	<0.1 mg/kg	TM157		<0.1
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157		<0.1
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157		<0.1

Validated

CERTIFICATE OF ANALYSIS

SDG:	210616-82	**Client Reference:**	784-B026948	**Report Number:**	603035
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BH25	1.00	Soil/Solid (S)	14/06/2021	.	16/06/2021	210616-82	24454134	ES2
GRO Surrogate % recovery**	%	TM089	105								
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01								
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01								
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01								
Aliphatics >C10-C12	<1 mg/kg	TM414	<1 #								
Aliphatics >C12-C16	<1 mg/kg	TM414	<1 #								
Aliphatics >C16-C21	<1 mg/kg	TM414	<1 #								
Aliphatics >C21-C35	<1 mg/kg	TM414	<1 #								
Aliphatics >C35-C44	<1 mg/kg	TM414	<1								
Total Aliphatics >C10-C44	<5 mg/kg	TM414	<5								
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414	<10								
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01								
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01								
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	<0.01								
Aromatics > EC10-EC12	<1 mg/kg	TM414	<1 #								
Aromatics > EC12-EC16	<1 mg/kg	TM414	<1 #								
Aromatics > EC16-EC21	<1 mg/kg	TM414	<1 #								
Aromatics > EC21-EC35	<1 mg/kg	TM414	<1 #								
Aromatics >EC35-EC44	<1 mg/kg	TM414	<1								
Aromatics > EC40-EC44	<1 mg/kg	TM414	<1								
Total Aromatics > EC10-EC44	<5 mg/kg	TM414	<5								
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414	<10								
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089	<0.05								
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089	<0.05								
GRO >C5-C10	<0.02 mg/kg	TM089	<0.02								

CERTIFICATE OF ANALYSIS

SDG:	210616-82	**Client Reference:**	784-B026948	**Report Number:**	603035
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH25	BH25				
			Depth (m)	0.40	1.00				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	14/06/2021	14/06/2021				
			Sample Time	.	.				
			Date Received	16/06/2021	16/06/2021				
			SDG Ref	210616-82	210616-82				
			Lab Sample No.(s)	24454123	24454134				
			AGS Reference	ES1	ES2				
Dibromofluoromethane**	%	TM116		118	114				
Toluene-d8**	%	TM116		99	101				
4-Bromofluorobenzene**	%	TM116		100	101				
Dichlorodifluoromethane	<0.006 mg/kg	TM116			<0.12 M				
Chloromethane	<0.007 mg/kg	TM116			<0.14 #				
Vinyl Chloride	<0.006 mg/kg	TM116			<0.12 M				
Bromomethane	<0.01 mg/kg	TM116			<0.2 M				
Chloroethane	<0.01 mg/kg	TM116			<0.2 M				
Trichlorofluorormethane	<0.006 mg/kg	TM116			<0.12 M				
1,1-Dichloroethene	<0.01 mg/kg	TM116			<0.2 #				
Carbon Disulphide	<0.007 mg/kg	TM116			<0.14 M				
Dichloromethane	<0.01 mg/kg	TM116			<0.2 #				
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 #	<0.2 M				
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116			<0.2 M				
1,1-Dichloroethane	<0.008 mg/kg	TM116			<0.16 M				
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116			<0.12 M				
2,2-Dichloropropane	<0.01 mg/kg	TM116			<0.2				
Bromochloromethane	<0.01 mg/kg	TM116			<0.2 M				
Chloroform	<0.008 mg/kg	TM116			<0.16 M				
1,1,1-Trichloroethane	<0.007 mg/kg	TM116			<0.14 M				
1,1-Dichloropropene	<0.01 mg/kg	TM116			<0.2 M				
Carbontetrachloride	<0.01 mg/kg	TM116			<0.2 M				
1,2-Dichloroethane	<0.005 mg/kg	TM116			<0.1 M				
Benzene	<0.009 mg/kg	TM116		<0.18 #	<0.18 M				
Trichloroethene	<0.009 mg/kg	TM116			<0.18 #				
1,2-Dichloropropane	<0.01 mg/kg	TM116			<0.2 M				
Dibromomethane	<0.009 mg/kg	TM116			<0.18 M				
Bromodichloromethane	<0.007 mg/kg	TM116			<0.14 M				
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116			<0.2 M				
Toluene	<0.007 mg/kg	TM116		<0.14 #	<0.14 M				
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116			<0.2				
1,1,2-Trichloroethane	<0.01 mg/kg	TM116			<0.2 M				
1,3-Dichloropropane	<0.007 mg/kg	TM116			<0.14 M				

CERTIFICATE OF ANALYSIS

SDG:	210616-82	**Client Reference:**	784-B026948	**Report Number:**	603035
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH25	BH25				
			Depth (m)	0.40	1.00				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	14/06/2021	14/06/2021				
			Sample Time	.	.				
			Date Received	16/06/2021	16/06/2021				
			SDG Ref	210616-82	210616-82				
			Lab Sample No.(s)	24454123	24454134				
			AGS Reference	ES1	ES2				
Tetrachloroethene	<0.005 mg/kg	TM116			<0.1 M				
Dibromochloromethane	<0.01 mg/kg	TM116			<0.2 M				
1,2-Dibromoethane	<0.01 mg/kg	TM116			<0.2 M				
Chlorobenzene	<0.005 mg/kg	TM116			<0.1 M				
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116			<0.2 M				
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 #	<0.08 M				
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #				
o-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 M				
Styrene	<0.01 mg/kg	TM116			<0.2 #				
Bromoform	<0.01 mg/kg	TM116			<0.2 M				
Isopropylbenzene	<0.005 mg/kg	TM116			<0.1 #				
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116			<0.2 #				
1,2,3-Trichloropropane	<0.016 mg/kg	TM116			<0.32 M				
Bromobenzene	<0.01 mg/kg	TM116			<0.2 M				
Propylbenzene	<0.01 mg/kg	TM116			<0.2 M				
2-Chlorotoluene	<0.009 mg/kg	TM116			<0.18 M				
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116			<0.16 M				
4-Chlorotoluene	<0.01 mg/kg	TM116			<0.2 M				
tert-Butylbenzene	<0.014 mg/kg	TM116			<0.28 M				
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116			<0.18 #				
sec-Butylbenzene	<0.01 mg/kg	TM116			<0.2				
4-Isopropyltoluene	<0.01 mg/kg	TM116			<0.2 M				
1,3-Dichlorobenzene	<0.008 mg/kg	TM116			<0.16 M				
1,4-Dichlorobenzene	<0.005 mg/kg	TM116			<0.1 M				
n-Butylbenzene	<0.011 mg/kg	TM116			<0.22				
1,2-Dichlorobenzene	<0.01 mg/kg	TM116			<0.2 M				
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116			<0.28 M				
Tert-amyl methyl ether	<0.01 mg/kg	TM116			<0.2 #				
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116			<0.4				
Hexachlorobutadiene	<0.02 mg/kg	TM116			<0.4				
Naphthalene	<0.013 mg/kg	TM116			<0.26 M				
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116			<0.4 #				
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116			<0.4				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210616-82	**Client Reference:**	784-B026948	**Report Number:**	603035
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH25	BH25
			Depth (m)	0.40	1.00
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	14/06/2021	14/06/2021
			Sample Time	.	.
			Date Received	16/06/2021	16/06/2021
			SDG Ref	210616-82	210616-82
			Lab Sample No.(s)	24454123	24454134
			AGS Reference	ES1	ES2
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4	
Sum of BTEX	<0.04 mg/kg	TM116		<0.8	

CERTIFICATE OF ANALYSIS

SDG:	210616-82	**Client Reference:**	784-B026948	**Report Number:**	603035
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref.	BH25ES2	18.06.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	1.00										
Sample Type	SOLID										
Date Sampled	14/06/2021 00:00:00										
Date Receieved	16/06/2021 05:00:00										
SDG	210616-82										
Original Sample	24454134										
Method Number	TM048										

Validated

CERTIFICATE OF ANALYSIS

SDG:	210616-82	**Client Reference:**	784-B026948	**Report Number:**	603035
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.097	**Natural Moisture Content (%)**	7.24
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	93.3
Particle Size <4mm	>95%		

Case	
SDG	210616-82
Lab Sample Number(s)	24454123
Sampled Date	14-Jun-2021
Customer Sample Ref.	BH25 ES1
Depth (m)	0.40

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	-	-	-	-
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	-	-	-	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.000529	<0.0005	0.00529	<0.005	0.5	2	25
Barium	0.0927	<0.0002	0.927	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	<0.0003	<0.0003	<0.003	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	<0.0004	<0.0004	<0.004	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	0.00165	<0.001	0.0165	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	20.3	<2	203	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	2.5	<2	25	<20	1000	20000	50000
Total Dissolved Solids	110	<5	1100	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	17-Jun-2021
pH (pH Units)	9.77
Conductivity (µS/cm)	148.00
Temperature (°C)	20.20
Volume Leachant (Litres)	0.894

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation

23/06/2021 12:43:33

12:43:10 23/06/2021

CERTIFICATE OF ANALYSIS

SDG:	210616-82	**Client Reference:**	784-B026948	**Report Number:**	603035
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.093	**Natural Moisture Content (%)**	3.04
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	97
Particle Size <4mm	>95%		

Case	
SDG	210616-82
Lab Sample Number(s)	24454134
Sampled Date	14-Jun-2021
Customer Sample Ref.	BH25 ES2
Depth (m)	1.00

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.00106	<0.0005	0.0106	<0.005	-	-	-
Boron	<0.01	<0.01	<0.1	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00104	<0.0003	0.0104	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.294	<0.019	2.94	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	0.00095	<0.0004	0.0095	<0.004	-	-	-
Selenium	0.00183	<0.001	0.0183	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	<0.001	<0.001	<0.01	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	17-Jun-2021
pH (pH Units)	8.26
Conductivity (µS/cm)	127.00
Temperature (°C)	20.30
Volume Leachant (Litres)	0.897

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210616-82	**Client Reference:**	784-B026948	**Report Number:**	603035
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24454123	24454134
Customer Sample Ref.	BH25	BH25
AGS Ref.	ES1	ES2
Depth	0.40	1.00
Type	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract		22-Jun-2021
Ammoniacal Nitrogen		22-Jun-2021
Ammonium Soil by Titration		22-Jun-2021
Anions by Kone (soil)		22-Jun-2021
Anions by Kone (w)	21-Jun-2021	
Asbestos ID in Solid Samples		18-Jun-2021
Boron Water Soluble		21-Jun-2021
CEN 10:1 Leachate (1 Stage)	17-Jun-2021	17-Jun-2021
CEN Readings	18-Jun-2021	18-Jun-2021
Coronene	17-Jun-2021	
Cyanide Comp/Free/Total/Thiocyanate		22-Jun-2021
Dissolved Metals by ICP-MS	19-Jun-2021	19-Jun-2021
Dissolved Organic/Inorganic Carbon	23-Jun-2021	
EPH		18-Jun-2021
EPH by GCxGC-FID	18-Jun-2021	18-Jun-2021
EPH CWG GC (S)		18-Jun-2021
Fluoride	21-Jun-2021	
GRO by GC-FID (S)		17-Jun-2021
Hexavalent Chromium (s)		22-Jun-2021
Hexavalent Chromium (w)		21-Jun-2021
Mercury Dissolved	21-Jun-2021	21-Jun-2021
Metals in solid samples by OES		23-Jun-2021
Moisture at 105C	17-Jun-2021	17-Jun-2021
PAH 16 & 17 Calc	18-Jun-2021	
PAH by GCMS	18-Jun-2021	17-Jun-2021
PCBs by GCMS	18-Jun-2021	
pH		17-Jun-2021
pH Value of Filtered Water		18-Jun-2021
Phenols by HPLC (S)		18-Jun-2021
Phenols by HPLC (W)	22-Jun-2021	
Sample description	16-Jun-2021	16-Jun-2021
Semi Volatile Organic Compounds		17-Jun-2021
Sulphide		22-Jun-2021
Total Dissolved Solids	21-Jun-2021	
Total Organic Carbon	22-Jun-2021	23-Jun-2021
TPH CWG GC (S)		18-Jun-2021
VOC MS (S)	17-Jun-2021	17-Jun-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2406
Ammoniacal Nitrogen as N	TM099	**98.8** 88.02 : 104.70

Ammonium Soil by Titration

Component	Method Code	QC 2448
Exchangeable Ammonium as NH4	TM024	**95.02** 74.04 : 103.44

Anions by Kone (w)

Component	Method Code	QC 2440
Chloride	TM184	**102.0** 92.93 : 115.43
Sulphate (soluble)	TM184	**97.6** 90.53 : 113.03

Boron Water Soluble

Component	Method Code	QC 2461
Water Soluble Boron	TM222	**101.0** 84.00 : 111.00

Coronene

Component	Method Code	QC 2426
Coronene RAW	TM410	**81.5** 79.43 : 137.78

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2409	QC 2486
Free Cyanide	TM153	**90.5** 78.00 : 114.00	
Free Cyanide (W)	TM227		**82.75** 90.67 : 122.67
Thiocyanate	TM153	**97.44** 94.53 : 113.33	

Cyanide Comp/Free/Total/Thiocyanate

		QC 2409	QC 2486
Thiocyanate (W)	TM227		**112.0** 92.25 : 117.75
Total Cyanide	TM153	**94.41** 77.13 : 111.53	
Total Cyanide (W)	TM227		**106.25** 88.75 : 111.25

Dissolved Metals by ICP-MS

Component	Method Code	QC 2427
Aluminium	TM152	**100.67** 94.21 : 111.52
Antimony	TM152	**99.83** 88.37 : 130.57
Arsenic	TM152	**98.5** 92.62 : 113.52
Barium	TM152	**100.83** 88.62 : 113.14
Beryllium	TM152	**103.33** 87.08 : 111.38
Bismuth	TM152	**98.5** 92.62 : 115.02
Boron	TM152	**101.0** 86.31 : 120.88
Cadmium	TM152	**99.33** 93.85 : 111.65
Calcium	TM152	**105.33** 89.20 : 126.91
Chromium	TM152	**98.83** 92.50 : 113.03
Cobalt	TM152	**97.83** 85.01 : 114.87
Copper	TM152	**98.5** 89.87 : 119.73
Iron	TM152	**98.67** 93.02 : 113.86
Lead	TM152	**100.5** 91.11 : 116.98
Lithium	TM152	**101.0** 87.70 : 115.90
Magnesium	TM152	**108.0** 89.60 : 116.61
Manganese	TM152	**99.17** 93.97 : 112.46
Molybdenum	TM152	**94.83** 89.07 : 110.96
Nickel	TM152	**98.33** 93.70 : 112.15
Phosphorus	TM152	**100.67** 89.24 : 114.18
Potassium	TM152	**106.0** 93.20 : 115.55
Selenium	TM152	**97.0** 91.69 : 117.12

Dissolved Metals by ICP-MS

		QC 2427
Silver	TM152	**96.67** 90.93 : 121.73
Sodium	TM152	**107.33** 92.42 : 113.24
Strontium	TM152	**100.0** 92.14 : 116.24
Tellurium	TM152	**96.17** 89.88 : 111.78
Thallium	TM152	**99.33** 82.43 : 113.83
Tin	TM152	**98.33** 94.62 : 107.79
Titanium	TM152	**100.67** 90.29 : 115.23
Tungsten	TM152	**98.5** 77.61 : 132.31
Uranium	TM152	**98.33** 86.97 : 115.76
Vanadium	TM152	**101.83** 89.61 : 115.48
Zinc	TM152	**100.0** 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2498
Dissolved Inorganic Carbon	TM090	**100.33** 93.58 : 112.28
Dissolved Organic Carbon	TM090	**102.5** 96.13 : 109.53

Fluoride

Component	Method Code	QC 2498
Fluoride	TM104	**108.0** 96.67 : 108.67

GRO by GC-FID (S)

Component	Method Code	QC 2419
QC	TM089	**74.54** 70.34 : 111.95

Hexavalent Chromium (s)

Hexavalent Chromium (s)

Component	Method Code	QC 2408
Hexavalent Chromium	TM151	**110.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2484
Hexavalent Chromium	TM241	**99.2** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2477
Mercury Dissolved (CVAF)	TM183	**93.4** 0.00 : 0.00

Metals in solid samples by OES

Component	Method Code	QC 2439
Aluminium	TM181	**100.88** 73.56 : 108.85
Antimony	TM181	**94.31** 76.89 : 111.24
Arsenic	TM181	**98.84** 88.53 : 111.01
Barium	TM181	**98.17** 77.67 : 105.35
Beryllium	TM181	**98.88** 85.44 : 109.61
Boron	TM181	**93.41** 73.51 : 104.66
Cadmium	TM181	**95.47** 77.67 : 104.12
Chromium	TM181	**90.67** 79.64 : 105.83
Cobalt	TM181	**97.8** 84.60 : 104.13
Copper	TM181	**99.3** 82.40 : 105.45
Iron	TM181	**97.62** 82.95 : 110.58
Lead	TM181	**96.17** 78.24 : 104.05
Manganese	TM181	**108.33** 94.29 : 119.51

Metals in solid samples by OES

		QC 2439
Mercury	TM181	**90.34** 83.16 : 107.81
Molybdenum	TM181	**97.12** 87.11 : 106.87
Nickel	TM181	**92.42** 80.26 : 102.28
Phosphorus	TM181	**106.46** 94.56 : 124.28
Selenium	TM181	**99.61** 82.28 : 110.48
Strontium	TM181	**97.33** 79.13 : 102.79
Thallium	TM181	**92.48** 82.94 : 111.86
Tin	TM181	**98.86** 86.72 : 110.03
Titanium	TM181	**87.02** 66.23 : 102.06
Vanadium	TM181	**97.8** 86.19 : 109.45
Zinc	TM181	**99.38** 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2496	QC 2413
Acenaphthene	TM218	**90.5** 78.59 : 112.16	**88.0** 78.59 : 112.16
Acenaphthylene	TM218	**90.0** 75.11 : 109.01	**87.0** 75.11 : 109.01
Anthracene	TM218	**83.0** 73.99 : 113.85	**89.5** 73.99 : 113.85
Benz(a)anthracene	TM218	**89.0** 69.31 : 119.18	**99.0** 69.31 : 119.18
Benzo(a)pyrene	TM218	**87.5** 66.97 : 114.92	**92.5** 66.97 : 114.92
Benzo(b)fluoranthene	TM218	**87.5** 67.41 : 114.46	**93.5** 67.41 : 114.46
Benzo(ghi)perylene	TM218	**91.0** 62.92 : 114.36	**90.5** 62.92 : 114.36
Benzo(k)fluoranthene	TM218	**88.0** 69.98 : 116.49	**92.5** 69.98 : 116.49
Chrysene	TM218	**90.5** 69.86 : 114.50	**96.5** 69.86 : 114.50
Dibenzo(ah)anthracene	TM218	**88.0** 64.54 : 115.22	**91.0** 64.54 : 115.22
Fluoranthene	TM218	**87.0** 72.56 : 111.70	**91.5** 72.56 : 111.70
Fluorene	TM218	**89.5** 79.13 : 111.49	**90.0** 79.13 : 111.49
Indeno(123cd)pyrene	TM218	**89.0** 61.22 : 113.25	**92.5** 61.22 : 113.25
Naphthalene	TM218	**92.5** 77.96 : 110.91	**86.0** 77.96 : 110.91

PAH by GCMS

		QC 2496	QC 2413
Phenanthrene	TM218	**87.5** 76.83 : 113.25	**91.0** 76.83 : 113.25
Pyrene	TM218	**85.0** 72.45 : 110.77	**91.0** 72.45 : 110.77

PCBs by GCMS

Component	Method Code	QC 2434
PCB congener 101	TM168	**77.6** 65.66 : 110.06
PCB congener 105	TM168	**74.5** 58.10 : 106.34
PCB congener 114	TM168	**75.8** 59.38 : 106.48
PCB congener 118	TM168	**76.4** 60.02 : 106.23
PCB congener 123	TM168	**81.0** 65.01 : 99.81
PCB congener 126	TM168	**77.9** 59.31 : 109.23
PCB congener 138	TM168	**81.7** 63.95 : 107.63
PCB congener 153	TM168	**83.6** 62.65 : 108.85
PCB congener 156	TM168	**81.4** 61.69 : 112.27
PCB congener 157	TM168	**77.7** 55.37 : 104.81
PCB congener 167	TM168	**82.0** 65.58 : 109.14
PCB congener 169	TM168	**81.7** 56.84 : 112.10
PCB congener 180	TM168	**86.6** 66.99 : 111.63
PCB congener 189	TM168	**82.1** 57.75 : 112.59
PCB congener 28	TM168	**79.3** 73.68 : 105.96
PCB congener 52	TM168	**77.8** 67.24 : 107.62
PCB congener 77	TM168	**77.9** 64.87 : 108.49
PCB congener 81	TM168	**76.4** 70.78 : 110.80

pH

Component	Method Code	QC 2410
pH	TM133	**100.15** 98.09 : 101.62

pH Value of Filtered Water

Component	Method Code	QC 2481
pH	TM256	**100.27** 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2428
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**51.3** 70.71 : 116.42
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**43.27** 64.54 : 117.79
Cresols by HPLC (S)	TM062 (S)	**49.06** 74.40 : 108.98
Phenol by HPLC (S)	TM062 (S)	**52.32** 69.44 : 122.18
Xylenols by HPLC (S)	TM062 (S)	**50.21** 76.56 : 106.38

Phenols by HPLC (W)

Component	Method Code	QC 2432
2.3.5 Trimethyl-Phenol by HPLC (W)	TM259	**95.7** 76.00 : 124.00
2-Isopropyl Phenol by HPLC (W)	TM259	**89.87** 76.00 : 124.00
Cresols by HPLC (W)	TM259	**94.74** 76.00 : 124.00
Napthol by HPLC (W)	TM259	**99.61** 76.00 : 124.00
Phenol by HPLC (W)	TM259	**90.74** 76.00 : 124.00
Xylenols by HPLC (W)	TM259	**93.99** 76.00 : 124.00

Semi Volatile Organic Compounds

Component	Method Code	QC 2436
4-Bromophenylphenylether (Soil)	TM157	**91.0** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**90.5** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**93.0** 68.25 : 126.75
Naphthalene (Soil)	TM157	**93.0** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**92.0** 66.50 : 123.50
Phenol (Soil)	TM157	**95.5** 69.92 : 114.02

Sulphide

Sulphide

Component	Method Code	QC 2464
Sulphide	TM101	**106.67** 88.90 : 112.50

Total Dissolved Solids

Component	Method Code	QC 2431
Total Dissolved Solids	TM123	**100.0** 97.30 : 100.92

Total Organic Carbon

Component	Method Code	QC 2442	QC 2463
Total Organic Carbon	TM132	**101.17** 87.02 : 113.45	**103.13** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2478
1,1,1,2-tetrachloroethane	TM116	**112.4** 86.59 : 118.97
1,1,1-Trichloroethane	TM116	**102.0** 86.26 : 117.53
1,1,2-Trichloroethane	TM116	**98.0** 75.16 : 112.70
1,1-Dichloroethane	TM116	**106.6** 83.27 : 122.16
1,2-Dichloroethane	TM116	**110.0** 89.30 : 133.10
1,4-Dichlorobenzene	TM116	**115.8** 82.59 : 123.23
2-Chlorotoluene	TM116	**104.2** 66.81 : 118.43
4-Chlorotoluene	TM116	**108.6** 65.88 : 114.76
Benzene	TM116	**99.6** 93.16 : 123.63
Carbon Disulphide	TM116	**100.6** 75.11 : 124.81
Carbontetrachloride	TM116	**106.6** 82.35 : 126.46
Chlorobenzene	TM116	**109.2** 85.07 : 118.13
Chloroform	TM116	**110.0** 88.13 : 122.71

		QC 2478
Chloromethane	TM116	**90.6** 61.62 : 145.66
Cis-1,2-Dichloroethene	TM116	**107.2** 88.41 : 121.33
Dibromomethane	TM116	**103.0** 77.47 : 121.29
Dichloromethane	TM116	**116.4** 87.89 : 134.72
Ethylbenzene	TM116	**99.2** 76.29 : 106.31
Hexachlorobutadiene	TM116	**86.8** 16.78 : 153.29
Isopropylbenzene	TM116	**94.4** 59.16 : 110.07
Naphthalene	TM116	**121.0** 79.29 : 125.59
o-Xylene	TM116	**93.0** 72.86 : 102.10
p/m-Xylene	TM116	**94.6** 68.99 : 102.40
Sec-Butylbenzene	TM116	**93.0** 44.71 : 117.87
Tetrachloroethene	TM116	**111.2** 77.82 : 125.00
Toluene	TM116	**93.6** 87.82 : 116.21
Trichloroethene	TM116	**100.2** 79.80 : 112.33
Trichlorofluoromethane	TM116	**110.0** 80.52 : 132.12
Vinyl Chloride	TM116	**102.2** 74.57 : 146.88

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	25 June 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210618-41
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	603475

We received 2 samples on Thursday June 17, 2021 and 1 of these samples were scheduled for analysis which was completed on Friday June 25, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210618-41	**Client Reference:**	784-B026948	**Report Number:**	603475
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24468894	BH24	ES1	0.40	15/06/2021
24468902	BH24	ES4	1.00	15/06/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210618-41	**Client Reference:**	784-B026948	**Report Number:**	603475
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24468902			
Customer Sample Reference			BH24			
AGS Reference			ES4			
Depth (m)			1.00			
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	
Anions by Kone (w)	All	NDPs: 0 Tests: 1	X			
CEN Readings	All	NDPs: 0 Tests: 1	X			
Coronene	All	NDPs: 0 Tests: 1		X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1	X			
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1	X			
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1		X		
Fluoride	All	NDPs: 0 Tests: 1	X			
Mercury Dissolved	All	NDPs: 0 Tests: 1	X			
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1		X		
PAH by GCMS	All	NDPs: 0 Tests: 1		X		
PCBs by GCMS	All	NDPs: 0 Tests: 1		X		
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1	X			
Sample description	All	NDPs: 0 Tests: 1		X		
Total Dissolved Solids	All	NDPs: 0 Tests: 1	X			
Total Organic Carbon	All	NDPs: 0 Tests: 1		X		

Validated

CERTIFICATE OF ANALYSIS

SDG:	210618-41	**Client Reference:**	784-B026948	**Report Number:**	603475
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			2446902			
Customer Sample Reference			BH24			
AGS Reference			ES4			
Depth (m)			1.00			
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	
VOC MS (S)	All	NDPs: 0 Tests: 1			X	

CERTIFICATE OF ANALYSIS

SDG:	210618-41	**Client Reference:**	784-B026948	**Report Number:**	603475
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24468902	BH24	1.00	Dark Brown	Silty Sand	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210618-41	**Client Reference:**	784-B026948	**Report Number:**	603475
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.			BH24
Depth (m)			1.00
Sample Type			Soil/Solid (S)
Date Sampled			15/06/2021
Sample Time			.
Date Received			17/06/2021
SDG Ref			210618-41
Lab Sample No.(s)			24468902
AGS Reference			ES4
Component	**LOD/Units**	**Method**	
Moisture Content Ratio (% of as received sample)	%	PM024	4.1
Organic Carbon, Total	<0.2 %	TM132	<0.2 M
PCB congener 28	<0.003 mg/kg	TM168	<0.003 M
PCB congener 52	<0.003 mg/kg	TM168	<0.003 M
PCB congener 101	<0.003 mg/kg	TM168	<0.003 M
PCB congener 118	<0.003 mg/kg	TM168	<0.003 M
PCB congener 138	<0.003 mg/kg	TM168	<0.003 M
PCB congener 153	<0.003 mg/kg	TM168	<0.003 M
PCB congener 180	<0.003 mg/kg	TM168	<0.003 M
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168	<0.021
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10
Coronene	<0.2 mg/kg	TM410	<0.2
EPH Surrogate % recovery**	%	TM415	105
Mineral Oil >C10-C40	<5 mg/kg	TM415	<5

Validated

CERTIFICATE OF ANALYSIS

SDG:	210618-41	**Client Reference:**	784-B026948	**Report Number:**	603475
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH24
Depth (m)	1.00
Sample Type	Soil/Solid (S)
Date Sampled	15/06/2021
Sample Time	.
Date Received	17/06/2021
SDG Ref	210618-41
Lab Sample No.(s)	24468902
AGS Reference	ES4

Component	LOD/Units	Method	
Dibromofluoromethane**	%	TM116	107
Toluene-d8**	%	TM116	99.7
4-Bromofluorobenzene**	%	TM116	99.4
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.23 M
Benzene	<0.009 mg/kg	TM116	<0.18 M
Toluene	<0.007 mg/kg	TM116	<0.2 M
Ethylbenzene	<0.004 mg/kg	TM116	<0.08 M
p/m-Xylene	<0.01 mg/kg	TM116	<0.2 #
o-Xylene	<0.01 mg/kg	TM116	<0.2 M

Validated

CERTIFICATE OF ANALYSIS

SDG:	210618-41	**Client Reference:**	784-B026948	**Report Number:**	603475
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.097	**Natural Moisture Content (%)**	6.73
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	93.7
Particle Size <4mm	>95%		

Case	
SDG	210618-41
Lab Sample Number(s)	24468902
Sampled Date	15-Jun-2021
Customer Sample Ref.	BH24 ES4
Depth (m)	1.00

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	-	-	-	-
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	-	-	-	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.00139	<0.0005	0.0139	<0.005	0.5	2	25
Barium	0.151	<0.0002	1.51	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00603	<0.0003	0.0603	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.000497	<0.0004	0.00497	<0.004	0.4	10	40
Lead	0.000385	<0.0002	0.00385	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.00293	<0.001	0.0293	<0.01	4	50	200
Chloride	12.4	<2	124	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	85.2	<5	852	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	4.52	<3	45.2	<30	500	800	1000

Leach Test Information

Date Prepared	19-Jun-2021
pH (pH Units)	8.29
Conductivity (µS/cm)	110.00
Temperature (°C)	20.70
Volume Leachant (Litres)	0.894

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation

25/06/2021 16:26:55

16:26:41 25/06/2021

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210618-41	**Client Reference:**	784-B026948	**Report Number:**	603475
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24468902
Customer Sample Ref.	BH24
AGS Ref.	ES4
Depth	1.00
Type	Soil/Solid (S)
Anions by Kone (w)	23-Jun-2021
CEN 10:1 Leachate (1 Stage)	21-Jun-2021
CEN Readings	25-Jun-2021
Coronene	22-Jun-2021
Dissolved Metals by ICP-MS	24-Jun-2021
Dissolved Organic/Inorganic Carbon	25-Jun-2021
EPH by GCxGC-FID	22-Jun-2021
Fluoride	23-Jun-2021
Mercury Dissolved	23-Jun-2021
Moisture at 105C	19-Jun-2021
PAH 16 & 17 Calc	22-Jun-2021
PAH by GCMS	21-Jun-2021
PCBs by GCMS	23-Jun-2021
Phenols by HPLC (W)	24-Jun-2021
Sample description	18-Jun-2021
Total Dissolved Solids	23-Jun-2021
Total Organic Carbon	23-Jun-2021
VOC MS (S)	24-Jun-2021

ASSOCIATED AQC DATA

Anions by Kone (w)

Component	Method Code	QC 2463
Chloride	TM184	**101.0** 91.40 : 109.10
Sulphate (soluble)	TM184	**102.8** 91.99 : 109.30

Coronene

Component	Method Code	QC 2482
Coronene RAW	TM410	**107.0** 79.43 : 137.78

Dissolved Metals by ICP-MS

Component	Method Code	QC 2463	QC 2467
Aluminium	TM152	**103.67** 94.21 : 111.52	**101.67** 94.21 : 111.52
Antimony	TM152	**106.83** 88.37 : 130.57	**105.17** 88.37 : 130.57
Arsenic	TM152	**101.67** 92.62 : 113.52	**101.67** 92.62 : 113.52
Barium	TM152	**102.5** 88.62 : 113.14	**98.67** 88.62 : 113.14
Beryllium	TM152	**108.17** 87.08 : 111.38	**101.0** 87.08 : 111.38
Bismuth	TM152	**101.83** 92.62 : 115.02	**97.5** 92.62 : 115.02
Boron	TM152	**105.33** 86.31 : 120.88	**103.0** 86.31 : 120.88
Cadmium	TM152	**103.33** 93.85 : 111.65	**100.83** 93.85 : 111.65
Calcium	TM152	**102.0** 89.20 : 126.91	**100.67** 89.20 : 126.91
Chromium	TM152	**98.0** 92.50 : 113.03	**102.33** 92.50 : 113.03
Cobalt	TM152	**96.0** 85.01 : 114.87	**102.0** 85.01 : 114.87
Copper	TM152	**97.33** 89.87 : 119.73	**102.33** 89.87 : 119.73
Iron	TM152	**98.67** 93.02 : 113.86	**102.67** 93.02 : 113.86
Lead	TM152	**101.17** 91.11 : 116.98	**97.67** 91.11 : 116.98
Lithium	TM152	**105.33** 87.70 : 115.90	**101.67** 87.70 : 115.90
Magnesium	TM152	**96.67** 89.60 : 116.61	**100.0** 89.60 : 116.61
Manganese	TM152	**99.5** 93.97 : 112.46	**102.5** 93.97 : 112.46

CERTIFICATE OF ANALYSIS

SDG:	210618-41	**Client Reference:**	784-B026948	**Report Number:**	603475
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Dissolved Metals by ICP-MS

		QC 2463	QC 2467
Molybdenum	TM152	**95.83** 89.07 : 110.96	**99.83** 89.07 : 110.96
Nickel	TM152	**96.67** 93.70 : 112.15	**103.83** 93.70 : 112.15
Phosphorus	TM152	**103.17** 89.24 : 114.18	**102.67** 89.24 : 114.18
Potassium	TM152	**100.67** 93.20 : 115.55	**100.0** 93.20 : 115.55
Selenium	TM152	**104.33** 91.69 : 117.12	**102.17** 91.69 : 117.12
Silver	TM152	**98.0** 90.93 : 121.73	**98.33** 90.93 : 121.73
Sodium	TM152	**96.67** 92.42 : 113.24	**99.33** 92.42 : 113.24
Strontium	TM152	**104.67** 92.14 : 116.24	**102.33** 92.14 : 116.24
Tellurium	TM152	**102.5** 89.88 : 111.78	**97.5** 89.88 : 111.78
Thallium	TM152	**99.0** 82.43 : 113.83	**93.67** 82.43 : 113.83
Tin	TM152	**101.83** 94.62 : 107.79	**99.17** 94.62 : 107.79
Titanium	TM152	**105.83** 90.29 : 115.23	**101.83** 90.29 : 115.23
Tungsten	TM152	**98.17** 77.61 : 132.31	**97.0** 77.61 : 132.31
Uranium	TM152	**101.0** 86.97 : 115.76	**95.67** 86.97 : 115.76
Vanadium	TM152	**104.17** 89.61 : 115.48	**97.33** 89.61 : 115.48
Zinc	TM152	**100.33** 87.51 : 116.26	**103.0** 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2408
Dissolved Inorganic Carbon	TM090	**98.67** 93.58 : 112.28
Dissolved Organic Carbon	TM090	**101.0** 96.13 : 109.53

Fluoride

Component	Method Code	QC 2417
Fluoride	TM104	**106.0** 96.67 : 108.67

Mercury Dissolved

Mercury Dissolved

Component	Method Code	QC 2475
Mercury Dissolved (CVAF)	TM183	**101.0** 0.00 : 0.00

PAH by GCMS

Component	Method Code	QC 2481
Acenaphthene	TM218	**88.0** 78.59 : 112.16
Acenaphthylene	TM218	**86.5** 75.11 : 109.01
Anthracene	TM218	**84.5** 73.99 : 113.85
Benz(a)anthracene	TM218	**88.5** 69.31 : 119.18
Benzo(a)pyrene	TM218	**82.5** 66.97 : 114.92
Benzo(b)fluoranthene	TM218	**84.5** 67.41 : 114.46
Benzo(ghi)perylene	TM218	**79.5** 62.92 : 114.36
Benzo(k)fluoranthene	TM218	**85.5** 69.98 : 116.49
Chrysene	TM218	**82.0** 69.86 : 114.50
Dibenzo(ah)anthracene	TM218	**84.0** 64.54 : 115.22
Fluoranthene	TM218	**83.5** 72.56 : 111.70
Fluorene	TM218	**88.0** 79.13 : 111.49
Indeno(123cd)pyrene	TM218	**82.5** 61.22 : 113.25
Naphthalene	TM218	**89.5** 77.96 : 110.91
Phenanthrene	TM218	**85.5** 76.83 : 113.25
Pyrene	TM218	**83.0** 72.45 : 110.77

PCBs by GCMS

Component	Method Code	QC 2485
PCB congener 101	TM168	**85.2** 65.66 : 110.06
PCB congener 105	TM168	**83.8** 58.10 : 106.34
PCB congener 114	TM168	**83.6** 59.38 : 106.48
PCB congener 118	TM168	**83.7** 60.02 : 106.23
PCB congener 123	TM168	**88.8** 65.01 : 99.81

PCBs by GCMS

		QC 2485
PCB congener 126	TM168	**84.2** 59.31 : 109.23
PCB congener 138	TM168	**86.0** 63.95 : 107.63
PCB congener 153	TM168	**90.1** 62.65 : 108.85
PCB congener 156	TM168	**83.0** 61.69 : 112.27
PCB congener 157	TM168	**80.7** 55.37 : 104.81
PCB congener 167	TM168	**83.4** 65.58 : 109.14
PCB congener 169	TM168	**83.2** 56.84 : 112.10
PCB congener 180	TM168	**86.4** 66.99 : 111.63
PCB congener 189	TM168	**81.1** 57.75 : 112.59
PCB congener 28	TM168	**90.7** 73.68 : 105.96
PCB congener 52	TM168	**88.4** 67.24 : 107.62
PCB congener 77	TM168	**89.0** 64.87 : 108.49
PCB congener 81	TM168	**85.4** 70.78 : 110.80

Phenols by HPLC (W)

Component	Method Code	QC 2455
2.3.5 Trimethyl-Phenol by HPLC (W)	TM259	**95.7** 77.41 : 127.55
2-Isopropyl Phenol by HPLC (W)	TM259	**89.87** 82.77 : 126.51
Cresols by HPLC (W)	TM259	**96.05** 76.60 : 126.28
Napthol by HPLC (W)	TM259	**95.7** 75.40 : 129.40
Phenol by HPLC (W)	TM259	**92.63** 85.77 : 125.91
Xylenols by HPLC (W)	TM259	**93.99** 79.09 : 131.82

Total Dissolved Solids

Component	Method Code	QC 2497
Total Dissolved Solids	TM123	**100.0** 97.30 : 100.92

Total Organic Carbon

Total Organic Carbon

Component	Method Code	QC 2410
Total Organic Carbon	TM132	**105.47** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2408
1,1,1,2-tetrachloroethane	TM116	**105.4** 86.59 : 118.97
1,1,1-Trichloroethane	TM116	**103.2** 86.26 : 117.53
1,1,2-Trichloroethane	TM116	**99.4** 75.16 : 112.70
1,1-Dichloroethane	TM116	**112.6** 83.27 : 122.16
1,2-Dichloroethane	TM116	**116.0** 89.30 : 133.10
1,4-Dichlorobenzene	TM116	**94.6** 82.59 : 123.23
2-Chlorotoluene	TM116	**88.4** 66.81 : 118.43
4-Chlorotoluene	TM116	**86.4** 65.88 : 114.76
Benzene	TM116	**102.8** 93.16 : 123.63
Carbon Disulphide	TM116	**101.6** 75.11 : 124.81
Carbontetrachloride	TM116	**107.8** 82.35 : 126.46
Chlorobenzene	TM116	**100.4** 85.07 : 118.13
Chloroform	TM116	**112.4** 88.13 : 122.71
Chloromethane	TM116	**104.6** 61.62 : 145.66
Cis-1,2-Dichloroethene	TM116	**106.4** 88.41 : 121.33
Dibromomethane	TM116	**103.0** 77.47 : 121.29
Dichloromethane	TM116	**119.0** 87.89 : 134.72
Ethylbenzene	TM116	**90.2** 76.29 : 106.31
Hexachlorobutadiene	TM116	**58.2** 16.78 : 153.29
Isopropylbenzene	TM116	**78.8** 59.16 : 110.07
Naphthalene	TM116	**101.8** 79.29 : 125.59
o-Xylene	TM116	**77.4** 72.86 : 102.10

		QC 2408
p/m-Xylene	TM116	**83.0** 68.99 : 102.40
Sec-Butylbenzene	TM116	**70.6** 44.71 : 117.87
Tetrachloroethene	TM116	**104.8** 77.82 : 125.00
Toluene	TM116	**92.2** 87.82 : 116.21
Trichloroethene	TM116	**99.4** 79.80 : 112.33
Trichlorofluoromethane	TM116	**112.4** 80.52 : 132.12
Vinyl Chloride	TM116	**108.2** 74.57 : 146.88

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	28 June 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210618-42
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	603599

We received 18 samples on Wednesday June 16, 2021 and 2 of these samples were scheduled for analysis which was completed on Monday June 28, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

So

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210618-42	**Client Reference:**	784-B026948	**Report Number:**	603599
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24468962	BH06		9.30 - 9.45	
24468964	BH25	ES7	1.30 - 1.40	15/06/2021
24469030	BH25	ES9	2.50 - 2.60	15/06/2021
24469038	BH25	ES11	3.30 - 3.40	15/06/2021
24469051	BH25	ES14	4.40 - 4.50	15/06/2021
24469060	BH25	ES17	5.50 - 5.60	15/06/2021
24469067	BH25	ES20	6.20 - 6.30	15/06/2021
24469076	BH25	ES23	6.70 - 6.80	15/06/2021
24469084	BH25	ES25	7.50 - 7.60	15/06/2021
24469093	BH25	ES27	8.50 - 8.60	15/06/2021
24468974	BH26	ES8	1.60 - 1.70	14/06/2021
24468980	BH26	ES11	2.30 - 2.40	14/06/2021
24468984	BH26	ES13	3.30 - 3.40	14/06/2021
24468992	BH26	ES14	3.60 - 3.70	14/06/2021
24468997	BH26	ES17	4.60 - 4.70	14/06/2021
24469004	BH26	ES18	5.20 - 5.30	14/06/2021
24469011	BH26	ES20	5.60 - 5.70	14/06/2021
24469020	BH26	ES24	6.40 - 6.50	14/06/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	210618-42	**Client Reference:**	784-B026948	**Report Number:**	603599
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24469067				24468997				
Customer Sample Reference			BH25				BH26				
AGS Reference			ES20				ES17				
Depth (m)			6.20 - 6.30				4.60 - 4.70				
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)			
Sample Type			S	S	S	S	S	S			
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 2		X			X				
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 2	X			X					
Ammonium Soil by Titration	All	NDPs: 0 Tests: 2		X			X				
Anions by Kone (soil)	All	NDPs: 0 Tests: 2		X			X				
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2	X			X					
Boron Water Soluble	All	NDPs: 0 Tests: 2		X			X				
CEN Readings	All	NDPs: 0 Tests: 2	X			X					
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 4	X	X		X	X				
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2	X			X					
EPH	All	NDPs: 0 Tests: 2		X			X				
EPH by GCxGC-FID	All	NDPs: 0 Tests: 2		X			X				
EPH CWG GC (S)	All	NDPs: 0 Tests: 2		X			X				
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2			X			X			
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2		X			X				
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 2	X			X					

Validated

CERTIFICATE OF ANALYSIS

SDG:	210618-42	**Client Reference:**	784-B026948	**Report Number:**	603599
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			2446906				2446899				
Customer Sample Reference			BH25				BH26				
AGS Reference			ES20				ES17				
Depth (m)			6.20 - 6.30				4.60 - 4.70				
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)			
Sample Type			S	S	S	S	S	S			
Mercury Dissolved	All	NDPs: 0 Tests: 2	X			X					
Metals in solid samples by OES	All	NDPs: 0 Tests: 2		X			X				
PAH by GCMS	All	NDPs: 0 Tests: 2		X			X				
pH	All	NDPs: 0 Tests: 2		X			X				
pH Value of Filtered Water	All	NDPs: 0 Tests: 2	X			X					
Phenols by HPLC (S)	All	NDPs: 0 Tests: 2		X			X				
Sample description	All	NDPs: 0 Tests: 2		X			X				
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 2		X			X				
Sulphide	All	NDPs: 0 Tests: 2	X			X					
Total Organic Carbon	All	NDPs: 0 Tests: 2		X			X				
TPH CWG GC (S)	All	NDPs: 0 Tests: 2		X			X				
VOC MS (S)	All	NDPs: 0 Tests: 2			X			X			

CERTIFICATE OF ANALYSIS

SDG:	210618-42	**Client Reference:**	784-B026948	**Report Number:**	603599
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24469067	BH25	6.20 - 6.30	Dark Brown	Sandy Clay Loam	None	None
24468997	BH26	4.60 - 4.70	Dark Brown	Silty Clay Loam	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210618-42	**Client Reference:**	784-B026948	**Report Number:**	603599
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH25	BH26				
			Depth (m)	6.20 - 6.30	4.60 - 4.70				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	15/06/2021	14/06/2021				
			Sample Time	.	.				
			Date Received	16/06/2021	16/06/2021				
			SDG Ref	210618-42	210618-42				
			Lab Sample No.(s)	24469067	24468997				
			AGS Reference	ES20	ES17				
Moisture Content Ratio (% of as received sample)	%	PM024		17	21				
Exchangeable Ammonia as N	<12 mg/kg	TM024		<12 M	<12 M				
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 M	<0.01 M				
Cresols	<0.01 mg/kg	TM062 (S)		<0.01 M	0.0254 M				
Xylenols	<0.015 mg/kg	TM062 (S)		<0.015 M	<0.015 M				
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 M	<0.035 M				
Soil Organic Matter (SOM)	<0.35 %	TM132		0.874 #	1.03 #				
pH	1 pH Units	TM133		7.35 M	7.56 M				
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #				
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M				
Arsenic	<0.6 mg/kg	TM181		12.5 M	11.1 M				
Cadmium	<0.02 mg/kg	TM181		2.98 M	1.36 M				
Chromium	<0.9 mg/kg	TM181		16 M	24.2 M				
Copper	<1.4 mg/kg	TM181		21.5 M	17.3 M				
Iron	<1000 mg/kg	TM181		28600 #	28700 #				
Lead	<0.7 mg/kg	TM181		54.9 M	69.2 M				
Mercury	<0.1 mg/kg	TM181		<0.1 M	<0.1 M				
Nickel	<0.2 mg/kg	TM181		33.9 M	28.2 M				
Selenium	<1 mg/kg	TM181		<1 #	<1 #				
Vanadium	<0.2 mg/kg	TM181		34.9 #	40.2 #				
Zinc	<1.9 mg/kg	TM181		217 M	189 M				
Boron, water soluble	<1 mg/kg	TM222		<1 M	<1 M				
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.061 M	0.063 M				
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248		<0.5	0.898				
EPH (C5-C40)	<35 mg/kg	TM415		<35	<35				
EPH Surrogate % recovery**	%	TM415		98.7	89.6				
EPH >C10-C40	<35 mg/kg	TM415		<35 M	<35 M				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210618-42	**Client Reference:**	784-B026948	**Report Number:**	603599
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH25	BH26
			Depth (m)	6.20 - 6.30	4.60 - 4.70
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	15/06/2021	14/06/2021
			Sample Time	.	.
			Date Received	16/06/2021	16/06/2021
			SDG Ref	210618-42	210618-42
			Lab Sample No.(s)	24469067	24468997
			AGS Reference	ES20	ES17
Naphthalene-d8 % recovery**	%	TM218		86.4	80
Acenaphthene-d10 % recovery**	%	TM218		76.9	74.4
Phenanthrene-d10 % recovery**	%	TM218		86.3	86
Chrysene-d12 % recovery**	%	TM218		87.6	85.1
Perylene-d12 % recovery**	%	TM218		86.3	85.1
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	<0.009 M
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 M	<0.012 M
Acenaphthene	<0.008 mg/kg	TM218		<0.008 M	<0.008 M
Fluorene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M
Anthracene	<0.016 mg/kg	TM218		<0.016 M	<0.016 M
Fluoranthene	<0.017 mg/kg	TM218		<0.017 M	<0.017 M
Pyrene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M
Benz(a)anthracene	<0.014 mg/kg	TM218		<0.014 M	<0.014 M
Chrysene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		<0.014 M	<0.014 M
Benzo(a)pyrene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		<0.018 M	<0.018 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	<0.023 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		<0.024 M	<0.024 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		<0.118	<0.118

CERTIFICATE OF ANALYSIS

SDG:	210618-42	**Client Reference:**	784-B026948	**Report Number:**	603599
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH25	BH26				
			Depth (m)	6.20 - 6.30	4.60 - 4.70				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	15/06/2021	14/06/2021				
			Sample Time	.	.				
			Date Received	16/06/2021	16/06/2021				
			SDG Ref	210618-42	210618-42				
			Lab Sample No.(s)	24469067	24468997				
			AGS Reference	ES20	ES17				
Phenol	<0.1 mg/kg	TM157		<0.1	<0.1				
Pentachlorophenol	<0.1 mg/kg	TM157		<0.5	<0.5				
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157		<0.1	<0.1				
Nitrobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
Isophorone	<0.1 mg/kg	TM157		<0.1	<0.1				
Hexachloroethane	<0.1 mg/kg	TM157		<0.1	<0.1				
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157		<0.1	<0.1				
Hexachlorobutadiene	<0.1 mg/kg	TM157		<0.1	<0.1				
Hexachlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
n-Dioctyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1				
Dimethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1				
Diethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1				
n-Dibutyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1				
Dibenzofuran	<0.1 mg/kg	TM157		<0.1	<0.1				
Carbazole	<0.1 mg/kg	TM157		<0.1	<0.1				
Butylbenzyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1				
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157		<0.1	<0.1				
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157		<0.1	<0.1				
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157		<0.1	<0.1				
Azobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
4-Nitrophenol	<0.1 mg/kg	TM157		<0.5	<0.5				
4-Nitroaniline	<0.1 mg/kg	TM157		<0.5	<0.5				
4-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1				
4-Chlorophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.1				
4-Chloroaniline	<0.1 mg/kg	TM157		<0.1	<0.1				
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1				
4-Bromophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.1				
3-Nitroaniline	<0.1 mg/kg	TM157		<0.5	<0.5				
2-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
2-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1				
2-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1				
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
2-Chlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1				

CERTIFICATE OF ANALYSIS

SDG:	210618-42	**Client Reference:**	784-B026948	**Report Number:**	603599
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH25	BH26				
			Depth (m)	6.20 - 6.30	4.60 - 4.70				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	15/06/2021	14/06/2021				
			Sample Time	.	.				
			Date Received	16/06/2021	16/06/2021				
			SDG Ref	210618-42	210618-42				
			Lab Sample No.(s)	24469067	24468997				
			AGS Reference	ES20	ES17				
2,6-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1				
2,4-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1				
2,4-Dimethylphenol	<0.1 mg/kg	TM157		<0.1	<0.1				
2,4-Dichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
1,4-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
1,3-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
1,2-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
2-Chloronaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1				
2-Methylnaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1				
Acenaphthylene	<0.1 mg/kg	TM157		<0.1	<0.1				
Acenaphthene	<0.1 mg/kg	TM157		<0.1	<0.1				
Anthracene	<0.1 mg/kg	TM157		<0.1	<0.1				
Benzo(a)anthracene	<0.1 mg/kg	TM157		<0.1	<0.1				
Benzo(b)fluoranthene	<0.1 mg/kg	TM157		<0.1	<0.1				
Benzo(k)fluoranthene	<0.1 mg/kg	TM157		<0.1	<0.1				
Benzo(a)pyrene	<0.1 mg/kg	TM157		<0.1	<0.1				
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157		<0.1	<0.1				
Chrysene	<0.1 mg/kg	TM157		<0.1	<0.1				
Fluoranthene	<0.1 mg/kg	TM157		<0.1	<0.1				
Fluorene	<0.1 mg/kg	TM157		<0.1	<0.1				
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157		<0.1	<0.1				
Phenanthrene	<0.1 mg/kg	TM157		<0.1	<0.1				
Pyrene	<0.1 mg/kg	TM157		<0.1	<0.1				
Naphthalene	<0.1 mg/kg	TM157		<0.1	<0.1				
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157		<0.1	<0.1				
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157		<0.1	<0.1				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210618-42	**Client Reference:**	784-B026948	**Report Number:**	603599
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH25	BH26				
			Depth (m)	6.20 - 6.30	4.60 - 4.70				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	15/06/2021	14/06/2021				
			Sample Time	.	.				
			Date Received	16/06/2021	16/06/2021				
			SDG Ref	210618-42	210618-42				
			Lab Sample No.(s)	24469067	24468997				
			AGS Reference	ES20	ES17				
GRO Surrogate % recovery**	%	TM089		97.2	94.7				
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	<0.01				
Aliphatics >C10-C12	<1 mg/kg	TM414		<1 #	<1 #				
Aliphatics >C12-C16	<1 mg/kg	TM414		<1 #	<1 #				
Aliphatics >C16-C21	<1 mg/kg	TM414		<1 #	<1 #				
Aliphatics >C21-C35	<1 mg/kg	TM414		<1 #	1.43 #				
Aliphatics >C35-C44	<1 mg/kg	TM414		<1	<1				
Total Aliphatics >C10-C44	<5 mg/kg	TM414		<5	<5				
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		<10	<10				
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01				
Aromatics > EC10-EC12	<1 mg/kg	TM414		<1 #	<1 #				
Aromatics > EC12-EC16	<1 mg/kg	TM414		<1 #	<1 #				
Aromatics > EC16-EC21	<1 mg/kg	TM414		<1 #	<1 #				
Aromatics > EC21-EC35	<1 mg/kg	TM414		1.03 #	<1 #				
Aromatics >EC35-EC44	<1 mg/kg	TM414		<1	<1				
Aromatics > EC40-EC44	<1 mg/kg	TM414		<1	<1				
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		<5	<5				
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		<10	<10				
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		<0.05	<0.05				
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		<0.05	<0.05				
GRO >C5-C10	<0.02 mg/kg	TM089		<0.02	<0.02				

CERTIFICATE OF ANALYSIS

SDG:	210618-42	**Client Reference:**	784-B026948	**Report Number:**	603599
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH25	BH26
			Depth (m)	6.20 - 6.30	4.60 - 4.70
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	15/06/2021	14/06/2021
			Sample Time	.	.
			Date Received	16/06/2021	16/06/2021
			SDG Ref	210618-42	210618-42
			Lab Sample No.(s)	24469067	24468997
			AGS Reference	ES20	ES17
Dibromofluoromethane**	%	TM116		108	105
Toluene-d8**	%	TM116		99.7	102
4-Bromofluorobenzene**	%	TM116		98.3	96.8
Dichlorodifluoromethane	<0.006 mg/kg	TM116		<0.12 M	<0.12 M
Chloromethane	<0.007 mg/kg	TM116		<0.14 #	<0.14 #
Vinyl Chloride	<0.006 mg/kg	TM116		<0.12 M	<0.12 @ M
Bromomethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
Chloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
Trichlorofluorormethane	<0.006 mg/kg	TM116		<0.12 M	<0.12 M
1,1-Dichloroethene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #
Carbon Disulphide	<0.007 mg/kg	TM116		<0.14 M	<0.14 M
Dichloromethane	<0.01 mg/kg	TM116		<0.2 #	0.299 #
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
1,1-Dichloroethane	<0.008 mg/kg	TM116		<0.16 M	<0.16 M
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116		<0.12 M	<0.12 M
2,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2	<0.2
Bromochloromethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
Chloroform	<0.008 mg/kg	TM116		<0.16 M	<0.16 M
1,1,1-Trichloroethane	<0.007 mg/kg	TM116		<0.14 M	<0.14 M
1,1-Dichloropropene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
Carbontetrachloride	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
1,2-Dichloroethane	<0.005 mg/kg	TM116		<0.1 M	<0.1 M
Benzene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M
Trichloroethene	<0.009 mg/kg	TM116		<0.18 #	<0.18 #
1,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
Dibromomethane	<0.009 mg/kg	TM116		<0.18 M	<0.18 M
Bromodichloromethane	<0.007 mg/kg	TM116		<0.14 M	<0.14 M
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
Toluene	<0.007 mg/kg	TM116		<0.14 M	<0.14 M
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2	<0.2
1,1,2-Trichloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
1,3-Dichloropropane	<0.007 mg/kg	TM116		<0.14 M	<0.14 M

CERTIFICATE OF ANALYSIS

SDG:	210618-42	**Client Reference:**	784-B026948	**Report Number:**	603599
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH25	BH26				
			Depth (m)	6.20 - 6.30	4.60 - 4.70				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	15/06/2021	14/06/2021				
			Sample Time	.	.				
			Date Received	16/06/2021	16/06/2021				
			SDG Ref	210618-42	210618-42				
			Lab Sample No.(s)	24469067	24468997				
			AGS Reference	ES20	ES17				
Tetrachloroethene	<0.005 mg/kg	TM116		<0.1 M	<0.1 M				
Dibromochloromethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
1,2-Dibromoethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Chlorobenzene	<0.005 mg/kg	TM116		<0.1 M	<0.1 M				
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 M	<0.08 M				
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #				
o-Xylene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Styrene	<0.01 mg/kg	TM116		<0.2 #	<0.2 @ #				
Bromoform	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Isopropylbenzene	<0.005 mg/kg	TM116		<0.1 #	<0.1 #				
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 #	<0.2 #				
1,2,3-Trichloropropane	<0.016 mg/kg	TM116		<0.32 M	<0.32 M				
Bromobenzene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Propylbenzene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
2-Chlorotoluene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M				
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116		<0.16 M	<0.16 M				
4-Chlorotoluene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
tert-Butylbenzene	<0.014 mg/kg	TM116		<0.28 M	<0.28 M				
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116		<0.18 #	<0.18 #				
sec-Butylbenzene	<0.01 mg/kg	TM116		<0.2	<0.2				
4-Isopropyltoluene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
1,3-Dichlorobenzene	<0.008 mg/kg	TM116		<0.16 M	<0.16 M				
1,4-Dichlorobenzene	<0.005 mg/kg	TM116		<0.1 M	<0.1 M				
n-Butylbenzene	<0.011 mg/kg	TM116		<0.22	<0.22				
1,2-Dichlorobenzene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116		<0.28 M	<0.28 M				
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.2 #	<0.2 #				
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4	<0.4				
Hexachlorobutadiene	<0.02 mg/kg	TM116		<0.4	<0.4				
Naphthalene	<0.013 mg/kg	TM116		<0.26 M	<0.26 M				
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4 #	<0.4 #				
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4	<0.4				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210618-42	**Client Reference:**	784-B026948	**Report Number:**	603599
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH25	BH26
			Depth (m)	6.20 - 6.30	4.60 - 4.70
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	15/06/2021	14/06/2021
			Sample Time	.	.
			Date Received	16/06/2021	16/06/2021
			SDG Ref	210618-42	210618-42
			Lab Sample No.(s)	24469067	24468997
			AGS Reference	ES20	ES17
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4	<0.4
Sum of BTEX	<0.04 mg/kg	TM116		<0.8	<0.8

CERTIFICATE OF ANALYSIS

SDG:	210618-42	**Client Reference:**	784-B026948	**Report Number:**	603599
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	BH25ES20 6.20 - 6.30 SOLID 15/06/2021 00:00:00 16/06/2021 05:00:00 210618-42 24469067 TM048	22/06/2021	Agnieszka Chelmowska	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	BH26ES17 4.60 - 4.70 SOLID 14/06/2021 00:00:00 16/06/2021 05:00:00 210618-42 24468997 TM048	22/06/2021	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	210618-42	**Client Reference:**	784-B026948	**Report Number:**	603599
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.127	**Natural Moisture Content (%)**	41
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	70.9
Particle Size <4mm	>95%		

Case	
SDG	210618-42
Lab Sample Number(s)	24468997
Sampled Date	14-Jun-2021
Customer Sample Ref.	BH26 ES17
Depth (m)	4.60 - 4.70

Eluate Analysis	**C_2 Conc^n in 10:1 eluate (mg/l)**		**A_2 10:1 conc^n leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.00198	<0.0005	0.0198	<0.005	-	-	-
Boron	0.108	<0.01	1.08	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00115	<0.0003	0.0115	<0.003	-	-	-
Iron (Dis.Filt) mg/l	1.28	<0.019	12.8	<0.19	-	-	-
Lead	0.0027	<0.0002	0.027	<0.002	-	-	-
Nickel	0.00207	<0.0004	0.0207	<0.004	-	-	-
Selenium	0.00135	<0.001	0.0135	<0.01	-	-	-
Vanadium	0.00166	<0.001	0.0166	<0.01	-	-	-
Zinc	0.0537	<0.001	0.537	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	19-Jun-2021
pH (pH Units)	7.79
Conductivity (µS/cm)	203.00
Temperature (°C)	20.60
Volume Leachant (Litres)	0.863

28/06/2021 14:56:46

14:56:07 28/06/2021

CERTIFICATE OF ANALYSIS

SDG:	210618-42	**Client Reference:**	784-B026948	**Report Number:**	603599
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.115	**Natural Moisture Content (%)**	27.7
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	78.3
Particle Size <4mm	>95%		

Case	
SDG	210618-42
Lab Sample Number(s)	24469067
Sampled Date	15-Jun-2021
Customer Sample Ref.	BH25 ES20
Depth (m)	6.20 - 6.30

Eluate Analysis	**C_2 Conc^n in 10:1 eluate (mg/l)**		**A_2 10:1 conc^n leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.00181	<0.0005	0.0181	<0.005	-	-	-
Boron	0.0376	<0.01	0.376	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.379	<0.019	3.79	<0.19	-	-	-
Lead	0.000704	<0.0002	0.00704	<0.002	-	-	-
Nickel	0.00294	<0.0004	0.0294	<0.004	-	-	-
Selenium	0.00189	<0.001	0.0189	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00172	<0.001	0.0172	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	19-Jun-2021
pH (pH Units)	7.49
Conductivity (µS/cm)	184.00
Temperature (°C)	20.60
Volume Leachant (Litres)	0.875

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210618-42	**Client Reference:**	784-B026948	**Report Number:**	603599
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24469067	24468997
Customer Sample Ref.	BH25	BH26
AGS Ref.	ES20	ES17
Depth	6.20 - 6.30	4.60 - 4.70
Type	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	25-Jun-2021	22-Jun-2021
Ammoniacal Nitrogen	25-Jun-2021	25-Jun-2021
Ammonium Soil by Titration	22-Jun-2021	22-Jun-2021
Anions by Kone (soil)	23-Jun-2021	23-Jun-2021
Asbestos ID in Solid Samples	22-Jun-2021	22-Jun-2021
Boron Water Soluble	22-Jun-2021	22-Jun-2021
CEN 10:1 Leachate (1 Stage)	21-Jun-2021	21-Jun-2021
CEN Readings	25-Jun-2021	25-Jun-2021
Cyanide Comp/Free/Total/Thiocyanate	25-Jun-2021	25-Jun-2021
Dissolved Metals by ICP-MS	24-Jun-2021	24-Jun-2021
EPH	22-Jun-2021	22-Jun-2021
EPH by GCxGC-FID	22-Jun-2021	22-Jun-2021
EPH CWG GC (S)	21-Jun-2021	22-Jun-2021
GRO by GC-FID (S)	21-Jun-2021	21-Jun-2021
Hexavalent Chromium (s)	25-Jun-2021	24-Jun-2021
Hexavalent Chromium (w)	24-Jun-2021	24-Jun-2021
Mercury Dissolved	23-Jun-2021	23-Jun-2021
Metals in solid samples by OES	22-Jun-2021	22-Jun-2021
Moisture at 105C	19-Jun-2021	19-Jun-2021
PAH by GCMS	21-Jun-2021	21-Jun-2021
pH	22-Jun-2021	22-Jun-2021
pH Value of Filtered Water	23-Jun-2021	23-Jun-2021
Phenols by HPLC (S)	21-Jun-2021	22-Jun-2021
Sample description	18-Jun-2021	18-Jun-2021
Semi Volatile Organic Compounds	23-Jun-2021	23-Jun-2021
Sulphide	24-Jun-2021	24-Jun-2021
Total Organic Carbon	23-Jun-2021	28-Jun-2021
TPH CWG GC (S)	21-Jun-2021	22-Jun-2021
VOC MS (S)	21-Jun-2021	21-Jun-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2468
Ammoniacal Nitrogen as N	TM099	**98.4** 88.02 : 104.70

Ammonium Soil by Titration

Component	Method Code	QC 2448	QC 2470
Exchangeable Ammonium as NH4	TM024	**95.02** 74.04 : 103.44	**83.58** 74.04 : 103.44

Boron Water Soluble

Component	Method Code	QC 2451
Water Soluble Boron	TM222	**101.5** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2426	QC 2453	QC 2479
Free Cyanide	TM153	**94.75** 78.00 : 114.00	**88.42** 78.00 : 114.00	
Free Cyanide (W)	TM227			**82.5** 90.67 : 122.67
Thiocyanate	TM153	**101.92** 94.53 : 113.33	**98.72** 94.53 : 113.33	
Thiocyanate (W)	TM227			**108.5** 92.25 : 117.75
Total Cyanide	TM153	**100.7** 77.13 : 111.53	**95.8** 77.13 : 111.53	
Total Cyanide (W)	TM227			**105.0** 88.75 : 111.25

Dissolved Metals by ICP-MS

Component	Method Code	QC 2463	QC 2467
Aluminium	TM152	**103.67** 94.21 : 111.52	**101.67** 94.21 : 111.52
Antimony	TM152	**106.83** 88.37 : 130.57	**105.17** 88.37 : 130.57
Arsenic	TM152	**101.67** 92.62 : 113.52	**101.67** 92.62 : 113.52
Barium	TM152	**102.5** 88.62 : 113.14	**98.67** 88.62 : 113.14

Dissolved Metals by ICP-MS

		QC 2463	QC 2467
Beryllium	TM152	**108.17** 87.08 : 111.38	**101.0** 87.08 : 111.38
Bismuth	TM152	**101.83** 92.62 : 115.02	**97.5** 92.62 : 115.02
Boron	TM152	**105.33** 86.31 : 120.88	**103.0** 86.31 : 120.88
Cadmium	TM152	**103.33** 93.85 : 111.65	**100.83** 93.85 : 111.65
Calcium	TM152	**102.0** 89.20 : 126.91	**100.67** 89.20 : 126.91
Chromium	TM152	**98.0** 92.50 : 113.03	**102.33** 92.50 : 113.03
Cobalt	TM152	**96.0** 85.01 : 114.87	**102.0** 85.01 : 114.87
Copper	TM152	**97.33** 89.87 : 119.73	**102.33** 89.87 : 119.73
Iron	TM152	**98.67** 93.02 : 113.86	**102.67** 93.02 : 113.86
Lead	TM152	**101.17** 91.11 : 116.98	**97.67** 91.11 : 116.98
Lithium	TM152	**105.33** 87.70 : 115.90	**101.67** 87.70 : 115.90
Magnesium	TM152	**96.67** 89.60 : 116.61	**100.0** 89.60 : 116.61
Manganese	TM152	**99.5** 93.97 : 112.46	**102.5** 93.97 : 112.46
Molybdenum	TM152	**95.83** 89.07 : 110.96	**99.83** 89.07 : 110.96
Nickel	TM152	**96.67** 93.70 : 112.15	**103.83** 93.70 : 112.15
Phosphorus	TM152	**103.17** 89.24 : 114.18	**102.67** 89.24 : 114.18
Potassium	TM152	**100.67** 93.20 : 115.55	**100.0** 93.20 : 115.55
Selenium	TM152	**104.33** 91.69 : 117.12	**102.17** 91.69 : 117.12
Silver	TM152	**98.0** 90.93 : 121.73	**98.33** 90.93 : 121.73
Sodium	TM152	**96.67** 92.42 : 113.24	**99.33** 92.42 : 113.24
Strontium	TM152	**104.67** 92.14 : 116.24	**102.33** 92.14 : 116.24
Tellurium	TM152	**102.5** 89.88 : 111.78	**97.5** 89.88 : 111.78
Thallium	TM152	**99.0** 82.43 : 113.83	**93.67** 82.43 : 113.83
Tin	TM152	**101.83** 94.62 : 107.79	**99.17** 94.62 : 107.79
Titanium	TM152	**105.83** 90.29 : 115.23	**101.83** 90.29 : 115.23
Tungsten	TM152	**98.17** 77.61 : 132.31	**97.0** 77.61 : 132.31
Uranium	TM152	**101.0** 86.97 : 115.76	**95.67** 86.97 : 115.76

Dissolved Metals by ICP-MS

		QC 2463	QC 2467
Vanadium	TM152	**104.17** 89.61 : 115.48	**97.33** 89.61 : 115.48
Zinc	TM152	**100.33** 87.51 : 116.26	**103.0** 87.51 : 116.26

GRO by GC-FID (S)

Component	Method Code	QC 2447
QC	TM089	**97.34** 68.78 : 110.61

Hexavalent Chromium (s)

Component	Method Code	QC 2457	QC 2440
Hexavalent Chromium	TM151	**114.0** 91.40 : 115.40	**104.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2454
Hexavalent Chromium	TM241	**99.8** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2475
Mercury Dissolved (CVAF)	TM183	**101.0** 0.00 : 0.00

Metals in solid samples by OES

Component	Method Code	QC 2427
Aluminium	TM181	**88.41** 73.56 : 108.85
Antimony	TM181	**93.9** 76.89 : 111.24
Arsenic	TM181	**97.38** 88.53 : 111.01
Barium	TM181	**97.25** 77.67 : 105.35
Beryllium	TM181	**97.39** 85.44 : 109.61

CERTIFICATE OF ANALYSIS

SDG:	210618-42	**Client Reference:**	784-B026948	**Report Number:**	603599
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Metals in solid samples by OES

		QC 2427
Boron	TM181	**90.26** 73.51 : 104.66
Cadmium	TM181	**90.53** 77.67 : 104.12
Chromium	TM181	**89.66** 79.64 : 105.83
Cobalt	TM181	**95.28** 84.60 : 104.13
Copper	TM181	**97.89** 82.40 : 105.45
Iron	TM181	**92.86** 82.95 : 110.58
Lead	TM181	**95.5** 78.24 : 104.05
Manganese	TM181	**105.28** 94.29 : 119.51
Mercury	TM181	**88.41** 83.16 : 107.81
Molybdenum	TM181	**95.88** 87.11 : 106.87
Nickel	TM181	**90.46** 80.26 : 102.28
Phosphorus	TM181	**105.25** 94.56 : 124.28
Selenium	TM181	**97.65** 82.28 : 110.48
Strontium	TM181	**93.99** 79.13 : 102.79
Thallium	TM181	**98.67** 82.94 : 111.86
Tin	TM181	**97.72** 86.72 : 110.03
Titanium	TM181	**88.55** 66.23 : 102.06
Vanadium	TM181	**96.34** 86.19 : 109.45
Zinc	TM181	**97.54** 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2493
Acenaphthene	TM218	**84.5** 73.47 : 109.80
Acenaphthylene	TM218	**86.0** 70.00 : 130.00
Anthracene	TM218	**86.5** 68.68 : 111.89
Benz(a)anthracene	TM218	**91.5** 68.12 : 118.39
Benzo(a)pyrene	TM218	**88.0** 71.72 : 115.31
Benzo(b)fluoranthene	TM218	**90.0** 66.89 : 120.40

PAH by GCMS

		QC 2493
Benzo(ghi)perylene	TM218	**85.0** 67.82 : 118.49
Benzo(k)fluoranthene	TM218	**96.0** 73.10 : 117.03
Chrysene	TM218	**88.5** 69.58 : 115.47
Dibenzo(ah)anthracene	TM218	**82.5** 67.32 : 121.35
Fluoranthene	TM218	**88.5** 75.16 : 117.28
Fluorene	TM218	**85.0** 73.81 : 108.66
Indeno(123cd)pyrene	TM218	**90.0** 68.91 : 117.62
Naphthalene	TM218	**87.5** 72.12 : 106.18
Phenanthrene	TM218	**87.0** 69.01 : 113.72
Pyrene	TM218	**89.5** 64.28 : 115.75

pH

Component	Method Code	QC 2472
pH	TM133	**100.15** 98.09 : 101.62

pH Value of Filtered Water

Component	Method Code	QC 2451
pH	TM256	**99.6** 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2443	QC 2451
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**49.35** 70.71 : 116.42	**49.35** 70.71 : 116.42
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**42.11** 64.54 : 117.79	**42.11** 64.54 : 117.79
Cresols by HPLC (S)	TM062 (S)	**46.35** 74.40 : 108.98	**46.76** 74.40 : 108.98
Phenol by HPLC (S)	TM062 (S)	**47.68** 69.44 : 122.18	**48.34** 69.44 : 122.18
Xylenols by HPLC (S)	TM062 (S)	**47.29** 76.56 : 106.38	**47.5** 76.56 : 106.38

Semi Volatile Organic Compounds

Semi Volatile Organic Compounds

Component	Method Code	QC 2489
4-Bromophenylphenylether (Soil)	TM157	**87.5** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**85.5** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**90.0** 68.25 : 126.75
Naphthalene (Soil)	TM157	**91.0** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**98.5** 66.50 : 123.50
Phenol (Soil)	TM157	**95.0** 69.92 : 114.02

Sulphide

Component	Method Code	QC 2455
Sulphide	TM101	**98.67** 88.90 : 112.50

Total Organic Carbon

Component	Method Code	QC 2410	QC 2470
Total Organic Carbon	TM132	**105.47** 87.02 : 113.45	**99.22** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2486
1,1,1,2-tetrachloroethane	TM116	**98.8** 86.59 : 118.97
1,1,1-Trichloroethane	TM116	**93.0** 86.26 : 117.53
1,1,2-Trichloroethane	TM116	**103.0** 75.16 : 112.70
1,1-Dichloroethane	TM116	**100.2** 83.27 : 122.16
1,2-Dichloroethane	TM116	**109.4** 89.30 : 133.10
1,4-Dichlorobenzene	TM116	**100.6** 82.59 : 123.23
2-Chlorotoluene	TM116	**94.4** 66.81 : 118.43
4-Chlorotoluene	TM116	**93.8** 65.88 : 114.76
Benzene	TM116	**95.0** 93.16 : 123.63
Carbon Disulphide	TM116	**92.6** 75.11 : 124.81

		QC 2486
Carbontetrachloride	TM116	**98.6** 82.35 : 126.46
Chlorobenzene	TM116	**99.0** 85.07 : 118.13
Chloroform	TM116	**101.0** 88.13 : 122.71
Chloromethane	TM116	**62.6** 61.62 : 145.66
Cis-1,2-Dichloroethene	TM116	**98.0** 88.41 : 121.33
Dibromomethane	TM116	**104.0** 77.47 : 121.29
Dichloromethane	TM116	**109.6** 87.89 : 134.72
Ethylbenzene	TM116	**90.6** 76.29 : 106.31
Hexachlorobutadiene	TM116	**67.0** 16.78 : 153.29
Isopropylbenzene	TM116	**78.8** 59.16 : 110.07
Naphthalene	TM116	**110.6** 79.29 : 125.59
o-Xylene	TM116	**82.8** 72.86 : 102.10
p/m-Xylene	TM116	**83.4** 68.99 : 102.40
Sec-Butylbenzene	TM116	**71.8** 44.71 : 117.87
Tetrachloroethene	TM116	**96.8** 77.82 : 125.00
Toluene	TM116	**93.0** 87.82 : 116.21
Trichloroethene	TM116	**96.4** 79.80 : 112.33
Trichlorofluoromethane	TM116	**96.8** 80.52 : 132.12
Vinyl Chloride	TM116	**91.6** 74.57 : 146.88

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	25 June 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210618-84
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	603384

We received 12 samples on Thursday June 17, 2021 and 1 of these samples were scheduled for analysis which was completed on Friday June 25, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

So

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210618-84	**Client Reference:**	784-B026948	**Report Number:**	603384
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24471034	BH24	ES7	1.30 - 1.40	16/06/2021
24471057	BH24	ES8	1.50 - 1.60	16/06/2021
24471061	BH24	ES9	1.80 - 1.90	16/06/2021
24471065	BH24	ES13	2.70 - 2.90	16/06/2021
24471070	BH24	ES15	3.30 - 3.40	16/06/2021
24471074	BH24	ES17	3.50 - 3.60	16/06/2021
24471079	BH24	ES18	3.70 - 3.80	16/06/2021
24471084	BH24	ES21	4.50 - 4.60	16/06/2021
24471088	BH24	ES22	5.60 - 5.70	16/06/2021
24471038	BH58	ES1	0.30	15/06/2021
24471045	BH58	ES2	1.30	15/06/2021
24471051	BH58	ES3	2.50	15/06/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	210618-84	**Client Reference:**	784-B026948	**Report Number:**	603384
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24471038			
Customer Sample Reference			BH58			
AGS Reference			ES1			
Depth (m)			0.30			
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 1		X		
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1	X			
Ammonium Soil by Titration	All	NDPs: 0 Tests: 1		X		
Anions by Kone (soil)	All	NDPs: 0 Tests: 1		X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1	X			
Boron Water Soluble	All	NDPs: 0 Tests: 1		X		
CEN Readings	All	NDPs: 0 Tests: 1	X			
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2	X	X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1	X			
EPH	All	NDPs: 0 Tests: 1		X		
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1		X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 1		X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1			X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1		X		
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1	X			

CERTIFICATE OF ANALYSIS

SDG:	210618-84	**Client Reference:**	784-B026948	**Report Number:**	603384
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24471038			
Customer Sample Reference			BH58			
AGS Reference			ES1			
Depth (m)			0.30			
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	
Mercury Dissolved	All	NDPs: 0 Tests: 1	X			
Metals in solid samples by OES	All	NDPs: 0 Tests: 1		X		
PAH by GCMS	All	NDPs: 0 Tests: 1		X		
PCBs by GCMS	All	NDPs: 0 Tests: 1		X		
pH	All	NDPs: 0 Tests: 1		X		
pH Value of Filtered Water	All	NDPs: 0 Tests: 1	X			
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1		X		
Sample description	All	NDPs: 0 Tests: 1		X		
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1		X		
Sulphide	All	NDPs: 0 Tests: 1	X			
Total Organic Carbon	All	NDPs: 0 Tests: 1		X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 1		X		
VOC MS (S)	All	NDPs: 0 Tests: 1			X	

CERTIFICATE OF ANALYSIS

SDG:	210618-84	**Client Reference:**	784-B026948	**Report Number:**	603384
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24471038	BH58	0.30	Light Brown	Sandy Loam	Stones	Brick

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210618-84	**Client Reference:**	784-B026948	**Report Number:**	603384
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH58
Depth (m)	0.30
Sample Type	Soil/Solid (S)
Date Sampled	15/06/2021
Sample Time	.
Date Received	17/06/2021
SDG Ref	210618-84
Lab Sample No.(s)	24471038
AGS Reference	ES1

Component	LOD/Units	Method	
Moisture Content Ratio (% of as received sample)	%	PM024	6.6
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12 M
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M
Soil Organic Matter (SOM)	<0.35 %	TM132	0.745 #
pH	1 pH Units	TM133	9.72 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #
Cyanide, Total	<1 mg/kg	TM153	<1 M
PCB congener 118	<0.003 mg/kg	TM168	<0.003 M
PCB congener 81	<0.003 mg/kg	TM168	<0.003 M
PCB congener 77	<0.003 mg/kg	TM168	<0.003 M
PCB congener 123	<0.003 mg/kg	TM168	<0.003 M
PCB congener 114	<0.003 mg/kg	TM168	<0.003 M
PCB congener 105	<0.003 mg/kg	TM168	<0.003 M
PCB congener 126	<0.003 mg/kg	TM168	<0.003 M
PCB congener 167	<0.003 mg/kg	TM168	<0.003 M
PCB congener 156	<0.003 mg/kg	TM168	<0.003 M
PCB congener 157	<0.003 mg/kg	TM168	<0.003 M
PCB congener 169	<0.003 mg/kg	TM168	<0.003 M
PCB congener 189	<0.003 mg/kg	TM168	<0.003 M
Sum of detected WHO 12 PCBs	<0.036 mg/kg	TM168	<0.036
Arsenic	<0.6 mg/kg	TM181	2.21 M
Cadmium	<0.02 mg/kg	TM181	0.285 M
Chromium	<0.9 mg/kg	TM181	1.98 M
Copper	<1.4 mg/kg	TM181	5.12 M
Iron	<1000 mg/kg	TM181	2490 #
Lead	<0.7 mg/kg	TM181	50.2 M
Mercury	<0.1 mg/kg	TM181	<0.1 M
Nickel	<0.2 mg/kg	TM181	1.92 M
Selenium	<1 mg/kg	TM181	<1 #
Vanadium	<0.2 mg/kg	TM181	1.85 #

Validated

CERTIFICATE OF ANALYSIS

SDG:	210618-84	**Client Reference:**	784-B026948	**Report Number:**	603384
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BH58	0.30	Soil/Solid (S)	15/06/2021	.	17/06/2021	210618-84	24471038	ES1
Zinc	<1.9 mg/kg	TM181	50.2 M								
Boron, water soluble	<1 mg/kg	TM222	<1 M								
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0139 M								
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248	5.6								
EPH (C5-C40)	<35 mg/kg	TM415	<35								
EPH Surrogate % recovery**	%	TM415	92								
EPH >C10-C40	<35 mg/kg	TM415	<35 M								

Validated

CERTIFICATE OF ANALYSIS

SDG:	210618-84	**Client Reference:**	784-B026948	**Report Number:**	603384
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH58
Depth (m)	0.30
Sample Type	Soil/Solid (S)
Date Sampled	15/06/2021
Sample Time	.
Date Received	17/06/2021
SDG Ref	210618-84
Lab Sample No.(s)	24471038
AGS Reference	ES1

Component	LOD/Units	Method	
Naphthalene-d8 % recovery**	%	TM218	84.5
Acenaphthene-d10 % recovery**	%	TM218	80
Phenanthrene-d10 % recovery**	%	TM218	91.1
Chrysene-d12 % recovery**	%	TM218	87.4
Perylene-d12 % recovery**	%	TM218	82.3
Naphthalene	<0.009 mg/kg	TM218	<0.009 M
Acenaphthylene	<0.012 mg/kg	TM218	<0.012 M
Acenaphthene	<0.008 mg/kg	TM218	<0.008 M
Fluorene	<0.01 mg/kg	TM218	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218	<0.015 M
Anthracene	<0.016 mg/kg	TM218	<0.016 M
Fluoranthene	<0.017 mg/kg	TM218	<0.017 M
Pyrene	<0.015 mg/kg	TM218	<0.015 M
Benz(a)anthracene	<0.014 mg/kg	TM218	<0.014 M
Chrysene	<0.01 mg/kg	TM218	<0.01 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	<0.015 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	<0.014 M
Benzo(a)pyrene	<0.015 mg/kg	TM218	<0.015 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	<0.018 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	<0.023 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	<0.024 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	<0.118

CERTIFICATE OF ANALYSIS

SDG:	210618-84	**Client Reference:**	784-B026948	**Report Number:**	603384
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BH58	0.30	Soil/Solid (S)	15/06/2021	.	17/06/2021	210618-84	24471038	ES1
Phenol	<0.1 mg/kg	TM157	<0.1								
Pentachlorophenol	<0.1 mg/kg	TM157	<0.5								
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157	<0.1								
Nitrobenzene	<0.1 mg/kg	TM157	<0.1								
Isophorone	<0.1 mg/kg	TM157	<0.1								
Hexachloroethane	<0.1 mg/kg	TM157	<0.1								
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157	<0.1								
Hexachlorobutadiene	<0.1 mg/kg	TM157	<0.1								
Hexachlorobenzene	<0.1 mg/kg	TM157	<0.1								
n-Dioctyl phthalate	<0.1 mg/kg	TM157	<0.1								
Dimethyl phthalate	<0.1 mg/kg	TM157	<0.1								
Diethyl phthalate	<0.1 mg/kg	TM157	<0.1								
n-Dibutyl phthalate	<0.1 mg/kg	TM157	<0.1								
Dibenzofuran	<0.1 mg/kg	TM157	<0.1								
Carbazole	<0.1 mg/kg	TM157	<0.1								
Butylbenzyl phthalate	<0.1 mg/kg	TM157	<0.1								
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157	<0.1								
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157	<0.1								
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157	<0.1								
Azobenzene	<0.1 mg/kg	TM157	<0.1								
4-Nitrophenol	<0.1 mg/kg	TM157	<0.5								
4-Nitroaniline	<0.1 mg/kg	TM157	<0.5								
4-Methylphenol	<0.1 mg/kg	TM157	<0.1								
4-Chlorophenylphenylether	<0.1 mg/kg	TM157	<0.1								
4-Chloroaniline	<0.1 mg/kg	TM157	<0.1								
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157	<0.1								
4-Bromophenylphenylether	<0.1 mg/kg	TM157	<0.1								
3-Nitroaniline	<0.1 mg/kg	TM157	<0.5								
2-Nitrophenol	<0.1 mg/kg	TM157	<0.1								
2-Nitroaniline	<0.1 mg/kg	TM157	<0.1								
2-Methylphenol	<0.1 mg/kg	TM157	<0.1								
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157	<0.1								
2-Chlorophenol	<0.1 mg/kg	TM157	<0.1								

CERTIFICATE OF ANALYSIS

SDG:	210618-84	**Client Reference:**	784-B026948	**Report Number:**	603384
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.	BH58
Depth (m)	0.30
Sample Type	Soil/Solid (S)
Date Sampled	15/06/2021
Sample Time	.
Date Received	17/06/2021
SDG Ref	210618-84
Lab Sample No.(s)	24471038
AGS Reference	ES1

Component	LOD/Units	Method	
2,6-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1
2,4-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1
2,4-Dimethylphenol	<0.1 mg/kg	TM157	<0.1
2,4-Dichlorophenol	<0.1 mg/kg	TM157	<0.1
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157	<0.1
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157	<0.1
1,4-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1
1,3-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1
1,2-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1
2-Chloronaphthalene	<0.1 mg/kg	TM157	<0.1
2-Methylnaphthalene	<0.1 mg/kg	TM157	<0.1
Acenaphthylene	<0.1 mg/kg	TM157	<0.1
Acenaphthene	<0.1 mg/kg	TM157	<0.1
Anthracene	<0.1 mg/kg	TM157	<0.1
Benzo(a)anthracene	<0.1 mg/kg	TM157	<0.1
Benzo(b)fluoranthene	<0.1 mg/kg	TM157	<0.1
Benzo(k)fluoranthene	<0.1 mg/kg	TM157	<0.1
Benzo(a)pyrene	<0.1 mg/kg	TM157	<0.1
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157	<0.1
Chrysene	<0.1 mg/kg	TM157	<0.1
Fluoranthene	<0.1 mg/kg	TM157	<0.1
Fluorene	<0.1 mg/kg	TM157	<0.1
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157	<0.1
Phenanthrene	<0.1 mg/kg	TM157	<0.1
Pyrene	<0.1 mg/kg	TM157	<0.1
Naphthalene	<0.1 mg/kg	TM157	<0.1
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157	<0.1
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157	<0.1

Validated

CERTIFICATE OF ANALYSIS

SDG:	210618-84	**Client Reference:**	784-B026948	**Report Number:**	603384
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH58
Depth (m)	0.30
Sample Type	Soil/Solid (S)
Date Sampled	15/06/2021
Sample Time	.
Date Received	17/06/2021
SDG Ref	210618-84
Lab Sample No.(s)	24471038
AGS Reference	ES1

Component	LOD/Units	Method	
GRO Surrogate % recovery**	%	TM089	136 4
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01 4
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01 4
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01 4
Aliphatics >C10-C12	<1 mg/kg	TM414	<1 #
Aliphatics >C12-C16	<1 mg/kg	TM414	<1 #
Aliphatics >C16-C21	<1 mg/kg	TM414	<1 #
Aliphatics >C21-C35	<1 mg/kg	TM414	<1 #
Aliphatics >C35-C44	<1 mg/kg	TM414	<1
Total Aliphatics >C10-C44	<5 mg/kg	TM414	<5
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414	<10
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01 4
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01 4
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	<0.01 4
Aromatics > EC10-EC12	<1 mg/kg	TM414	<1 #
Aromatics > EC12-EC16	<1 mg/kg	TM414	<1 #
Aromatics > EC16-EC21	<1 mg/kg	TM414	<1 #
Aromatics > EC21-EC35	<1 mg/kg	TM414	<1 #
Aromatics >EC35-EC44	<1 mg/kg	TM414	<1
Aromatics > EC40-EC44	<1 mg/kg	TM414	<1
Total Aromatics > EC10-EC44	<5 mg/kg	TM414	<5
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414	<10
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089	<0.05 4
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089	<0.05 4
GRO >C5-C10	<0.02 mg/kg	TM089	<0.02 4

CERTIFICATE OF ANALYSIS

SDG:	210618-84	**Client Reference:**	784-B026948	**Report Number:**	603384
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref. BH58				
			Depth (m) 0.30				
			Sample Type Soil/Solid (S)				
			Date Sampled 15/06/2021				
			Sample Time .				
			Date Received 17/06/2021				
			SDG Ref 210618-84				
			Lab Sample No.(s) 24471038				
			AGS Reference ES1				
Dibromofluoromethane**	%	TM116	114				
Toluene-d8**	%	TM116	97.4				
4-Bromofluorobenzene**	%	TM116	104				
Dichlorodifluoromethane	<0.006 mg/kg	TM116	<0.12 M				
Chloromethane	<0.007 mg/kg	TM116	<0.14 #				
Vinyl Chloride	<0.006 mg/kg	TM116	<0.12 M				
Bromomethane	<0.01 mg/kg	TM116	<0.2 M				
Chloroethane	<0.01 mg/kg	TM116	<0.2 M				
Trichlorofluorormethane	<0.006 mg/kg	TM116	<0.12 M				
1,1-Dichloroethene	<0.01 mg/kg	TM116	<0.2 #				
Carbon Disulphide	<0.007 mg/kg	TM116	<0.14 M				
Dichloromethane	<0.01 mg/kg	TM116	<0.2 #				
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.2 M				
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116	<0.2 M				
1,1-Dichloroethane	<0.008 mg/kg	TM116	<0.16 M				
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116	<0.12 M				
2,2-Dichloropropane	<0.01 mg/kg	TM116	<0.2				
Bromochloromethane	<0.01 mg/kg	TM116	<0.2 M				
Chloroform	<0.008 mg/kg	TM116	<0.16 M				
1,1,1-Trichloroethane	<0.007 mg/kg	TM116	<0.14 M				
1,1-Dichloropropene	<0.01 mg/kg	TM116	<0.2 M				
Carbontetrachloride	<0.01 mg/kg	TM116	<0.2 M				
1,2-Dichloroethane	<0.005 mg/kg	TM116	<0.1 M				
Benzene	<0.009 mg/kg	TM116	<0.18 M				
Trichloroethene	<0.009 mg/kg	TM116	<0.18 #				
1,2-Dichloropropane	<0.01 mg/kg	TM116	<0.2 M				
Dibromomethane	<0.009 mg/kg	TM116	<0.18 M				
Bromodichloromethane	<0.007 mg/kg	TM116	<0.14 M				
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.2 M				
Toluene	<0.007 mg/kg	TM116	<0.14 M				
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.2				
1,1,2-Trichloroethane	<0.01 mg/kg	TM116	<0.2 M				
1,3-Dichloropropane	<0.007 mg/kg	TM116	<0.14 M				

CERTIFICATE OF ANALYSIS

SDG:	210618-84	**Client Reference:**	784-B026948	**Report Number:**	603384
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref. BH58				
			Depth (m) 0.30				
			Sample Type Soil/Solid (S)				
			Date Sampled 15/06/2021				
			Sample Time .				
			Date Received 17/06/2021				
			SDG Ref 210618-84				
			Lab Sample No.(s) 24471038				
			AGS Reference ES1				
Tetrachloroethene	<0.005 mg/kg	TM116	<0.1 M				
Dibromochloromethane	<0.01 mg/kg	TM116	<0.2 M				
1,2-Dibromoethane	<0.01 mg/kg	TM116	<0.2 M				
Chlorobenzene	<0.005 mg/kg	TM116	<0.1 M				
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.2 M				
Ethylbenzene	<0.004 mg/kg	TM116	<0.08 M				
p/m-Xylene	<0.01 mg/kg	TM116	<0.2 #				
o-Xylene	<0.01 mg/kg	TM116	<0.2 M				
Styrene	<0.01 mg/kg	TM116	<0.2 #				
Bromoform	<0.01 mg/kg	TM116	<0.2 M				
Isopropylbenzene	<0.005 mg/kg	TM116	<0.1 #				
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.2 #				
1,2,3-Trichloropropane	<0.016 mg/kg	TM116	<0.32 M				
Bromobenzene	<0.01 mg/kg	TM116	<0.2 M				
Propylbenzene	<0.01 mg/kg	TM116	<0.2 M				
2-Chlorotoluene	<0.009 mg/kg	TM116	<0.18 M				
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116	<0.16 M				
4-Chlorotoluene	<0.01 mg/kg	TM116	<0.2 M				
tert-Butylbenzene	<0.014 mg/kg	TM116	<0.28 M				
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116	<0.18 #				
sec-Butylbenzene	<0.01 mg/kg	TM116	<0.2				
4-Isopropyltoluene	<0.01 mg/kg	TM116	<0.2 M				
1,3-Dichlorobenzene	<0.008 mg/kg	TM116	<0.16 M				
1,4-Dichlorobenzene	<0.005 mg/kg	TM116	<0.1 M				
n-Butylbenzene	<0.011 mg/kg	TM116	<0.22				
1,2-Dichlorobenzene	<0.01 mg/kg	TM116	<0.2 M				
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116	<0.28 M				
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.2 #				
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116	<0.4				
Hexachlorobutadiene	<0.02 mg/kg	TM116	<0.4				
Naphthalene	<0.013 mg/kg	TM116	<0.26 M				
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116	<0.4 #				
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116	<0.4				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210618-84	**Client Reference:**	784-B026948	**Report Number:**	603384
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

		Customer Sample Ref.	BH58
		Depth (m)	0.30
		Sample Type	Soil/Solid (S)
		Date Sampled	15/06/2021
		Sample Time	.
		Date Received	17/06/2021
		SDG Ref	210618-84
		Lab Sample No.(s)	24471038
		AGS Reference	ES1
Component	**LOD/Units**	**Method**	
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4
Sum of BTEX	<0.04 mg/kg	TM116	<0.8

CERTIFICATE OF ANALYSIS

SDG:	210618-84	**Client Reference:**	784-B026948	**Report Number:**	603384
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref.	BH58ES1	22.06.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	0.30										
Sample Type	SOLID										
Date Sampled	15/06/2021 00:00:00										
Date Receieved	17/06/2021 05:00:00										
SDG	210618-84										
Original Sample	24471038										
Method Number	TM048										

CERTIFICATE OF ANALYSIS

SDG:	210618-84	**Client Reference:**	784-B026948	**Report Number:**	603384
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.098	**Natural Moisture Content (%)**	9.19
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	91.6
Particle Size <4mm	>95%		

Case	
SDG	210618-84
Lab Sample Number(s)	24471038
Sampled Date	15-Jun-2021
Customer Sample Ref.	BH58 ES1
Depth (m)	0.30

Eluate Analysis	**C_2 Conc^n in 10:1 eluate (mg/l)**		**A_2 10:1 conc^n leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.000653	<0.0005	0.00653	<0.005	-	-	-
Boron	<0.01	<0.01	<0.1	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.000659	<0.0003	0.00659	<0.003	-	-	-
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.19	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00127	<0.001	0.0127	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	21-Jun-2021
pH (pH Units)	9.90
Conductivity (µS/cm)	122.00
Temperature (°C)	19.54
Volume Leachant (Litres)	0.892

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210618-84	**Client Reference:**	784-B026948	**Report Number:**	603384
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24471038
Customer Sample Ref.	BH58
AGS Ref.	ES1
Depth	0.30
Type	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	22-Jun-2021
Ammoniacal Nitrogen	25-Jun-2021
Ammonium Soil by Titration	22-Jun-2021
Anions by Kone (soil)	22-Jun-2021
Asbestos ID in Solid Samples	22-Jun-2021
Boron Water Soluble	23-Jun-2021
CEN 10:1 Leachate (1 Stage)	21-Jun-2021
CEN Readings	23-Jun-2021
Cyanide Comp/Free/Total/Thiocyanate	25-Jun-2021
Dissolved Metals by ICP-MS	24-Jun-2021
EPH	22-Jun-2021
EPH by GCxGC-FID	22-Jun-2021
EPH CWG GC (S)	22-Jun-2021
GRO by GC-FID (S)	22-Jun-2021
Hexavalent Chromium (s)	24-Jun-2021
Hexavalent Chromium (w)	24-Jun-2021
Mercury Dissolved	24-Jun-2021
Metals in solid samples by OES	23-Jun-2021
Moisture at 105C	21-Jun-2021
PAH by GCMS	22-Jun-2021
PCBs by GCMS	23-Jun-2021
pH	22-Jun-2021
pH Value of Filtered Water	23-Jun-2021
Phenols by HPLC (S)	22-Jun-2021
Sample description	19-Jun-2021
Semi Volatile Organic Compounds	23-Jun-2021
Sulphide	24-Jun-2021
Total Organic Carbon	24-Jun-2021
TPH CWG GC (S)	22-Jun-2021
VOC MS (S)	21-Jun-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2468
Ammoniacal Nitrogen as N	TM099	**98.4** 88.02 : 104.70

Ammonium Soil by Titration

Component	Method Code	QC 2470
Exchangeable Ammonium as NH4	TM024	**83.58** 74.04 : 103.44

Anions by Kone (soil)

Component	Method Code	QC 2457
Chloride (soluble)	TM243	**151.81** 80.93 : 111.66
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**166.36** 70.00 : 130.00

Boron Water Soluble

Component	Method Code	QC 2487
Water Soluble Boron	TM222	**101.5** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2481	QC 2436
Free Cyanide	TM153	**87.62** 78.00 : 114.00	
Free Cyanide (W)	TM227		**82.75** 90.67 : 122.67
Thiocyanate	TM153	**97.44** 94.53 : 113.33	
Thiocyanate (W)	TM227		**108.5** 92.25 : 117.75
Total Cyanide	TM153	**93.01** 77.13 : 111.53	
Total Cyanide (W)	TM227		**104.5** 88.75 : 111.25

Dissolved Metals by ICP-MS

Dissolved Metals by ICP-MS

Component	Method Code	QC 2468
Aluminium	TM152	**101.67** 94.21 : 111.52
Antimony	TM152	**102.83** 88.37 : 130.57
Arsenic	TM152	**108.17** 92.62 : 113.52
Barium	TM152	**105.0** 88.62 : 113.14
Beryllium	TM152	**100.17** 87.08 : 111.38
Bismuth	TM152	**100.0** 92.62 : 115.02
Boron	TM152	**99.67** 86.31 : 120.88
Cadmium	TM152	**101.17** 93.85 : 111.65
Calcium	TM152	**108.67** 89.20 : 126.91
Chromium	TM152	**106.0** 92.50 : 113.03
Cobalt	TM152	**106.83** 85.01 : 114.87
Copper	TM152	**106.0** 89.87 : 119.73
Iron	TM152	**107.33** 93.02 : 113.86
Lead	TM152	**101.33** 91.11 : 116.98
Lithium	TM152	**100.67** 87.70 : 115.90
Magnesium	TM152	**106.0** 89.60 : 116.61
Manganese	TM152	**107.0** 93.97 : 112.46
Molybdenum	TM152	**101.0** 89.07 : 110.96
Nickel	TM152	**107.83** 93.70 : 112.15
Phosphorus	TM152	**111.33** 89.24 : 114.18
Potassium	TM152	**110.67** 93.20 : 115.55
Selenium	TM152	**106.67** 91.69 : 117.12
Silver	TM152	**100.5** 90.93 : 121.73
Sodium	TM152	**106.0** 92.42 : 113.24
Strontium	TM152	**105.67** 92.14 : 116.24
Tellurium	TM152	**100.17** 89.88 : 111.78
Thallium	TM152	**92.17** 82.43 : 113.83

Dissolved Metals by ICP-MS

		QC 2468
Tin	TM152	**103.5** 94.62 : 107.79
Titanium	TM152	**106.33** 90.29 : 115.23
Tungsten	TM152	**102.0** 77.61 : 132.31
Uranium	TM152	**95.5** 86.97 : 115.76
Vanadium	TM152	**111.5** 89.61 : 115.48
Zinc	TM152	**106.67** 87.51 : 116.26

GRO by GC-FID (S)

Component	Method Code	QC 2497
QC	TM089	**86.16** 70.34 : 111.95

Hexavalent Chromium (s)

Component	Method Code	QC 2493
Hexavalent Chromium	TM151	**106.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2470
Hexavalent Chromium	TM241	**98.8** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2446
Mercury Dissolved (CVAF)	TM183	**93.1** 0.00 : 0.00

Metals in solid samples by OES

Metals in solid samples by OES

Component	Method Code	QC 2416
Aluminium	TM181	**96.46** 73.56 : 108.85
Antimony	TM181	**94.31** 76.89 : 111.24
Arsenic	TM181	**97.38** 88.53 : 111.01
Barium	TM181	**99.08** 77.67 : 105.35
Beryllium	TM181	**97.39** 85.44 : 109.61
Boron	TM181	**91.98** 73.51 : 104.66
Cadmium	TM181	**92.59** 77.67 : 104.12
Chromium	TM181	**88.24** 79.64 : 105.83
Cobalt	TM181	**98.11** 84.60 : 104.13
Copper	TM181	**97.01** 82.40 : 105.45
Iron	TM181	**92.86** 82.95 : 110.58
Lead	TM181	**92.57** 78.24 : 104.05
Manganese	TM181	**106.67** 94.29 : 119.51
Mercury	TM181	**88.41** 83.16 : 107.81
Molybdenum	TM181	**95.47** 87.11 : 106.87
Nickel	TM181	**90.22** 80.26 : 102.28
Phosphorus	TM181	**106.87** 94.56 : 124.28
Selenium	TM181	**96.86** 82.28 : 110.48
Strontium	TM181	**93.54** 79.13 : 102.79
Thallium	TM181	**90.27** 82.94 : 111.86
Tin	TM181	**99.62** 86.72 : 110.03
Titanium	TM181	**87.02** 66.23 : 102.06
Vanadium	TM181	**95.97** 86.19 : 109.45
Zinc	TM181	**98.15** 84.68 : 113.99

PAH by GCMS

PAH by GCMS

Component	Method Code	QC 2475
Acenaphthene	TM218	**88.0** 73.47 : 109.80
Acenaphthylene	TM218	**86.0** 70.00 : 130.00
Anthracene	TM218	**89.0** 68.68 : 111.89
Benz(a)anthracene	TM218	**90.5** 68.12 : 118.39
Benzo(a)pyrene	TM218	**86.5** 71.72 : 115.31
Benzo(b)fluoranthene	TM218	**92.5** 66.89 : 120.40
Benzo(ghi)perylene	TM218	**83.0** 67.82 : 118.49
Benzo(k)fluoranthene	TM218	**84.5** 73.10 : 117.03
Chrysene	TM218	**90.5** 69.58 : 115.47
Dibenzo(ah)anthracene	TM218	**83.0** 67.32 : 121.35
Fluoranthene	TM218	**91.0** 75.16 : 117.28
Fluorene	TM218	**88.0** 73.81 : 108.66
Indeno(123cd)pyrene	TM218	**85.5** 68.91 : 117.62
Naphthalene	TM218	**83.5** 72.12 : 106.18
Phenanthrene	TM218	**91.0** 69.01 : 113.72
Pyrene	TM218	**90.5** 64.28 : 115.75

PCBs by GCMS

Component	Method Code	QC 2478
PCB congener 101	TM168	**86.3** 65.66 : 110.06
PCB congener 105	TM168	**82.8** 58.10 : 106.34
PCB congener 114	TM168	**83.2** 59.38 : 106.48
PCB congener 118	TM168	**84.3** 60.02 : 106.23
PCB congener 123	TM168	**89.0** 65.01 : 99.81
PCB congener 126	TM168	**83.6** 59.31 : 109.23
PCB congener 138	TM168	**87.8** 63.95 : 107.63
PCB congener 153	TM168	**90.3** 62.65 : 108.85
PCB congener 156	TM168	**83.5** 61.69 : 112.27

PCBs by GCMS

		QC 2478
PCB congener 157	TM168	**82.9** 55.37 : 104.81
PCB congener 167	TM168	**83.3** 65.58 : 109.14
PCB congener 169	TM168	**84.8** 56.84 : 112.10
PCB congener 180	TM168	**88.3** 66.99 : 111.63
PCB congener 189	TM168	**83.0** 57.75 : 112.59
PCB congener 28	TM168	**89.6** 73.68 : 105.96
PCB congener 52	TM168	**88.0** 67.24 : 107.62
PCB congener 77	TM168	**87.0** 64.87 : 108.49
PCB congener 81	TM168	**84.3** 70.78 : 110.80

pH

Component	Method Code	QC 2473
pH	TM133	**100.15** 98.09 : 101.62

pH Value of Filtered Water

Component	Method Code	QC 2439
pH	TM256	**99.6** 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2408
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**51.3** 70.71 : 116.42
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**43.86** 64.54 : 117.79
Cresols by HPLC (S)	TM062 (S)	**48.02** 74.40 : 108.98
Phenol by HPLC (S)	TM062 (S)	**49.67** 69.44 : 122.18
Xylenols by HPLC (S)	TM062 (S)	**48.85** 76.56 : 106.38

Semi Volatile Organic Compounds

Semi Volatile Organic Compounds

Component	Method Code	QC 2489
4-Bromophenylphenylether (Soil)	TM157	**87.5** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**85.5** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**90.0** 68.25 : 126.75
Naphthalene (Soil)	TM157	**91.0** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**98.5** 66.50 : 123.50
Phenol (Soil)	TM157	**95.0** 69.92 : 114.02

Sulphide

Component	Method Code	QC 2484
Sulphide	TM101	**103.33** 88.90 : 112.50

Total Organic Carbon

Component	Method Code	QC 2415
Total Organic Carbon	TM132	**101.95** 87.02 : 113.45

VOC MS (S)

Component	Method Code	QC 2487
1,1,1,2-tetrachloroethane	TM116	**94.8** 84.84 : 116.25
1,1,1-Trichloroethane	TM116	**98.4** 73.73 : 118.05
1,1,2-Trichloroethane	TM116	**96.4** 77.12 : 116.04
1,1-Dichloroethane	TM116	**105.0** 74.46 : 129.15
1,2-Dichloroethane	TM116	**107.6** 92.38 : 131.65
1,4-Dichlorobenzene	TM116	**100.2** 83.64 : 126.18
2-Chlorotoluene	TM116	**93.0** 76.03 : 113.25
4-Chlorotoluene	TM116	**88.2** 66.90 : 112.46
Benzene	TM116	**101.2** 88.60 : 113.80
Carbon Disulphide	TM116	**101.2** 74.91 : 122.14

VOC MS (S)

		QC 2487
Carbontetrachloride	TM116	**97.2** 80.31 : 124.50
Chlorobenzene	TM116	**99.4** 83.81 : 114.18
Chloroform	TM116	**105.6** 87.40 : 122.49
Chloromethane	TM116	**96.4** 65.89 : 136.93
Cis-1,2-Dichloroethene	TM116	**103.4** 80.67 : 126.72
Dibromomethane	TM116	**95.2** 73.23 : 118.35
Dichloromethane	TM116	**110.0** 81.11 : 133.25
Ethylbenzene	TM116	**89.6** 75.92 : 110.41
Hexachlorobutadiene	TM116	**65.8** 12.82 : 152.73
Isopropylbenzene	TM116	**78.6** 54.30 : 105.91
Naphthalene	TM116	**100.8** 80.86 : 128.81
o-Xylene	TM116	**85.8** 69.99 : 108.74
p/m-Xylene	TM116	**87.2** 68.32 : 108.91
Sec-Butylbenzene	TM116	**73.8** 38.50 : 101.50
Tetrachloroethene	TM116	**97.8** 76.95 : 121.02
Toluene	TM116	**91.6** 74.24 : 107.42
Trichloroethene	TM116	**97.2** 85.28 : 109.36
Trichlorofluoromethane	TM116	**102.2** 81.46 : 120.52
Vinyl Chloride	TM116	**99.8** 68.02 : 143.37

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	01 July 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210624-33
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	604086

We received 17 samples on Wednesday June 23, 2021 and 3 of these samples were scheduled for analysis which was completed on Thursday July 01, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

App[redacted]

So

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210624-33	**Client Reference:**	784-B026948	**Report Number:**	604086
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24502124	BH12	ES1	0.30	17/06/2021
24502170	BH12	ES1	0.40	17/06/2021
24502178	BH12	ES2	1.00	17/06/2021
24502164	BH12	ES2	1.30	17/06/2021
24502185	BH43	ES7	1.30 - 1.40	18/06/2021
24502189	BH43	ES8	1.80 - 1.90	18/06/2021
24502160	BH43	ES29	10.40 - 10.50	18/06/2021
24502194	BH43	ES10	2.30 - 2.40	18/06/2021
24502198	BH43	ES13	3.50 - 3.60	18/06/2021
24502202	BH43	ES15	4.40 - 4.50	18/06/2021
24502130	BH43	ES17	4.90 - 5.00	18/06/2021
24502134	BH43	ES19	5.50 - 5.60	18/06/2021
24502139	BH43	ES21	6.50 - 6.60	18/06/2021
24502143	BH43	ES23	6.90 - 7.00	18/06/2021
24502148	BH43	ES24	7.50 - 7.60	18/06/2021
24502152	BH43	ES26	8.50 - 8.60	18/06/2021
24502156	BH43	ES27	9.50 - 9.60	18/06/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210624-33	**Client Reference:**	784-B026948	**Report Number:**	604086
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X	Test
N	No Determination Possible

Sample Types -

- S - Soil/Solid
- UNS - Unspecified Solid
- GW - Ground Water
- SW - Surface Water
- LE - Land Leachate
- PL - Prepared Leachate
- PR - Process Water
- SA - Saline Water
- TE - Trade Effluent
- TS - Treated Sewage
- US - Untreated Sewage
- RE - Recreational Water
- DW - Drinking Water Non-regulatory
- UNL - Unspecified Liquid
- SL - Sludge
- G - Gas
- OTH - Other

		Lab Sample No(s)	24502124			24502185			24502143	
		Customer Sample Reference	BH12			BH43			BH43	
		AGS Reference	ES1			ES7			ES23	
		Depth (m)	0.30			1.30 - 1.40			6.90 - 7.00	
		Container	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	60g VOC (ALE215)
		Sample Type	S	S	S	S	S	S	S	S
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 3		X			X		X	
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 3	X			X			X	
Ammonium Soil by Titration	All	NDPs: 0 Tests: 3		X			X		X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 3		X			X		X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 3	X			X			X	
Boron Water Soluble	All	NDPs: 0 Tests: 3		X			X		X	
CEN Readings	All	NDPs: 0 Tests: 3	X			X			X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 5	X	X		X	X		X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 3	X			X			X	
EPH	All	NDPs: 0 Tests: 3		X			X		X	
EPH by GCxGC-FID	All	NDPs: 0 Tests: 3		X			X		X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 3		X			X		X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 3			X			X		X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 3		X			X		X	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 3	X			X			X	

CERTIFICATE OF ANALYSIS

SDG:	210624-33	**Client Reference:**	784-B026948	**Report Number:**	604086
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24502124			24502185			24502143	
Customer Sample Reference			BH12			BH43			BH43	
AGS Reference			ES1			ES7			ES23	
Depth (m)			0.30			1.30 - 1.40			6.90 - 7.00	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S
Mercury Dissolved	All	NDPs: 0 Tests: 3	X			X			X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 3		X			X		X	
PAH by GCMS	All	NDPs: 0 Tests: 3		X			X		X	
PCBs by GCMS	All	NDPs: 0 Tests: 3		X			X		X	
pH	All	NDPs: 0 Tests: 3		X			X		X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 3	X			X			X	
Phenols by HPLC (S)	All	NDPs: 0 Tests: 3		X			X		X	
Sample description	All	NDPs: 0 Tests: 3		X			X		X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 3		X			X		X	
Sulphide	All	NDPs: 0 Tests: 3	X			X			X	
Total Organic Carbon	All	NDPs: 0 Tests: 3		X			X		X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 3		X			X		X	
VOC MS (S)	All	NDPs: 0 Tests: 3			X			X		X

CERTIFICATE OF ANALYSIS

SDG:	210624-33	**Client Reference:**	784-B026948	**Report Number:**	604086
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24502124	BH12	0.30	Dark Brown	Sandy Silt Loam	Stones	Vegetation
24502143	BH43	6.90 - 7.00	Dark Brown	Sandy Silt Loam	Stones	None
24502185	BH43	1.30 - 1.40	Dark Brown	Silty Clay	None	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210624-33	**Client Reference:**	784-B026948	**Report Number:**	604086
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH12	BH43	BH43			
			Depth (m)	0.30	1.30 - 1.40	6.90 - 7.00			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	17/06/2021	18/06/2021	18/06/2021			
			Sample Time	.	.	.			
			Date Received	23/06/2021	23/06/2021	23/06/2021			
			SDG Ref	210624-33	210624-33	210624-33			
			Lab Sample No.(s)	24502124	24502185	24502143			
			AGS Reference	ES1	ES7	ES23			
Moisture Content Ratio (% of as received sample)	%	PM024		11	18	6.5			
Exchangeable Ammonia as N	<12 mg/kg	TM024		<12 M	<12 M	<12 M			
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 M	<0.01 M	<0.01 M			
Cresols	<0.01 mg/kg	TM062 (S)		0.0112 M	<0.01 M	<0.01 M			
Xylenols	<0.015 mg/kg	TM062 (S)		<0.015 M	<0.015 M	<0.015 M			
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 M	<0.035 M	<0.035 M			
Soil Organic Matter (SOM)	<0.35 %	TM132		2.52 #	7.84 #	0.474 #			
pH	1 pH Units	TM133		7.22 M	10.3 M	7.72 M			
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #			
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M	<1 M			
PCB congener 118	<0.003 mg/kg	TM168		<0.003 M	<0.003 M	<0.003 M			
PCB congener 81	<0.003 mg/kg	TM168		<0.003 M	<0.003 M	<0.003 M			
PCB congener 77	<0.003 mg/kg	TM168		<0.003 M	<0.003 M	<0.003 M			
PCB congener 123	<0.003 mg/kg	TM168		<0.003 M	<0.003 M	<0.003 M			
PCB congener 114	<0.003 mg/kg	TM168		<0.003 M	<0.003 M	<0.003 M			
PCB congener 105	<0.003 mg/kg	TM168		<0.003 M	<0.003 M	<0.003 M			
PCB congener 126	<0.003 mg/kg	TM168		<0.003 M	<0.003 M	<0.003 M			
PCB congener 167	<0.003 mg/kg	TM168		<0.003 M	<0.003 M	<0.003 M			
PCB congener 156	<0.003 mg/kg	TM168		<0.003 M	<0.003 M	<0.003 M			
PCB congener 157	<0.003 mg/kg	TM168		<0.003 M	<0.003 M	<0.003 M			
PCB congener 169	<0.003 mg/kg	TM168		<0.003 M	<0.003 M	<0.003 M			
PCB congener 189	<0.003 mg/kg	TM168		<0.003 M	<0.003 M	<0.003 M			
Sum of detected WHO 12 PCBs	<0.036 mg/kg	TM168		<0.036	<0.036	<0.036			
Arsenic	<0.6 mg/kg	TM181		11 M	138 M	7.44 M			
Cadmium	<0.02 mg/kg	TM181		0.681 M	0.3 M	0.21 M			
Chromium	<0.9 mg/kg	TM181		92 M	43.3 M	1.38 M			
Copper	<1.4 mg/kg	TM181		27.2 M	82.4 M	7.12 M			
Iron	<1000 mg/kg	TM181		19200 #	34100 #	19700 #			
Lead	<0.7 mg/kg	TM181		64.3 M	46 M	8.73 M			
Mercury	<0.1 mg/kg	TM181		<0.1 M	<0.1 M	<0.1 M			
Nickel	<0.2 mg/kg	TM181		18.4 M	52.9 M	10.3 M			
Selenium	<1 mg/kg	TM181		<1 #	1.92 #	<1 #			
Vanadium	<0.2 mg/kg	TM181		25.3 #	114 #	13.1 #			

Validated

CERTIFICATE OF ANALYSIS

SDG:	210624-33	**Client Reference:**	784-B026948	**Report Number:**	604086
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH12	BH43	BH43
			Depth (m)	0.30	1.30 - 1.40	6.90 - 7.00
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	17/06/2021	18/06/2021	18/06/2021
			Sample Time	.	.	.
			Date Received	23/06/2021	23/06/2021	23/06/2021
			SDG Ref	210624-33	210624-33	210624-33
			Lab Sample No.(s)	24502124	24502185	24502143
			AGS Reference	ES1	ES7	ES23
Zinc	<1.9 mg/kg	TM181		113 M	59.1 M	24.2 M
Boron, water soluble	<1 mg/kg	TM222		<1 M	19.9 M	2.77 M
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		<0.004 M	1.1 M	0.18 M
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248		2.7	7.93	6.11
EPH (C5-C40)	<35 mg/kg	TM415		<35	<35	<35
EPH Surrogate % recovery**	%	TM415		89.8	88.2	103
EPH >C10-C40	<35 mg/kg	TM415		<35 M	<35 M	<35 M

Validated

CERTIFICATE OF ANALYSIS

SDG:	210624-33	**Client Reference:**	784-B026948	**Report Number:**	604086
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH12	BH43	BH43			
			Depth (m)	0.30	1.30 - 1.40	6.90 - 7.00			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	17/06/2021	18/06/2021	18/06/2021			
			Sample Time	.	.	.			
			Date Received	23/06/2021	23/06/2021	23/06/2021			
			SDG Ref	210624-33	210624-33	210624-33			
			Lab Sample No.(s)	24502124	24502185	24502143			
			AGS Reference	ES1	ES7	ES23			
Naphthalene-d8 % recovery**	%	TM218		79.3	42.2	84.3			
Acenaphthene-d10 % recovery**	%	TM218		80.8	44.1	83.1			
Phenanthrene-d10 % recovery**	%	TM218		81.3	27.7	82.6			
Chrysene-d12 % recovery**	%	TM218		76	9.47	80.3			
Perylene-d12 % recovery**	%	TM218		71.4	3.03	83.4			
Naphthalene	<0.009 mg/kg	TM218		0.0129 M	<0.009 M	<0.009 M			
Acenaphthylene	<0.012 mg/kg	TM218		0.0183 M	<0.012 M	<0.012 M			
Acenaphthene	<0.008 mg/kg	TM218		<0.008 M	<0.008 M	<0.008 M			
Fluorene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M	<0.01 M			
Phenanthrene	<0.015 mg/kg	TM218		0.0457 M	<0.015 M	<0.015 M			
Anthracene	<0.016 mg/kg	TM218		<0.016 M	<0.016 M	<0.016 M			
Fluoranthene	<0.017 mg/kg	TM218		0.116 M	<0.017 M	<0.017 M			
Pyrene	<0.015 mg/kg	TM218		0.115 M	<0.015 M	<0.015 M			
Benz(a)anthracene	<0.014 mg/kg	TM218		0.0659 M	<0.014 M	<0.014 M			
Chrysene	<0.01 mg/kg	TM218		0.0698 M	<0.01 M	<0.01 M			
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		0.0949 M	<0.015 M	<0.015 M			
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.0353 M	<0.014 M	<0.014 M			
Benzo(a)pyrene	<0.015 mg/kg	TM218		0.0711 M	<0.015 M	<0.015 M			
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.0494 M	<0.018 M	<0.018 M			
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	<0.023 M	<0.023 M			
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.052 M	<0.024 M	<0.024 M			
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		0.746	<0.118	<0.118			

CERTIFICATE OF ANALYSIS

SDG:	210624-33	**Client Reference:**	784-B026948	**Report Number:**	604086
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH12	BH43	BH43			
			Depth (m)	0.30	1.30 - 1.40	6.90 - 7.00			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	17/06/2021	18/06/2021	18/06/2021			
			Sample Time	.	.	.			
			Date Received	23/06/2021	23/06/2021	23/06/2021			
			SDG Ref	210624-33	210624-33	210624-33			
			Lab Sample No.(s)	24502124	24502185	24502143			
			AGS Reference	ES1	ES7	ES23			
Phenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Pentachlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Nitrobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Isophorone	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Hexachloroethane	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Hexachlorobutadiene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Hexachlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
n-Dioctyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Dimethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Diethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
n-Dibutyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Dibenzofuran	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Carbazole	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Butylbenzyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Azobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Chlorophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Chloroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Bromophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
3-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2-Chlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			

CERTIFICATE OF ANALYSIS

SDG:	210624-33	**Client Reference:**	784-B026948	**Report Number:**	604086
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH12	BH43	BH43			
			Depth (m)	0.30	1.30 - 1.40	6.90 - 7.00			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	17/06/2021	18/06/2021	18/06/2021			
			Sample Time	.	.	.			
			Date Received	23/06/2021	23/06/2021	23/06/2021			
			SDG Ref	210624-33	210624-33	210624-33			
			Lab Sample No.(s)	24502124	24502185	24502143			
			AGS Reference	ES1	ES7	ES23			
2,6-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2,4-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2,4-Dimethylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2,4-Dichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
1,4-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
1,3-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
1,2-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2-Chloronaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2-Methylnaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Acenaphthylene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Acenaphthene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Anthracene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Benzo(a)anthracene	<0.1 mg/kg	TM157		0.258	<0.1	<0.1			
Benzo(b)fluoranthene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Benzo(k)fluoranthene	<0.1 mg/kg	TM157		0.146	<0.1	<0.1			
Benzo(a)pyrene	<0.1 mg/kg	TM157		0.123	<0.1	<0.1			
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Chrysene	<0.1 mg/kg	TM157		0.235	<0.1	<0.1			
Fluoranthene	<0.1 mg/kg	TM157		0.448	<0.1	<0.1			
Fluorene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Phenanthrene	<0.1 mg/kg	TM157		0.347	<0.1	<0.1			
Pyrene	<0.1 mg/kg	TM157		0.392	<0.1	<0.1			
Naphthalene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			

CERTIFICATE OF ANALYSIS

SDG: 210624-33 **Client Reference:** 784-B026948 **Report Number:** 604086
Location: A46 Newark Northern Bypas **Order Number:** 7001649 **Superseded Report:**

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH12	BH43	BH43
			Depth (m)	0.30	1.30 - 1.40	6.90 - 7.00
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	17/06/2021	18/06/2021	18/06/2021
			Sample Time	.	.	.
			Date Received	23/06/2021	23/06/2021	23/06/2021
			SDG Ref	210624-33	210624-33	210624-33
			Lab Sample No.(s)	24502124	24502185	24502143
			AGS Reference	ES1	ES7	ES23
GRO Surrogate % recovery**	%	TM089		89	31.9 4	96.4
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01 4	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01 4	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	<0.01 4	<0.01
Aliphatics >C10-C12	<1 mg/kg	TM414		<1 #	<1 #	<1 #
Aliphatics >C12-C16	<1 mg/kg	TM414		<1 #	<1 #	<1 #
Aliphatics >C16-C21	<1 mg/kg	TM414		<1 #	<1 #	<1 #
Aliphatics >C21-C35	<1 mg/kg	TM414		6.99 #	5.95 #	<1 #
Aliphatics >C35-C44	<1 mg/kg	TM414		<1	<1	<1
Total Aliphatics >C10-C44	<5 mg/kg	TM414		7.15	5.95	<5
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		10.8	<10	<10
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01 4	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01 4	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01 4	<0.01
Aromatics > EC10-EC12	<1 mg/kg	TM414		<1 #	<1 #	<1 #
Aromatics > EC12-EC16	<1 mg/kg	TM414		<1 #	<1 #	<1 #
Aromatics > EC16-EC21	<1 mg/kg	TM414		<1 #	<1 #	<1 #
Aromatics > EC21-EC35	<1 mg/kg	TM414		2.56 #	<1 #	<1 #
Aromatics >EC35-EC44	<1 mg/kg	TM414		<1	<1	<1
Aromatics > EC40-EC44	<1 mg/kg	TM414		<1	<1	<1
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		<5	<5	<5
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		<10	<10	<10
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		<0.05	<0.05 4	<0.05
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		<0.05	<0.05 4	<0.05
GRO >C5-C10	<0.02 mg/kg	TM089		<0.02	<0.02 4	<0.02

Validated

CERTIFICATE OF ANALYSIS

SDG: 210624-33 **Client Reference:** 784-B026948 **Report Number:** 604086
Location: A46 Newark Northern Bypas **Order Number:** 7001649 **Superseded Report:**

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH12	BH43	BH43			
			Depth (m)	0.30	1.30 - 1.40	6.90 - 7.00			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	17/06/2021	18/06/2021	18/06/2021			
			Sample Time	.	.	.			
			Date Received	23/06/2021	23/06/2021	23/06/2021			
			SDG Ref	210624-33	210624-33	210624-33			
			Lab Sample No.(s)	24502124	24502185	24502143			
			AGS Reference	ES1	ES7	ES23			
Dibromofluoromethane**	%	TM116		117	119	131			
Toluene-d8**	%	TM116		101	100	101			
4-Bromofluorobenzene**	%	TM116		96.3	91.8	101			
Dichlorodifluoromethane	<0.006 mg/kg	TM116		<0.12 M	<0.12 M	<0.12 M			
Chloromethane	<0.007 mg/kg	TM116		<0.14 #	<0.14 #	<0.14 #			
Vinyl Chloride	<0.006 mg/kg	TM116		<0.12 @ M	<0.12 M	<0.12 M			
Bromomethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
Chloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
Trichlorofluorormethane	<0.006 mg/kg	TM116		<0.12 M	<0.12 M	<0.12 M			
1,1-Dichloroethene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #	<0.2 #			
Carbon Disulphide	<0.007 mg/kg	TM116		<0.14 M	<0.14 M	<0.14 M			
Dichloromethane	<0.01 mg/kg	TM116		<0.2 #	<0.2 #	<0.2 #			
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
1,1-Dichloroethane	<0.008 mg/kg	TM116		<0.16 3 M	<0.16 3 M	<0.16 3 M			
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116		<0.12 M	<0.12 M	<0.12 M			
2,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2	<0.2	<0.2			
Bromochloromethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
Chloroform	<0.008 mg/kg	TM116		<0.16 M	<0.16 M	<0.16 M			
1,1,1-Trichloroethane	<0.007 mg/kg	TM116		<0.14 M	<0.14 M	<0.14 M			
1,1-Dichloropropene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
Carbontetrachloride	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
1,2-Dichloroethane	<0.005 mg/kg	TM116		<0.1 M	<0.1 M	<0.1 M			
Benzene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M	<0.18 M			
Trichloroethene	<0.009 mg/kg	TM116		<0.18 #	<0.18 #	<0.18 #			
1,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
Dibromomethane	<0.009 mg/kg	TM116		<0.18 M	<0.18 M	<0.18 M			
Bromodichloromethane	<0.007 mg/kg	TM116		<0.14 M	<0.14 M	<0.14 M			
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
Toluene	<0.007 mg/kg	TM116		<0.14 M	<0.14 M	<0.14 M			
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2	<0.2	<0.2			
1,1,2-Trichloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
1,3-Dichloropropane	<0.007 mg/kg	TM116		<0.14 M	<0.14 M	<0.14 M			

CERTIFICATE OF ANALYSIS

SDG:	210624-33	**Client Reference:**	784-B026948	**Report Number:**	604086
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH12	BH43	BH43			
			Depth (m)	0.30	1.30 - 1.40	6.90 - 7.00			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	17/06/2021	18/06/2021	18/06/2021			
			Sample Time	.	.	.			
			Date Received	23/06/2021	23/06/2021	23/06/2021			
			SDG Ref	210624-33	210624-33	210624-33			
			Lab Sample No.(s)	24502124	24502185	24502143			
			AGS Reference	ES1	ES7	ES23			
Tetrachloroethene	<0.005 mg/kg	TM116		<0.1 M	<0.1 M	<0.1 M			
Dibromochloromethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
1,2-Dibromoethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
Chlorobenzene	<0.005 mg/kg	TM116		<0.1 M	<0.1 M	<0.1 M			
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 M	<0.08 M	<0.08 M			
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #	<0.2 #			
o-Xylene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
Styrene	<0.01 mg/kg	TM116		<0.2 @#	<0.2 #	<0.2 #			
Bromoform	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
Isopropylbenzene	<0.005 mg/kg	TM116		<0.1 #	<0.1 #	<0.1 #			
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 #	<0.2 #	<0.2 #			
1,2,3-Trichloropropane	<0.016 mg/kg	TM116		<0.32 M	<0.32 M	<0.32 M			
Bromobenzene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
Propylbenzene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
2-Chlorotoluene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M	<0.18 M			
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116		<0.16 M	<0.16 M	<0.16 M			
4-Chlorotoluene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
tert-Butylbenzene	<0.014 mg/kg	TM116		<0.28 M	<0.28 M	<0.28 M			
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116		<0.18 #	<0.18 #	<0.18 #			
sec-Butylbenzene	<0.01 mg/kg	TM116		<0.2	<0.2	<0.2			
4-Isopropyltoluene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
1,3-Dichlorobenzene	<0.008 mg/kg	TM116		<0.16 M	<0.16 M	<0.16 M			
1,4-Dichlorobenzene	<0.005 mg/kg	TM116		<0.1 M	<0.1 M	<0.1 M			
n-Butylbenzene	<0.011 mg/kg	TM116		<0.22	<0.22	<0.22			
1,2-Dichlorobenzene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M			
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116		<0.28 M	<0.28 M	<0.28 M			
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.2 #	<0.2 #	<0.2 #			
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4	<0.4	<0.4			
Hexachlorobutadiene	<0.02 mg/kg	TM116		<0.4	<0.4	<0.4			
Naphthalene	<0.013 mg/kg	TM116		<0.26 M	<0.26 M	<0.26 M			
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4 #	<0.4 #	<0.4 #			
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4	<0.4	<0.4			

Validated

CERTIFICATE OF ANALYSIS

SDG:	210624-33	**Client Reference:**	784-B026948	**Report Number:**	604086
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH12	BH43	BH43			
			Depth (m)	0.30	1.30 - 1.40	6.90 - 7.00			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	17/06/2021	18/06/2021	18/06/2021			
			Sample Time	.	.	.			
			Date Received	23/06/2021	23/06/2021	23/06/2021			
			SDG Ref	210624-33	210624-33	210624-33			
			Lab Sample No.(s)	24502124	24502185	24502143			
			AGS Reference	ES1	ES7	ES23			
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4	<0.4	<0.4			
Sum of BTEX	<0.04 mg/kg	TM116		<0.8	<0.8	<0.8			

CERTIFICATE OF ANALYSIS

SDG:	210624-33	**Client Reference:**	784-B026948	**Report Number:**	604086
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	BH12ES1 0.30 SOLID 17/06/2021 00:00:00 23/06/2021 05:00:00 210624-33 24502124 TM048	28/06/2021	Agnieszka Chelmowska	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	BH43ES7 1.30 - 1.40 SOLID 18/06/2021 00:00:00 23/06/2021 05:00:00 210624-33 24502185 TM048	28/06/2021	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	BH43ES23 6.90 - 7.00 SOLID 18/06/2021 00:00:00 23/06/2021 05:00:00 210624-33 24502143 TM048	29/06/2021	Agnieszka Chelmowska	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	210624-33	**Client Reference:**	784-B026948	**Report Number:**	604086
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.105	**Natural Moisture Content (%)**	15.9
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	86.3
Particle Size <4mm	>95%		

Case	
SDG	210624-33
Lab Sample Number(s)	24502124
Sampled Date	17-Jun-2021
Customer Sample Ref.	BH12 ES1
Depth (m)	0.30

Eluate Analysis	**C_2 Conc^n in 10:1 eluate (mg/l)**		**A_2 10:1 conc^n leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	0.0000114	<0.00001	0.000114	<0.0001	-	-	-
Arsenic	0.00109	<0.0005	0.0109	<0.005	-	-	-
Boron	0.0416	<0.01	0.416	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.00283	<0.001	0.0283	<0.01	-	-	-
Copper	0.00617	<0.0003	0.0617	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.381	<0.019	3.81	<0.19	-	-	-
Lead	0.00203	<0.0002	0.0203	<0.002	-	-	-
Nickel	0.00202	<0.0004	0.0202	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00307	<0.001	0.0307	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	25-Jun-2021
pH (pH Units)	7.23
Conductivity (µS/cm)	58.60
Temperature (°C)	21.70
Volume Leachant (Litres)	0.885

CERTIFICATE OF ANALYSIS

SDG:	210624-33	**Client Reference:**	784-B026948	**Report Number:**	604086
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.097	**Natural Moisture Content (%)**	7.36
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	93.1
Particle Size <4mm	>95%		

Case	
SDG	210624-33
Lab Sample Number(s)	24502143
Sampled Date	18-Jun-2021
Customer Sample Ref.	BH43 ES23
Depth (m)	6.90 - 7.00

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.000814	<0.0005	0.00814	<0.005	-	-	-
Boron	0.18	<0.01	1.8	<0.1	-	-	-
Cadmium	0.000977	<0.00008	0.00977	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.124	<0.019	1.24	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	0.00141	<0.001	0.0141	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.226	<0.001	2.26	<0.01	-	-	-
Sulphide	0.0246	<0.01	0.246	<0.1	-	-	-

Leach Test Information

Date Prepared	25-Jun-2021
pH (pH Units)	7.92
Conductivity (µS/cm)	203.00
Temperature (°C)	20.50
Volume Leachant (Litres)	0.893

CERTIFICATE OF ANALYSIS

SDG:	210624-33	**Client Reference:**	784-B026948	**Report Number:**	604086
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.110	**Natural Moisture Content (%)**	21.7
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	82.2
Particle Size <4mm	>95%		

Case	
SDG	210624-33
Lab Sample Number(s)	24502185
Sampled Date	18-Jun-2021
Customer Sample Ref.	BH43 ES7
Depth (m)	1.30 - 1.40

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.0783	<0.0005	0.783	<0.005	-	-	-
Boron	0.98	<0.01	9.8	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.0113	<0.001	0.113	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.19	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	0.0152	<0.001	0.152	<0.01	-	-	-
Vanadium	0.195	<0.001	1.95	<0.01	-	-	-
Zinc	<0.001	<0.001	<0.01	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	25-Jun-2021
pH (pH Units)	10.73
Conductivity (µS/cm)	710.00
Temperature (°C)	21.10
Volume Leachant (Litres)	0.880

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210624-33	**Client Reference:**	784-B026948	**Report Number:**	604086
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24502124	24502143	24502185
Customer Sample Ref.	BH12	BH43	BH43
AGS Ref.	ES1	ES23	ES7
Depth	0.30	6.90 - 7.00	1.30 - 1.40
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	29-Jun-2021	29-Jun-2021	29-Jun-2021
Ammoniacal Nitrogen	30-Jun-2021	01-Jul-2021	01-Jul-2021
Ammonium Soil by Titration	28-Jun-2021	01-Jul-2021	28-Jun-2021
Anions by Kone (soil)	28-Jun-2021	29-Jun-2021	28-Jun-2021
Asbestos ID in Solid Samples	28-Jun-2021	29-Jun-2021	28-Jun-2021
Boron Water Soluble	28-Jun-2021	29-Jun-2021	28-Jun-2021
CEN 10:1 Leachate (1 Stage)	25-Jun-2021	25-Jun-2021	25-Jun-2021
CEN Readings	29-Jun-2021	30-Jun-2021	29-Jun-2021
Cyanide Comp/Free/Total/Thiocyanate	01-Jul-2021	01-Jul-2021	01-Jul-2021
Dissolved Metals by ICP-MS	29-Jun-2021	29-Jun-2021	29-Jun-2021
EPH	28-Jun-2021	28-Jun-2021	29-Jun-2021
EPH by GCxGC-FID	28-Jun-2021	28-Jun-2021	28-Jun-2021
EPH CWG GC (S)	28-Jun-2021	28-Jun-2021	29-Jun-2021
GRO by GC-FID (S)	28-Jun-2021	25-Jun-2021	29-Jun-2021
Hexavalent Chromium (s)	30-Jun-2021	30-Jun-2021	30-Jun-2021
Hexavalent Chromium (w)	29-Jun-2021	29-Jun-2021	29-Jun-2021
Mercury Dissolved	01-Jul-2021	01-Jul-2021	01-Jul-2021
Metals in solid samples by OES	30-Jun-2021	30-Jun-2021	29-Jun-2021
Moisture at 105C	25-Jun-2021	25-Jun-2021	25-Jun-2021
PAH by GCMS	28-Jun-2021	25-Jun-2021	29-Jun-2021
PCBs by GCMS	28-Jun-2021	28-Jun-2021	28-Jun-2021
pH	25-Jun-2021	25-Jun-2021	29-Jun-2021
pH Value of Filtered Water	29-Jun-2021	29-Jun-2021	29-Jun-2021
Phenols by HPLC (S)	28-Jun-2021	29-Jun-2021	29-Jun-2021
Sample description	24-Jun-2021	24-Jun-2021	24-Jun-2021
Semi Volatile Organic Compounds	01-Jul-2021	25-Jun-2021	01-Jul-2021
Sulphide	29-Jun-2021	29-Jun-2021	29-Jun-2021
Total Organic Carbon	30-Jun-2021	30-Jun-2021	30-Jun-2021
TPH CWG GC (S)	28-Jun-2021	28-Jun-2021	29-Jun-2021
VOC MS (S)	28-Jun-2021	25-Jun-2021	28-Jun-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2494	QC 2420
Ammoniacal Nitrogen as N	TM099	**95.2** 88.02 : 104.70	**98.4** 88.02 : 104.70

Ammonium Soil by Titration

Component	Method Code	QC 2407	QC 2467
Exchangeable Ammonium as NH4	TM024	**82.09** 74.04 : 103.44	**88.56** 74.04 : 103.44

Anions by Kone (soil)

Component	Method Code	QC 2458	QC 2468	QC 2460
Chloride (soluble)	TM243	**143.01** 83.05 : 116.28	**140.93** 83.05 : 116.28	**147.15** 80.93 : 111.66
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**161.21** 70.00 : 130.00	**156.07** 70.00 : 130.00	**153.27** 70.00 : 130.00

Boron Water Soluble

Component	Method Code	QC 2425	QC 2436
Water Soluble Boron	TM222	**92.5** 84.00 : 111.00	**97.5** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2424	QC 2449
Free Cyanide	TM153	**93.27** 78.00 : 114.00	
Free Cyanide (W)	TM227		**82.0** 90.67 : 122.67
Thiocyanate	TM153	**97.44** 94.53 : 113.33	
Thiocyanate (W)	TM227		**108.75** 92.25 : 117.75
Total Cyanide	TM153	**106.29** 77.13 : 111.53	
Total Cyanide (W)	TM227		**105.25** 88.75 : 111.25

Dissolved Metals by ICP-MS

Dissolved Metals by ICP-MS

Component	Method Code	QC 2409
Aluminium	TM152	**100.33** 94.21 : 111.52
Antimony	TM152	**111.5** 88.37 : 130.57
Arsenic	TM152	**103.33** 92.62 : 113.52
Barium	TM152	**101.0** 88.62 : 113.14
Beryllium	TM152	**98.83** 87.08 : 111.38
Bismuth	TM152	**97.0** 92.62 : 115.02
Boron	TM152	**101.0** 86.31 : 120.88
Cadmium	TM152	**100.83** 93.85 : 111.65
Calcium	TM152	**101.33** 89.20 : 126.91
Chromium	TM152	**102.17** 92.50 : 113.03
Cobalt	TM152	**104.0** 85.01 : 114.87
Copper	TM152	**103.67** 89.87 : 119.73
Iron	TM152	**103.33** 93.02 : 113.86
Lead	TM152	**101.17** 91.11 : 116.98
Lithium	TM152	**98.5** 87.70 : 115.90
Magnesium	TM152	**100.67** 89.60 : 116.61
Manganese	TM152	**103.33** 93.97 : 112.46
Molybdenum	TM152	**102.0** 89.07 : 110.96
Nickel	TM152	**105.5** 93.70 : 112.15
Phosphorus	TM152	**102.33** 89.24 : 114.18
Potassium	TM152	**102.0** 93.20 : 115.55
Selenium	TM152	**98.17** 91.69 : 117.12
Silver	TM152	**102.67** 90.93 : 121.73
Sodium	TM152	**101.33** 92.42 : 113.24
Strontium	TM152	**102.0** 92.14 : 116.24
Tellurium	TM152	**102.5** 89.88 : 111.78
Thallium	TM152	**92.83** 82.43 : 113.83

Dissolved Metals by ICP-MS

		QC 2409
Tin	TM152	**100.0** 94.62 : 107.79
Titanium	TM152	**100.5** 90.29 : 115.23
Tungsten	TM152	**99.33** 77.61 : 132.31
Uranium	TM152	**98.5** 86.97 : 115.76
Vanadium	TM152	**100.33** 89.61 : 115.48
Zinc	TM152	**103.33** 87.51 : 116.26

GRO by GC-FID (S)

Component	Method Code	QC 2477	QC 2495	QC 2465
QC	TM089	**89.92** 68.78 : 110.61	**93.38** 72.28 : 114.54	**93.07** 68.78 : 110.61

Hexavalent Chromium (s)

Component	Method Code	QC 2421	QC 2434	QC 2436
Hexavalent Chromium	TM151	**104.0** 91.40 : 115.40	**96.0** 91.40 : 115.40	**108.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2430
Hexavalent Chromium	TM241	**98.8** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2449	QC 2453
Mercury Dissolved (CVAF)	TM183	**90.8** 0.00 : 0.00	**91.1** 0.00 : 0.00

Metals in solid samples by OES

CERTIFICATE OF ANALYSIS

SDG:	210624-33	**Client Reference:**	784-B026948	**Report Number:**	604086
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Metals in solid samples by OES

Component	Method Code	QC 2417	QC 2419	QC 2421
Aluminium	TM181	**90.27** 73.56 : 108.85	**94.69** 73.56 : 108.85	**97.35** 73.56 : 108.85
Antimony	TM181	**93.5** 76.89 : 111.24	**85.37** 76.89 : 111.24	**96.34** 76.89 : 111.24
Arsenic	TM181	**97.67** 88.53 : 111.01	**95.93** 88.53 : 111.01	**97.97** 88.53 : 111.01
Barium	TM181	**94.5** 77.67 : 105.35	**96.33** 77.67 : 105.35	**99.08** 77.67 : 105.35
Beryllium	TM181	**100.0** 85.44 : 109.61	**97.39** 85.44 : 109.61	**98.88** 85.44 : 109.61
Boron	TM181	**85.39** 73.51 : 104.66	**86.53** 73.51 : 104.66	**90.83** 73.51 : 104.66
Cadmium	TM181	**92.18** 77.67 : 104.12	**92.18** 77.67 : 104.12	**93.0** 77.67 : 104.12
Chromium	TM181	**86.0** 79.64 : 105.83	**87.83** 79.64 : 105.83	**87.83** 79.64 : 105.83
Cobalt	TM181	**96.54** 84.60 : 104.13	**95.91** 84.60 : 104.13	**96.54** 84.60 : 104.13
Copper	TM181	**97.18** 82.40 : 105.45	**96.48** 82.40 : 105.45	**98.94** 82.40 : 105.45
Iron	TM181	**94.44** 82.95 : 110.58	**94.44** 82.95 : 110.58	**98.41** 82.95 : 110.58
Lead	TM181	**97.97** 78.24 : 104.05	**93.02** 78.24 : 104.05	**93.02** 78.24 : 104.05
Manganese	TM181	**108.06** 94.29 : 119.51	**103.89** 94.29 : 119.51	**107.22** 94.29 : 119.51
Mercury	TM181	**87.92** 83.16 : 107.81	**87.92** 83.16 : 107.81	**89.61** 83.16 : 107.81
Molybdenum	TM181	**98.35** 87.11 : 106.87	**92.59** 87.11 : 106.87	**98.35** 87.11 : 106.87
Nickel	TM181	**89.73** 80.26 : 102.28	**89.98** 80.26 : 102.28	**89.98** 80.26 : 102.28
Phosphorus	TM181	**105.45** 94.56 : 124.28	**102.42** 94.56 : 124.28	**105.05** 94.56 : 124.28
Selenium	TM181	**100.39** 82.28 : 110.48	**99.22** 82.28 : 110.48	**100.39** 82.28 : 110.48
Strontium	TM181	**93.1** 79.13 : 102.79	**91.76** 79.13 : 102.79	**94.88** 79.13 : 102.79
Thallium	TM181	**89.82** 82.94 : 111.86	**89.38** 82.94 : 111.86	**89.38** 82.94 : 111.86
Tin	TM181	**96.2** 86.72 : 110.03	**95.06** 86.72 : 110.03	**98.1** 86.72 : 110.03
Titanium	TM181	**76.34** 66.23 : 102.06	**69.62** 66.23 : 102.06	**88.55** 66.23 : 102.06
Vanadium	TM181	**96.34** 86.19 : 109.45	**93.04** 86.19 : 109.45	**97.8** 86.19 : 109.45
Zinc	TM181	**94.25** 84.68 : 113.99	**96.92** 84.68 : 113.99	**96.3** 84.68 : 113.99

PAH by GCMS

PAH by GCMS

Component	Method Code	QC 2429	QC 2462
Acenaphthene	TM218	**91.5** 76.79 : 103.90	**87.5** 76.79 : 103.90
Acenaphthylene	TM218	**89.0** 74.19 : 106.17	**85.0** 74.19 : 106.17
Anthracene	TM218	**91.0** 70.90 : 109.22	**88.0** 70.90 : 109.22
Benz(a)anthracene	TM218	**95.5** 73.77 : 119.26	**94.0** 73.77 : 119.26
Benzo(a)pyrene	TM218	**97.0** 73.20 : 114.18	**99.0** 73.20 : 114.18
Benzo(b)fluoranthene	TM218	**87.5** 75.36 : 117.58	**91.0** 75.36 : 117.58
Benzo(ghi)perylene	TM218	**94.0** 70.73 : 116.12	**89.5** 70.73 : 116.12
Benzo(k)fluoranthene	TM218	**94.0** 75.98 : 116.59	**92.5** 75.98 : 116.59
Chrysene	TM218	**94.5** 74.82 : 114.18	**90.5** 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	**90.5** 69.17 : 115.30	**88.5** 69.17 : 115.30
Fluoranthene	TM218	**97.0** 66.06 : 114.63	**87.5** 66.06 : 114.63
Fluorene	TM218	**90.5** 76.66 : 107.56	**88.0** 76.66 : 107.56
Indeno(123cd)pyrene	TM218	**84.5** 70.26 : 117.95	**85.0** 70.26 : 117.95
Naphthalene	TM218	**89.5** 74.70 : 101.83	**80.5** 74.70 : 101.83
Phenanthrene	TM218	**94.5** 73.62 : 109.34	**87.5** 73.62 : 109.34
Pyrene	TM218	**95.0** 71.46 : 117.00	**87.5** 71.46 : 117.00

PCBs by GCMS

Component	Method Code	QC 2465
PCB congener 101	TM168	**81.4** 65.66 : 110.06
PCB congener 105	TM168	**77.3** 58.10 : 106.34
PCB congener 114	TM168	**76.9** 59.38 : 106.48
PCB congener 118	TM168	**79.4** 60.02 : 106.23
PCB congener 123	TM168	**82.4** 65.01 : 99.81
PCB congener 126	TM168	**76.5** 59.31 : 109.23
PCB congener 138	TM168	**79.8** 63.95 : 107.63
PCB congener 153	TM168	**83.0** 62.65 : 108.85
PCB congener 156	TM168	**74.7** 61.69 : 112.27

PCBs by GCMS

		QC 2465
PCB congener 157	TM168	**73.2** 55.37 : 104.81
PCB congener 167	TM168	**73.8** 65.58 : 109.14
PCB congener 169	TM168	**74.4** 56.84 : 112.10
PCB congener 180	TM168	**77.8** 66.99 : 111.63
PCB congener 189	TM168	**71.7** 57.75 : 112.59
PCB congener 28	TM168	**86.8** 73.68 : 105.96
PCB congener 52	TM168	**83.8** 67.24 : 107.62
PCB congener 77	TM168	**82.1** 64.87 : 108.49
PCB congener 81	TM168	**82.9** 70.78 : 110.80

pH

Component	Method Code	QC 2465	QC 2457	QC 2426
pH	TM133	**100.59** 98.09 : 101.62	**101.03** 98.09 : 101.62	**99.85** 98.09 : 101.62

pH Value of Filtered Water

Component	Method Code	QC 2444
pH	TM256	**99.87** 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2477
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**51.3** 70.71 : 116.42
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**43.86** 64.54 : 117.79
Cresols by HPLC (S)	TM062 (S)	**47.6** 74.40 : 108.98
Phenol by HPLC (S)	TM062 (S)	**49.67** 69.44 : 122.18
Xylenols by HPLC (S)	TM062 (S)	**48.85** 76.56 : 106.38

Semi Volatile Organic Compounds

Semi Volatile Organic Compounds

Component	Method Code	QC 2408	QC 2462
4-Bromophenylphenylether (Soil)	TM157	**91.0** 66.75 : 125.25	**95.0** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**91.0** 67.40 : 120.50	**98.5** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**92.0** 68.25 : 126.75	**94.0** 68.25 : 126.75
Naphthalene (Soil)	TM157	**95.0** 67.55 : 125.45	**96.5** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**99.5** 66.50 : 123.50	**94.0** 66.50 : 123.50
Phenol (Soil)	TM157	**98.5** 69.92 : 114.02	**100.0** 69.92 : 114.02

Sulphide

Component	Method Code	QC 2464
Sulphide	TM101	**96.67** 88.90 : 112.50

Total Organic Carbon

Component	Method Code	QC 2456	QC 2444
Total Organic Carbon	TM132	**94.53** 84.82 : 117.61	**92.97** 84.82 : 117.61

VOC MS (S)

Component	Method Code	QC 2485
1,1,1,2-tetrachloroethane	TM116	**109.8** 86.59 : 118.97
1,1,1-Trichloroethane	TM116	**105.4** 86.26 : 117.53
1,1,2-Trichloroethane	TM116	**112.2** 75.16 : 112.70
1,1-Dichloroethane	TM116	**117.0** 83.27 : 122.16
1,2-Dichloroethane	TM116	**125.0** 89.30 : 133.10
1,4-Dichlorobenzene	TM116	**113.8** 82.59 : 123.23
2-Chlorotoluene	TM116	**96.4** 66.81 : 118.43
4-Chlorotoluene	TM116	**98.0** 65.88 : 114.76
Benzene	TM116	**104.2** 93.16 : 123.63
Carbon Disulphide	TM116	**101.0** 75.11 : 124.81

VOC MS (S)

		QC 2485
Carbontetrachloride	TM116	**105.8** 82.35 : 126.46
Chlorobenzene	TM116	**109.0** 85.07 : 118.13
Chloroform	TM116	**115.2** 88.13 : 122.71
Chloromethane	TM116	**78.8** 61.62 : 145.66
Cis-1,2-Dichloroethene	TM116	**112.6** 88.41 : 121.33
Dibromomethane	TM116	**115.4** 77.47 : 121.29
Dichloromethane	TM116	**132.0** 87.89 : 134.72
Ethylbenzene	TM116	**92.8** 76.29 : 106.31
Hexachlorobutadiene	TM116	**91.6** 16.78 : 153.29
Isopropylbenzene	TM116	**79.6** 59.16 : 110.07
Naphthalene	TM116	**113.6** 79.29 : 125.59
o-Xylene	TM116	**85.6** 72.86 : 102.10
p/m-Xylene	TM116	**84.9** 68.99 : 102.40
Sec-Butylbenzene	TM116	**68.4** 44.71 : 117.87
Tetrachloroethene	TM116	**102.2** 77.82 : 125.00
Toluene	TM116	**101.2** 87.82 : 116.21
Trichloroethene	TM116	**102.0** 79.80 : 112.33
Trichlorofluoromethane	TM116	**108.0** 80.52 : 132.12
Vinyl Chloride	TM116	**103.6** 74.57 : 146.88

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

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Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	09 July 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210624-34
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	605089

We received 2 samples on Wednesday June 23, 2021 and 1 of these samples were scheduled for analysis which was completed on Friday July 09, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210624-34	**Client Reference:**	784-B026948	**Report Number:**	605089
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24502213	BH44	ES1	0.40	18/06/2021
24502221	BH44	ES2	0.90	18/06/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	210624-34	**Client Reference:**	784-B026948	**Report Number:**	605089
Location:	A46 Newark Northern Bypa	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24502213			
Customer Sample Reference			BH44			
AGS Reference			ES1			
Depth (m)			0.40			
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	
Anions by Kone (w)	All	NDPs: 0 Tests: 1	X			
CEN Readings	All	NDPs: 0 Tests: 1	X			
Coronene	All	NDPs: 0 Tests: 1		X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1	X			
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1	X			
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1		X		
Fluoride	All	NDPs: 0 Tests: 1	X			
Mercury Dissolved	All	NDPs: 0 Tests: 1	X			
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1		X		
PAH by GCMS	All	NDPs: 0 Tests: 1		X		
PCBs by GCMS	All	NDPs: 0 Tests: 1		X		
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1	X			
Sample description	All	NDPs: 0 Tests: 1		X		
Total Dissolved Solids	All	NDPs: 0 Tests: 1	X			
Total Organic Carbon	All	NDPs: 0 Tests: 1		X		

CERTIFICATE OF ANALYSIS

SDG:	210624-34	**Client Reference:**	784-B026948	**Report Number:**	605089
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24502213		
Customer Sample Reference			BH44		
AGS Reference			ES1		
Depth (m)			0.40		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S
VOC MS (S)	All	NDPs: 0 Tests: 1			X

CERTIFICATE OF ANALYSIS

SDG:	210624-34	**Client Reference:**	784-B026948	**Report Number:**	605089
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24502213	BH44	0.40	Light Brown	Sand	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210624-34	**Client Reference:**	784-B026948	**Report Number:**	605089
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH44
Depth (m)	0.40
Sample Type	Soil/Solid (S)
Date Sampled	18/06/2021
Sampled Time	.
Date Received	23/06/2021
SDG Ref	210624-34
Lab Sample No.(s)	24502213
AGS Reference	ES1

Component	LOD/Units	Method	
Moisture Content Ratio (% of as received sample)	%	PM024	7.6
Organic Carbon, Total	<0.2 %	TM132	<0.2 M
PCB congener 28	<0.003 mg/kg	TM168	<0.003 M
PCB congener 52	<0.003 mg/kg	TM168	<0.003 M
PCB congener 101	<0.003 mg/kg	TM168	<0.003 M
PCB congener 118	<0.003 mg/kg	TM168	<0.003 M
PCB congener 138	<0.003 mg/kg	TM168	<0.003 M
PCB congener 153	<0.003 mg/kg	TM168	<0.003 M
PCB congener 180	<0.003 mg/kg	TM168	<0.003 M
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168	<0.021
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10
Coronene	<0.2 mg/kg	TM410	<0.2
EPH Surrogate % recovery**	%	TM415	93.6
Mineral Oil >C10-C40	<5 mg/kg	TM415	7.09

CERTIFICATE OF ANALYSIS

SDG:	210624-34	**Client Reference:**	784-B026948	**Report Number:**	605089
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH44
Depth (m)	0.40
Sample Type	Soil/Solid (S)
Date Sampled	18/06/2021
Sampled Time	.
Date Received	23/06/2021
SDG Ref	210624-34
Lab Sample No.(s)	24502213
AGS Reference	ES1

Component	LOD/Units	Method	
Dibromofluoromethane**	%	TM116	109
Toluene-d8**	%	TM116	101
4-Bromofluorobenzene**	%	TM116	100
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.2 M
Benzene	<0.009 mg/kg	TM116	<0.18 M
Toluene	<0.007 mg/kg	TM116	<0.14 M
Ethylbenzene	<0.004 mg/kg	TM116	<0.08 M
p/m-Xylene	<0.01 mg/kg	TM116	<0.2 #
o-Xylene	<0.01 mg/kg	TM116	<0.2 M

Validated

CERTIFICATE OF ANALYSIS

SDG:	210624-34	**Client Reference:**	784-B026948	**Report Number:**	605089
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.103	**Natural Moisture Content (%)**	13.9
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	87.8
Particle Size <4mm	>95%		

Case	
SDG	210624-34
Lab Sample Number(s)	24502213
Sampled Date	18-Jun-2021
Customer Sample Ref.	BH44 ES1
Depth (m)	0.40

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	-	-	-	-
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	7.09	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	-	-	-	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.24	<0.0002	2.4	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	<0.0003	<0.0003	<0.003	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	<0.0004	<0.0004	<0.004	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.0254	<0.001	0.254	<0.01	4	50	200
Chloride	10.3	<2	103	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	<2	<2	<20	<20	1000	20000	50000
Total Dissolved Solids	100	<5	1000	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	24-Jun-2021
pH (pH Units)	9.74
Conductivity (µS/cm)	116.00
Temperature (°C)	19.10
Volume Leachant (Litres)	0.888

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation

09/07/2021 14:16:21

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210624-34	**Client Reference:**	784-B026948	**Report Number:**	605089
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24502213
Customer Sample Ref.	BH44
AGS Ref.	ES1
Depth	0.40
Type	Soil/Solid (S)
Anions by Kone (w)	30-Jun-2021
CEN 10:1 Leachate (1 Stage)	24-Jun-2021
CEN Readings	30-Jun-2021
Coronene	25-Jun-2021
Dissolved Metals by ICP-MS	30-Jun-2021
Dissolved Organic/Inorganic Carbon	09-Jul-2021
EPH by GCxGC-FID	28-Jun-2021
Fluoride	30-Jun-2021
Mercury Dissolved	01-Jul-2021
Moisture at 105C	24-Jun-2021
PAH 16 & 17 Calc	25-Jun-2021
PAH by GCMS	25-Jun-2021
PCBs by GCMS	29-Jun-2021
Phenols by HPLC (W)	01-Jul-2021
Sample description	24-Jun-2021
Total Dissolved Solids	30-Jun-2021
Total Organic Carbon	30-Jun-2021
VOC MS (S)	25-Jun-2021

ASSOCIATED AQC DATA

Anions by Kone (w)

Component	Method Code	QC 2404
Chloride	TM184	**104.0** 92.93 : 115.43
Sulphate (soluble)	TM184	**102.4** 90.53 : 113.03

Coronene

Component	Method Code	QC 2475
Coronene RAW	TM410	**88.5** 79.43 : 137.78

Dissolved Metals by ICP-MS

Component	Method Code	QC 2431
Aluminium	TM152	**102.0** 94.21 : 111.52
Antimony	TM152	**98.67** 88.37 : 130.57
Arsenic	TM152	**101.5** 92.62 : 113.52
Barium	TM152	**101.83** 88.62 : 113.14
Beryllium	TM152	**102.83** 87.08 : 111.38
Bismuth	TM152	**100.17** 92.62 : 115.02
Boron	TM152	**102.67** 86.31 : 120.88
Cadmium	TM152	**102.33** 93.85 : 111.65
Calcium	TM152	**102.0** 89.20 : 126.91
Chromium	TM152	**101.17** 92.50 : 113.03
Cobalt	TM152	**101.0** 85.01 : 114.87
Copper	TM152	**100.83** 89.87 : 119.73
Iron	TM152	**101.33** 93.02 : 113.86
Lead	TM152	**101.5** 91.11 : 116.98
Lithium	TM152	**101.67** 87.70 : 115.90
Magnesium	TM152	**100.0** 89.60 : 116.61
Manganese	TM152	**102.5** 93.97 : 112.46

Dissolved Metals by ICP-MS

		QC 2431
Molybdenum	TM152	**100.0** 89.07 : 110.96
Nickel	TM152	**100.83** 93.70 : 112.15
Phosphorus	TM152	**102.83** 89.24 : 114.18
Potassium	TM152	**100.67** 93.20 : 115.55
Selenium	TM152	**103.33** 91.69 : 117.12
Silver	TM152	**101.5** 90.93 : 121.73
Sodium	TM152	**100.0** 92.42 : 113.24
Strontium	TM152	**102.33** 92.14 : 116.24
Tellurium	TM152	**101.67** 89.88 : 111.78
Thallium	TM152	**105.33** 82.43 : 113.83
Tin	TM152	**100.67** 94.62 : 107.79
Titanium	TM152	**100.0** 90.29 : 115.23
Tungsten	TM152	**99.0** 77.61 : 132.31
Uranium	TM152	**99.67** 86.97 : 115.76
Vanadium	TM152	**103.0** 89.61 : 115.48
Zinc	TM152	**102.0** 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2463
Dissolved Inorganic Carbon	TM090	**99.67** 93.58 : 112.28
Dissolved Organic Carbon	TM090	**101.0** 96.13 : 109.53

Fluoride

Component	Method Code	QC 2465
Fluoride	TM104	**102.0** 96.67 : 108.67

Mercury Dissolved

Mercury Dissolved

Component	Method Code	QC 2487
Mercury Dissolved (CVAF)	TM183	**106.0** 0.00 : 0.00

PAH by GCMS

Component	Method Code	QC 2444
Acenaphthene	TM218	**88.0** 73.47 : 109.80
Acenaphthylene	TM218	**90.0** 70.00 : 130.00
Anthracene	TM218	**85.5** 68.68 : 111.89
Benz(a)anthracene	TM218	**91.0** 68.12 : 118.39
Benzo(a)pyrene	TM218	**80.0** 71.72 : 115.31
Benzo(b)fluoranthene	TM218	**82.0** 66.89 : 120.40
Benzo(ghi)perylene	TM218	**85.5** 67.82 : 118.49
Benzo(k)fluoranthene	TM218	**81.0** 73.10 : 117.03
Chrysene	TM218	**89.5** 69.58 : 115.47
Dibenzo(ah)anthracene	TM218	**81.5** 67.32 : 121.35
Fluoranthene	TM218	**85.0** 75.16 : 117.28
Fluorene	TM218	**87.0** 73.81 : 108.66
Indeno(123cd)pyrene	TM218	**85.0** 68.91 : 117.62
Naphthalene	TM218	**88.5** 72.12 : 106.18
Phenanthrene	TM218	**87.0** 69.01 : 113.72
Pyrene	TM218	**85.0** 64.28 : 115.75

PCBs by GCMS

Component	Method Code	QC 2453
PCB congener 101	TM168	**91.0** 65.66 : 110.06
PCB congener 105	TM168	**86.2** 58.10 : 106.34
PCB congener 114	TM168	**86.3** 59.38 : 106.48
PCB congener 118	TM168	**85.9** 60.02 : 106.23

PCBs by GCMS

		QC 2453
PCB congener 123	TM168	**92.8** 65.01 : 99.81
PCB congener 126	TM168	**85.0** 59.31 : 109.23
PCB congener 138	TM168	**90.8** 63.95 : 107.63
PCB congener 153	TM168	**93.0** 62.65 : 108.85
PCB congener 156	TM168	**87.6** 61.69 : 112.27
PCB congener 157	TM168	**83.7** 55.37 : 104.81
PCB congener 167	TM168	**86.4** 65.58 : 109.14
PCB congener 169	TM168	**90.3** 56.84 : 112.10
PCB congener 180	TM168	**91.5** 66.99 : 111.63
PCB congener 189	TM168	**87.6** 57.75 : 112.59
PCB congener 28	TM168	**93.2** 73.68 : 105.96
PCB congener 52	TM168	**91.3** 67.24 : 107.62
PCB congener 77	TM168	**90.7** 64.87 : 108.49
PCB congener 81	TM168	**91.8** 70.78 : 110.80

Phenols by HPLC (W)

Component	Method Code	QC 2459
2.3.5 Trimethyl-Phenol by HPLC (W)	TM259	**99.61** 76.00 : 124.00
2-Isopropyl Phenol by HPLC (W)	TM259	**91.78** 76.00 : 124.00
Cresols by HPLC (W)	TM259	**96.71** 76.00 : 124.00
Napthol by HPLC (W)	TM259	**105.47** 76.00 : 124.00
Phenol by HPLC (W)	TM259	**94.52** 76.00 : 124.00
Xylenols by HPLC (W)	TM259	**98.1** 76.00 : 124.00

Total Dissolved Solids

Component	Method Code	QC 2433
Total Dissolved Solids	TM123	**98.7** 97.30 : 100.92

Total Organic Carbon

Component	Method Code	QC 2472
Total Organic Carbon	TM132	**94.53** 84.82 : 117.61

VOC MS (S)

Component	Method Code	QC 2430
1,1,1,2-tetrachloroethane	TM116	**107.4** 86.59 : 118.97
1,1,1-Trichloroethane	TM116	**104.8** 86.26 : 117.53
1,1,2-Trichloroethane	TM116	**101.6** 75.16 : 112.70
1,1-Dichloroethane	TM116	**114.4** 83.27 : 122.16
1,2-Dichloroethane	TM116	**117.8** 89.30 : 133.10
1,4-Dichlorobenzene	TM116	**108.4** 82.59 : 123.23
2-Chlorotoluene	TM116	**98.2** 66.81 : 118.43
4-Chlorotoluene	TM116	**97.2** 65.88 : 114.76
Benzene	TM116	**104.8** 93.16 : 123.63
Carbon Disulphide	TM116	**106.2** 75.11 : 124.81
Carbontetrachloride	TM116	**107.4** 82.35 : 126.46
Chlorobenzene	TM116	**104.2** 85.07 : 118.13
Chloroform	TM116	**113.0** 88.13 : 122.71
Chloromethane	TM116	**93.8** 61.62 : 145.66
Cis-1,2-Dichloroethene	TM116	**111.0** 88.41 : 121.33
Dibromomethane	TM116	**105.6** 77.47 : 121.29
Dichloromethane	TM116	**122.2** 87.89 : 134.72
Ethylbenzene	TM116	**93.6** 76.29 : 106.31
Hexachlorobutadiene	TM116	**99.0** 16.78 : 153.29
Isopropylbenzene	TM116	**82.8** 59.16 : 110.07
Naphthalene	TM116	**115.4** 79.29 : 125.59
o-Xylene	TM116	**85.0** 72.86 : 102.10

VOC MS (S)

		QC 2430
p/m-Xylene	TM116	**87.3** 68.99 : 102.40
Sec-Butylbenzene	TM116	**81.6** 44.71 : 117.87
Tetrachloroethene	TM116	**104.4** 77.82 : 125.00
Toluene	TM116	**97.6** 87.82 : 116.21
Trichloroethene	TM116	**99.2** 79.80 : 112.33
Trichlorofluoromethane	TM116	**110.0** 80.52 : 132.12
Vinyl Chloride	TM116	**103.0** 74.57 : 146.88

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

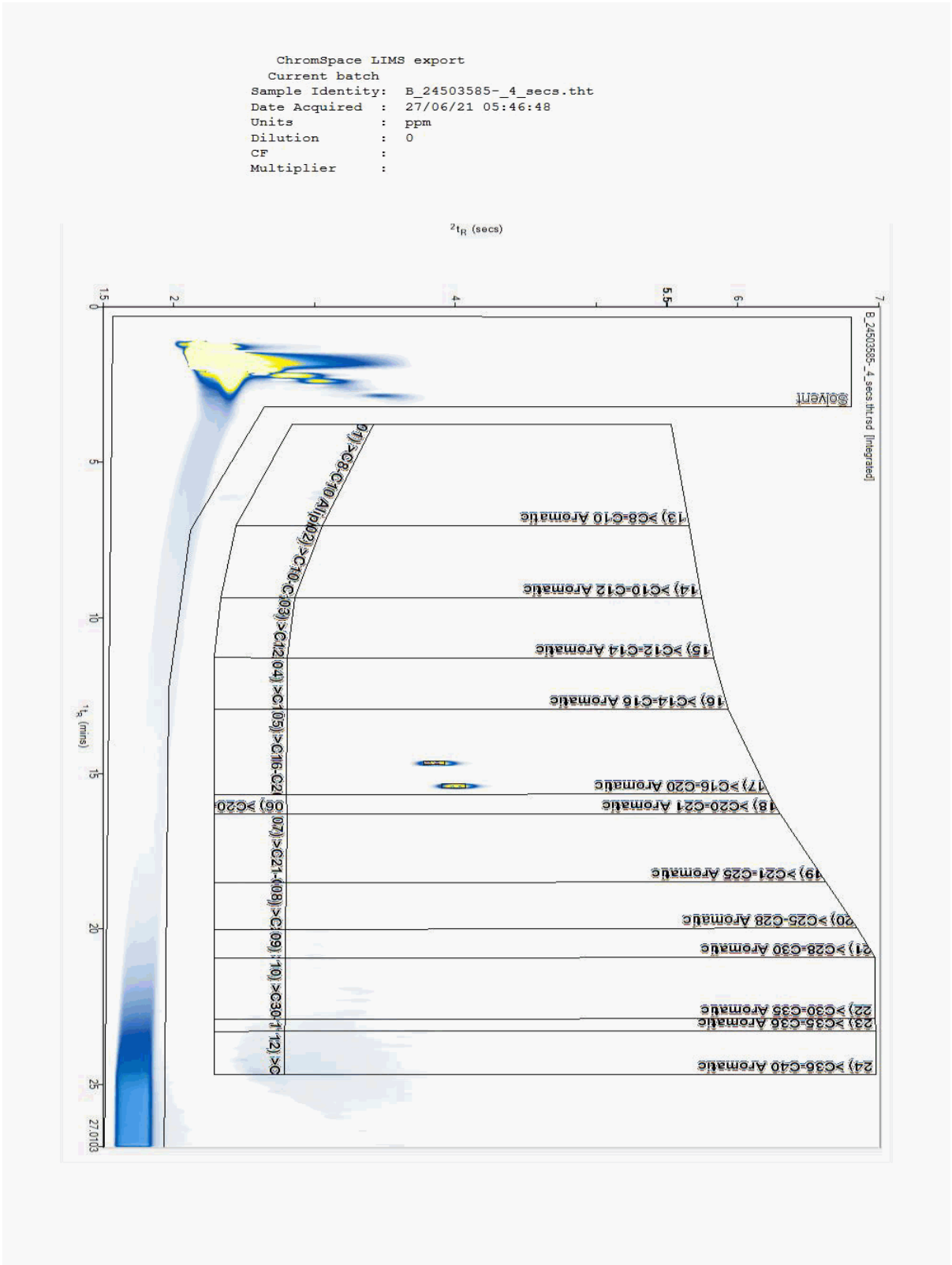
SDG:	210624-34	**Client Reference:**	784-B026948	**Report Number:**	605089
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 24503585
Sample ID : BH44

Depth : 0.40



Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	01 July 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210624-36
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	604044

This report has been revised and directly supersedes 604043 in its entirety.

We received 5 samples on Wednesday June 23, 2021 and 2 of these samples were scheduled for analysis which was completed on Thursday July 01, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Ap[redacted]

Sc[redacted]

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210624-36	**Client Reference:**	784-B026948	**Report Number:**	604044
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	604043

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24502278	BH44	ES7	1.40 - 1.50	22/06/2021
24502282	BH44	ES9	2.40 - 2.50	22/06/2021
24502286	BH44	ES11	3.40 - 3.50	22/06/2021
24502290	BH44	ES14	4.40 - 4.50	22/06/2021
24502295	BH44	ES16	5.40 - 5.50	22/06/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210624-36	**Client Reference:**	784-B026948	**Report Number:**	604044
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	604043

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24502278				24502295				
Customer Sample Reference			BH44				BH44				
AGS Reference			ES7				ES16				
Depth (m)			1.40 - 1.50				5.40 - 5.50				
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)			
Sample Type			S	S	S	S	S	S			
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 2		X			X				
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 2	X			X					
Ammonium Soil by Titration	All	NDPs: 0 Tests: 2		X			X				
Anions by Kone (soil)	All	NDPs: 0 Tests: 2		X			X				
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2	X			X					
Boron Water Soluble	All	NDPs: 0 Tests: 2		X			X				
CEN Readings	All	NDPs: 0 Tests: 2	X			X					
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 4	X	X		X	X				
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2	X			X					
EPH	All	NDPs: 0 Tests: 2		X			X				
EPH by GCxGC-FID	All	NDPs: 0 Tests: 2		X			X				
EPH CWG GC (S)	All	NDPs: 0 Tests: 2		X			X				
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2			X			X			
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2		X			X				
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 2	X			X					

Validated

CERTIFICATE OF ANALYSIS

SDG:	210624-36	**Client Reference:**	784-B026948	**Report Number:**	604044
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	604043

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)						24502278						24502295
Customer Sample Reference						BH44						BH44
AGS Reference						ES7						ES16
Depth (m)						1.40 - 1.50						5.40 - 5.50
Container						1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type						S	S	S	S	S	S
Mercury Dissolved	All	NDPs: 0 Tests: 2				X			X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 2					X			X	
PAH by GCMS	All	NDPs: 0 Tests: 2					X			X	
PCBs by GCMS	All	NDPs: 0 Tests: 2					X			X	
pH	All	NDPs: 0 Tests: 2					X			X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 2				X			X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 2					X			X	
Sample description	All	NDPs: 0 Tests: 2					X			X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 2					X			X	
Sulphide	All	NDPs: 0 Tests: 2				X			X		
Total Organic Carbon	All	NDPs: 0 Tests: 2					X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 2					X			X	
VOC MS (S)	All	NDPs: 0 Tests: 2						X			X

CERTIFICATE OF ANALYSIS

SDG:	210624-36	**Client Reference:**	784-B026948	**Report Number:**	604044
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	604043

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24502278	BH44	1.40 - 1.50	Dark Brown	Silty Sand	None	None
24502295	BH44	5.40 - 5.50	Dark Brown	Sand	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210624-36	**Client Reference:**	784-B026948	**Report Number:**	604044
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	604043

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BH44	1.40 - 1.50	Soil/Solid (S)	22/06/2021	.	23/06/2021	210624-36	24502278	ES7
			BH44	5.40 - 5.50	Soil/Solid (S)	22/06/2021	.	23/06/2021	210624-36	24502295	ES16
Moisture Content Ratio (% of as received sample)	%	PM024	16					1.1			
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12 M					<12 M			
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M					<0.01 M			
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M					<0.01 M			
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M					<0.015 M			
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M					<0.035 M			
Soil Organic Matter (SOM)	<0.35 %	TM132	4.97 #					<0.35 #			
pH	1 pH Units	TM133	10 M					8.64 M			
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #					<0.6 #			
Cyanide, Total	<1 mg/kg	TM153	<1 M					<1 M			
PCB congener 118	<0.003 mg/kg	TM168	<0.003 M					<0.003 M			
PCB congener 81	<0.003 mg/kg	TM168	<0.003 M					<0.003 M			
PCB congener 77	<0.003 mg/kg	TM168	<0.003 M					<0.003 M			
PCB congener 123	<0.003 mg/kg	TM168	<0.003 M					<0.003 M			
PCB congener 114	<0.003 mg/kg	TM168	<0.003 M					<0.003 M			
PCB congener 105	<0.003 mg/kg	TM168	<0.003 M					<0.003 M			
PCB congener 126	<0.003 mg/kg	TM168	<0.003 M					<0.003 M			
PCB congener 167	<0.003 mg/kg	TM168	<0.003 M					<0.003 M			
PCB congener 156	<0.003 mg/kg	TM168	<0.003 M					<0.003 M			
PCB congener 157	<0.003 mg/kg	TM168	<0.003 M					<0.003 M			
PCB congener 169	<0.003 mg/kg	TM168	<0.003 M					<0.003 M			
PCB congener 189	<0.003 mg/kg	TM168	<0.003 M					<0.003 M			
Sum of detected WHO 12 PCBs	<0.036 mg/kg	TM168	<0.036					<0.036			
Arsenic	<0.6 mg/kg	TM181	129 M					3.32 M			
Cadmium	<0.02 mg/kg	TM181	0.412 M					0.16 M			
Chromium	<0.9 mg/kg	TM181	47.4 M					2.6 M			
Copper	<1.4 mg/kg	TM181	91.1 M					5.03 M			
Iron	<1000 mg/kg	TM181	34000 #					10300 #			
Lead	<0.7 mg/kg	TM181	54.5 M					8.07 M			
Mercury	<0.1 mg/kg	TM181	<0.1 M					<0.1 M			
Nickel	<0.2 mg/kg	TM181	59 M					6.89 M			
Selenium	<1 mg/kg	TM181	1.88 #					<1 #			
Vanadium	<0.2 mg/kg	TM181	124 #					8.23 #			

Validated

CERTIFICATE OF ANALYSIS

SDG:	210624-36	**Client Reference:**	784-B026948	**Report Number:**	604044
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	604043

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH44	BH44
			Depth (m)	1.40 - 1.50	5.40 - 5.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	22/06/2021	22/06/2021
			Sample Time	.	.
			Date Received	23/06/2021	23/06/2021
			SDG Ref	210624-36	210624-36
			Lab Sample No.(s)	24502278	24502295
			AGS Reference	ES7	ES16
Zinc	<1.9 mg/kg	TM181		71.6 M	19.2 M
Boron, water soluble	<1 mg/kg	TM222		21.5 M	2.57 M
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		1.35 M	0.131 M
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248		6.6	8.42
EPH (C5-C40)	<35 mg/kg	TM415		<35	<35
EPH Surrogate % recovery**	%	TM415		95.2	95.2
EPH >C10-C40	<35 mg/kg	TM415		<35 M	<35 M

Validated

CERTIFICATE OF ANALYSIS

SDG:	210624-36	**Client Reference:**	784-B026948	**Report Number:**	604044
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	604043

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH44	BH44
			Depth (m)	1.40 - 1.50	5.40 - 5.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	22/06/2021	22/06/2021
			Sample Time	.	.
			Date Received	23/06/2021	23/06/2021
			SDG Ref	210624-36	210624-36
			Lab Sample No.(s)	24502278	24502295
			AGS Reference	ES7	ES16
Naphthalene-d8 % recovery**	%	TM218		32.9	82.4
Acenaphthene-d10 % recovery**	%	TM218		31.8	82.3
Phenanthrene-d10 % recovery**	%	TM218		19.1	82.8
Chrysene-d12 % recovery**	%	TM218		7.95	83.3
Perylene-d12 % recovery**	%	TM218		6.16	89
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	<0.009 M
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 M	<0.012 M
Acenaphthene	<0.008 mg/kg	TM218		<0.008 M	<0.008 M
Fluorene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M
Anthracene	<0.016 mg/kg	TM218		<0.016 M	<0.016 M
Fluoranthene	<0.017 mg/kg	TM218		<0.017 M	<0.017 M
Pyrene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M
Benz(a)anthracene	<0.014 mg/kg	TM218		<0.014 M	<0.014 M
Chrysene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		<0.014 M	<0.014 M
Benzo(a)pyrene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		<0.018 M	<0.018 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	<0.023 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		<0.024 M	<0.024 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		<0.118	<0.118

CERTIFICATE OF ANALYSIS

SDG:	210624-36	**Client Reference:**	784-B026948	**Report Number:**	604044
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	604043

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.					
			BH44	BH44				
			Depth (m)	1.40 - 1.50	5.40 - 5.50			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	22/06/2021	22/06/2021			
			Sample Time	.	.			
			Date Received	23/06/2021	23/06/2021			
			SDG Ref	210624-36	210624-36			
			Lab Sample No.(s)	24502278	24502295			
			AGS Reference	ES7	ES16			
Phenol	<0.1 mg/kg	TM157	<0.1	<0.1				
Pentachlorophenol	<0.1 mg/kg	TM157	<0.1	<0.1				
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157	<0.1	<0.1				
Nitrobenzene	<0.1 mg/kg	TM157	<0.1	<0.1				
Isophorone	<0.1 mg/kg	TM157	<0.1	<0.1				
Hexachloroethane	<0.1 mg/kg	TM157	<0.1	<0.1				
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157	<0.1	<0.1				
Hexachlorobutadiene	<0.1 mg/kg	TM157	<0.1	<0.1				
Hexachlorobenzene	<0.1 mg/kg	TM157	<0.1	<0.1				
n-Dioctyl phthalate	<0.1 mg/kg	TM157	<0.1	<0.1				
Dimethyl phthalate	<0.1 mg/kg	TM157	<0.1	<0.1				
Diethyl phthalate	<0.1 mg/kg	TM157	<0.1	<0.1				
n-Dibutyl phthalate	<0.1 mg/kg	TM157	<0.1	<0.1				
Dibenzofuran	<0.1 mg/kg	TM157	<0.1	<0.1				
Carbazole	<0.1 mg/kg	TM157	<0.1	<0.1				
Butylbenzyl phthalate	<0.1 mg/kg	TM157	<0.1	<0.1				
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157	<0.1	<0.1				
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157	<0.1	<0.1				
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157	<0.1	<0.1				
Azobenzene	<0.1 mg/kg	TM157	<0.1	<0.1				
4-Nitrophenol	<0.1 mg/kg	TM157	<0.1	<0.1				
4-Nitroaniline	<0.1 mg/kg	TM157	<0.1	<0.1				
4-Methylphenol	<0.1 mg/kg	TM157	<0.1	<0.1				
4-Chlorophenylphenylether	<0.1 mg/kg	TM157	<0.1	<0.1				
4-Chloroaniline	<0.1 mg/kg	TM157	<0.1	<0.1				
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157	<0.1	<0.1				
4-Bromophenylphenylether	<0.1 mg/kg	TM157	<0.1	<0.1				
3-Nitroaniline	<0.1 mg/kg	TM157	<0.1	<0.1				
2-Nitrophenol	<0.1 mg/kg	TM157	<0.1	<0.1				
2-Nitroaniline	<0.1 mg/kg	TM157	<0.1	<0.1				
2-Methylphenol	<0.1 mg/kg	TM157	<0.1	<0.1				
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157	<0.1	<0.1				
2-Chlorophenol	<0.1 mg/kg	TM157	<0.1	<0.1				

CERTIFICATE OF ANALYSIS

SDG:	210624-36	**Client Reference:**	784-B026948	**Report Number:**	604044
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	604043

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH44	BH44				
			Depth (m)	1.40 - 1.50	5.40 - 5.50				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	22/06/2021	22/06/2021				
			Sample Time	.	.				
			Date Received	23/06/2021	23/06/2021				
			SDG Ref	210624-36	210624-36				
			Lab Sample No.(s)	24502278	24502295				
			AGS Reference	ES7	ES16				
2,6-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1				
2,4-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1				
2,4-Dimethylphenol	<0.1 mg/kg	TM157		<0.1	<0.1				
2,4-Dichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
1,4-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
1,3-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
1,2-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
2-Chloronaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1				
2-Methylnaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1				
Acenaphthylene	<0.1 mg/kg	TM157		<0.1	<0.1				
Acenaphthene	<0.1 mg/kg	TM157		<0.1	<0.1				
Anthracene	<0.1 mg/kg	TM157		<0.1	<0.1				
Benzo(a)anthracene	<0.1 mg/kg	TM157		<0.1	<0.1				
Benzo(b)fluoranthene	<0.1 mg/kg	TM157		<0.1	<0.1				
Benzo(k)fluoranthene	<0.1 mg/kg	TM157		<0.1	<0.1				
Benzo(a)pyrene	<0.1 mg/kg	TM157		<0.1	<0.1				
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157		<0.1	<0.1				
Chrysene	<0.1 mg/kg	TM157		<0.1	<0.1				
Fluoranthene	<0.1 mg/kg	TM157		<0.1	<0.1				
Fluorene	<0.1 mg/kg	TM157		<0.1	<0.1				
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157		<0.1	<0.1				
Phenanthrene	<0.1 mg/kg	TM157		<0.1	<0.1				
Pyrene	<0.1 mg/kg	TM157		<0.1	<0.1				
Naphthalene	<0.1 mg/kg	TM157		<0.1	<0.1				
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157		<0.1	<0.1				
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157		<0.1	<0.1				

Validated

CERTIFICATE OF ANALYSIS

SDG:	210624-36	**Client Reference:**	784-B026948	**Report Number:**	604044
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	604043

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH44	BH44				
			Depth (m)	1.40 - 1.50	5.40 - 5.50				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	22/06/2021	22/06/2021				
			Sample Time	.	.				
			Date Received	23/06/2021	23/06/2021				
			SDG Ref	210624-36	210624-36				
			Lab Sample No.(s)	24502278	24502295				
			AGS Reference	ES7	ES16				
GRO Surrogate % recovery**	%	TM089		25 4	90				
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01 4	0.0111				
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01 4	0.0152				
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01 4	0.0415				
Aliphatics >C10-C12	<1 mg/kg	TM414		<1 #	<1 #				
Aliphatics >C12-C16	<1 mg/kg	TM414		<1 #	<1 #				
Aliphatics >C16-C21	<1 mg/kg	TM414		<1 #	<1 #				
Aliphatics >C21-C35	<1 mg/kg	TM414		<1 #	5.84 #				
Aliphatics >C35-C44	<1 mg/kg	TM414		<1	<1				
Total Aliphatics >C10-C44	<5 mg/kg	TM414		<5	5.84				
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		<10	<10				
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01 4	<0.01				
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01 4	<0.01				
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01 4	0.0273				
Aromatics > EC10-EC12	<1 mg/kg	TM414		<1 #	<1 #				
Aromatics > EC12-EC16	<1 mg/kg	TM414		<1 #	<1 #				
Aromatics > EC16-EC21	<1 mg/kg	TM414		<1 #	<1 #				
Aromatics > EC21-EC35	<1 mg/kg	TM414		<1 #	2.76 #				
Aromatics >EC35-EC44	<1 mg/kg	TM414		<1	<1				
Aromatics > EC40-EC44	<1 mg/kg	TM414		<1	<1				
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		<5	<5				
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		<10	<10				
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		<0.05 4	0.0677				
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		<0.05 4	<0.05				
GRO >C5-C10	<0.02 mg/kg	TM089		<0.02 4	0.0677				

CERTIFICATE OF ANALYSIS

SDG:	210624-36	**Client Reference:**	784-B026948	**Report Number:**	604044
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	604043

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH44	BH44				
			Depth (m)	1.40 - 1.50	5.40 - 5.50				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	22/06/2021	22/06/2021				
			Sample Time	.	.				
			Date Received	23/06/2021	23/06/2021				
			SDG Ref	210624-36	210624-36				
			Lab Sample No.(s)	24502278	24502295				
			AGS Reference	ES7	ES16				
Dibromofluoromethane**	%	TM116		121	112				
Toluene-d8**	%	TM116		99.4	102				
4-Bromofluorobenzene**	%	TM116		91.1	97				
Dichlorodifluoromethane	<0.006 mg/kg	TM116		<0.12 M	<0.12 M				
Chloromethane	<0.007 mg/kg	TM116		<0.14 #	<0.14 #				
Vinyl Chloride	<0.006 mg/kg	TM116		<0.12 M	<0.12 M				
Bromomethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Chloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Trichlorofluorormethane	<0.006 mg/kg	TM116		<0.12 M	<0.12 M				
1,1-Dichloroethene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #				
Carbon Disulphide	<0.007 mg/kg	TM116		<0.14 M	<0.14 M				
Dichloromethane	<0.01 mg/kg	TM116		<0.2 #	<0.2 #				
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
1,1-Dichloroethane	<0.008 mg/kg	TM116		<0.16 3 M	<0.16 3 M				
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116		<0.12 M	<0.12 M				
2,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2	<0.2				
Bromochloromethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Chloroform	<0.008 mg/kg	TM116		<0.16 M	<0.16 M				
1,1,1-Trichloroethane	<0.007 mg/kg	TM116		<0.14 M	<0.14 M				
1,1-Dichloropropene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Carbontetrachloride	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
1,2-Dichloroethane	<0.005 mg/kg	TM116		<0.1 M	<0.1 M				
Benzene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M				
Trichloroethene	<0.009 mg/kg	TM116		<0.18 #	<0.18 #				
1,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Dibromomethane	<0.009 mg/kg	TM116		<0.18 M	<0.18 M				
Bromodichloromethane	<0.007 mg/kg	TM116		<0.14 M	<0.14 M				
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Toluene	<0.007 mg/kg	TM116		<0.14 M	<0.14 M				
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2	<0.2				
1,1,2-Trichloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
1,3-Dichloropropane	<0.007 mg/kg	TM116		<0.14 M	<0.14 M				

CERTIFICATE OF ANALYSIS

SDG:	210624-36	**Client Reference:**	784-B026948	**Report Number:**	604044
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	604043

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH44	BH44
			Depth (m)	1.40 - 1.50	5.40 - 5.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	22/06/2021	22/06/2021
			Sample Time	.	.
			Date Received	23/06/2021	23/06/2021
			SDG Ref	210624-36	210624-36
			Lab Sample No.(s)	24502278	24502295
			AGS Reference	ES7	ES16
Tetrachloroethene	<0.005 mg/kg	TM116		<0.1 M	<0.1 M
Dibromochloromethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
1,2-Dibromoethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
Chlorobenzene	<0.005 mg/kg	TM116		<0.1 M	<0.1 M
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 M	<0.08 M
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #
o-Xylene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
Styrene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #
Bromoform	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
Isopropylbenzene	<0.005 mg/kg	TM116		<0.1 #	<0.1 #
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 #	<0.2 #
1,2,3-Trichloropropane	<0.016 mg/kg	TM116		<0.32 M	<0.32 M
Bromobenzene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
Propylbenzene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
2-Chlorotoluene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116		<0.16 M	<0.16 M
4-Chlorotoluene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
tert-Butylbenzene	<0.014 mg/kg	TM116		<0.28 M	<0.28 M
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116		<0.18 #	<0.18 #
sec-Butylbenzene	<0.01 mg/kg	TM116		<0.2	<0.2
4-Isopropyltoluene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
1,3-Dichlorobenzene	<0.008 mg/kg	TM116		<0.16 M	<0.16 M
1,4-Dichlorobenzene	<0.005 mg/kg	TM116		<0.1 M	<0.1 M
n-Butylbenzene	<0.011 mg/kg	TM116		<0.22	<0.22
1,2-Dichlorobenzene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116		<0.28 M	<0.28 M
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.2 #	<0.2 #
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4	<0.4
Hexachlorobutadiene	<0.02 mg/kg	TM116		<0.4	<0.4
Naphthalene	<0.013 mg/kg	TM116		<0.26 M	<0.26 M
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4 #	<0.4 #
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4	<0.4

Validated

CERTIFICATE OF ANALYSIS

SDG:	210624-36	**Client Reference:**	784-B026948	**Report Number:**	604044
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	604043

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH44	BH44				
			Depth (m)	1.40 - 1.50	5.40 - 5.50				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	22/06/2021	22/06/2021				
			Sample Time	.	.				
			Date Received	23/06/2021	23/06/2021				
			SDG Ref	210624-36	210624-36				
			Lab Sample No.(s)	24502278	24502295				
			AGS Reference	ES7	ES16				
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4	<0.4				
Sum of BTEX	<0.04 mg/kg	TM116		<0.8	<0.8				

CERTIFICATE OF ANALYSIS

SDG:	210624-36	**Client Reference:**	784-B026948	**Report Number:**	604044
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	604043

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	BH44ES7 1.40 - 1.50 SOLID 22/06/2021 00:00:00 23/06/2021 05:00:00 210624-36 24502278 TM048	29/06/2021	Agnieszka Chelmowska	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	BH44ES16 5.40 - 5.50 SOLID 22/06/2021 00:00:00 23/06/2021 05:00:00 210624-36 24502295 TM048	29/06/2021	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	210624-36	**Client Reference:**	784-B026948	**Report Number:**	604044
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	604043

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.110	**Natural Moisture Content (%)**	21.8
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	82.1
Particle Size <4mm	>95%		

Case	
SDG	210624-36
Lab Sample Number(s)	24502278
Sampled Date	22-Jun-2021
Customer Sample Ref.	BH44 ES7
Depth (m)	1.40 - 1.50

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.045	<0.0005	0.45	<0.005	-	-	-
Boron	0.965	<0.01	9.65	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.19	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	0.00701	<0.001	0.0701	<0.01	-	-	-
Vanadium	0.155	<0.001	1.55	<0.01	-	-	-
Zinc	0.00128	<0.001	0.0128	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	24-Jun-2021
pH (pH Units)	10.33
Conductivity (µS/cm)	758.00
Temperature (°C)	20.60
Volume Leachant (Litres)	0.880

CERTIFICATE OF ANALYSIS

SDG:	210624-36	**Client Reference:**	784-B026948	**Report Number:**	604044
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	604043

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.093	**Natural Moisture Content (%)**	3.57
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	96.5
Particle Size <4mm	>95%		

Case	
SDG	210624-36
Lab Sample Number(s)	24502295
Sampled Date	22-Jun-2021
Customer Sample Ref.	BH44 ES16
Depth (m)	5.40 - 5.50

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.00907	<0.0005	0.0907	<0.005	-	-	-
Boron	0.183	<0.01	1.83	<0.1	-	-	-
Cadmium	0.000296	<0.00008	0.00296	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.19	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	0.0032	<0.001	0.032	<0.01	-	-	-
Vanadium	0.00171	<0.001	0.0171	<0.01	-	-	-
Zinc	<0.001	<0.001	<0.01	<0.01	-	-	-
Sulphide	0.0257	<0.01	0.257	<0.1	-	-	-

Leach Test Information

Date Prepared	24-Jun-2021
pH (pH Units)	8.36
Conductivity (µS/cm)	191.00
Temperature (°C)	18.90
Volume Leachant (Litres)	0.897

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210624-36	**Client Reference:**	784-B026948	**Report Number:**	604044
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	604043

Test Completion Dates

Lab Sample No(s)	24502278	24502295
Customer Sample Ref.	BH44	BH44
AGS Ref.	ES7	ES16
Depth	1.40 - 1.50	5.40 - 5.50
Type	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	29-Jun-2021	29-Jun-2021
Ammoniacal Nitrogen	01-Jul-2021	30-Jun-2021
Ammonium Soil by Titration	28-Jun-2021	28-Jun-2021
Anions by Kone (soil)	30-Jun-2021	29-Jun-2021
Asbestos ID in Solid Samples	29-Jun-2021	29-Jun-2021
Boron Water Soluble	28-Jun-2021	25-Jun-2021
CEN 10:1 Leachate (1 Stage)	24-Jun-2021	24-Jun-2021
CEN Readings	30-Jun-2021	30-Jun-2021
Cyanide Comp/Free/Total/Thiocyanate	01-Jul-2021	01-Jul-2021
Dissolved Metals by ICP-MS	30-Jun-2021	30-Jun-2021
EPH	28-Jun-2021	27-Jun-2021
EPH by GCxGC-FID	28-Jun-2021	25-Jun-2021
EPH CWG GC (S)	28-Jun-2021	25-Jun-2021
GRO by GC-FID (S)	28-Jun-2021	25-Jun-2021
Hexavalent Chromium (s)	30-Jun-2021	30-Jun-2021
Hexavalent Chromium (w)	30-Jun-2021	30-Jun-2021
Mercury Dissolved	01-Jul-2021	01-Jul-2021
Metals in solid samples by OES	29-Jun-2021	30-Jun-2021
Moisture at 105C	24-Jun-2021	24-Jun-2021
PAH by GCMS	29-Jun-2021	25-Jun-2021
PCBs by GCMS	28-Jun-2021	28-Jun-2021
pH	25-Jun-2021	25-Jun-2021
pH Value of Filtered Water	30-Jun-2021	30-Jun-2021
Phenols by HPLC (S)	29-Jun-2021	01-Jul-2021
Sample description	24-Jun-2021	24-Jun-2021
Semi Volatile Organic Compounds	25-Jun-2021	25-Jun-2021
Sulphide	30-Jun-2021	30-Jun-2021
Total Organic Carbon	30-Jun-2021	29-Jun-2021
TPH CWG GC (S)	28-Jun-2021	25-Jun-2021
VOC MS (S)	25-Jun-2021	25-Jun-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2405	QC 2432
Ammoniacal Nitrogen as N	TM099	**99.6** 88.02 : 104.70	**98.0** 88.02 : 104.70

Ammonium Soil by Titration

Component	Method Code	QC 2407
Exchangeable Ammonium as NH4	TM024	**82.09** 74.04 : 103.44

Anions by Kone (soil)

Component	Method Code	QC 2460	QC 2404
Chloride (soluble)	TM243	**147.15** 80.93 : 111.66	**134.72** 80.93 : 111.66
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**153.27** 70.00 : 130.00	**154.67** 70.00 : 130.00

Boron Water Soluble

Component	Method Code	QC 2438	QC 2425
Water Soluble Boron	TM222	**102.0** 84.00 : 111.00	**92.5** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2424	QC 2449
Free Cyanide	TM153	**93.27** 78.00 : 114.00	
Free Cyanide (W)	TM227		**82.0** 90.67 : 122.67
Thiocyanate	TM153	**97.44** 94.53 : 113.33	
Thiocyanate (W)	TM227		**108.75** 92.25 : 117.75
Total Cyanide	TM153	**106.29** 77.13 : 111.53	
Total Cyanide (W)	TM227		**105.25** 88.75 : 111.25

Dissolved Metals by ICP-MS

CERTIFICATE OF ANALYSIS

SDG:	210624-36	**Client Reference:**	784-B026948	**Report Number:**	604044
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	604043

Dissolved Metals by ICP-MS

Component	Method Code	QC 2431
Aluminium	TM152	**102.0** 94.21 : 111.52
Antimony	TM152	**98.67** 88.37 : 130.57
Arsenic	TM152	**101.5** 92.62 : 113.52
Barium	TM152	**101.83** 88.62 : 113.14
Beryllium	TM152	**102.83** 87.08 : 111.38
Bismuth	TM152	**100.17** 92.62 : 115.02
Boron	TM152	**102.67** 86.31 : 120.88
Cadmium	TM152	**102.33** 93.85 : 111.65
Calcium	TM152	**102.0** 89.20 : 126.91
Chromium	TM152	**101.17** 92.50 : 113.03
Cobalt	TM152	**101.0** 85.01 : 114.87
Copper	TM152	**100.83** 89.87 : 119.73
Iron	TM152	**101.33** 93.02 : 113.86
Lead	TM152	**101.5** 91.11 : 116.98
Lithium	TM152	**101.67** 87.70 : 115.90
Magnesium	TM152	**100.0** 89.60 : 116.61
Manganese	TM152	**102.5** 93.97 : 112.46
Molybdenum	TM152	**100.0** 89.07 : 110.96
Nickel	TM152	**100.83** 93.70 : 112.15
Phosphorus	TM152	**102.83** 89.24 : 114.18
Potassium	TM152	**100.67** 93.20 : 115.55
Selenium	TM152	**103.33** 91.69 : 117.12
Silver	TM152	**101.5** 90.93 : 121.73
Sodium	TM152	**100.0** 92.42 : 113.24
Strontium	TM152	**102.33** 92.14 : 116.24
Tellurium	TM152	**101.67** 89.88 : 111.78
Thallium	TM152	**105.33** 82.43 : 113.83

CERTIFICATE OF ANALYSIS

SDG:	210624-36	**Client Reference:**	784-B026948	**Report Number:**	604044
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	604043

Dissolved Metals by ICP-MS

		QC 2431
Tin	TM152	**100.67** 94.62 : 107.79
Titanium	TM152	**100.0** 90.29 : 115.23
Tungsten	TM152	**99.0** 77.61 : 132.31
Uranium	TM152	**99.67** 86.97 : 115.76
Vanadium	TM152	**103.0** 89.61 : 115.48
Zinc	TM152	**102.0** 87.51 : 116.26

GRO by GC-FID (S)

Component	Method Code	QC 2477	QC 2452
QC	TM089	**89.92** 68.78 : 110.61	**87.5** 72.28 : 114.54

Hexavalent Chromium (s)

Component	Method Code	QC 2436
Hexavalent Chromium	TM151	**108.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2404
Hexavalent Chromium	TM241	**100.0** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2487
Mercury Dissolved (CVAF)	TM183	**106.0** 0.00 : 0.00

Metals in solid samples by OES

CERTIFICATE OF ANALYSIS

SDG:	210624-36	**Client Reference:**	784-B026948	**Report Number:**	604044
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	604043

Metals in solid samples by OES

Component	Method Code	QC 2486	QC 2402	QC 2478
Aluminium	TM181	**94.69** 73.56 : 108.85	**89.38** 73.56 : 108.85	**99.12** 73.56 : 108.85
Antimony	TM181	**90.24** 76.89 : 111.24	**91.46** 76.89 : 111.24	**95.12** 76.89 : 111.24
Arsenic	TM181	**99.71** 88.53 : 111.01	**97.38** 88.53 : 111.01	**97.97** 88.53 : 111.01
Barium	TM181	**95.41** 77.67 : 105.35	**92.66** 77.67 : 105.35	**98.17** 77.67 : 105.35
Beryllium	TM181	**102.99** 85.44 : 109.61	**99.25** 85.44 : 109.61	**100.37** 85.44 : 109.61
Boron	TM181	**91.4** 73.51 : 104.66	**87.68** 73.51 : 104.66	**92.84** 73.51 : 104.66
Cadmium	TM181	**95.06** 77.67 : 104.12	**92.18** 77.67 : 104.12	**94.24** 77.67 : 104.12
Chromium	TM181	**91.08** 79.64 : 105.83	**86.0** 79.64 : 105.83	**89.66** 79.64 : 105.83
Cobalt	TM181	**99.37** 84.60 : 104.13	**96.54** 84.60 : 104.13	**97.17** 84.60 : 104.13
Copper	TM181	**97.18** 82.40 : 105.45	**95.42** 82.40 : 105.45	**100.35** 82.40 : 105.45
Iron	TM181	**96.83** 82.95 : 110.58	**92.86** 82.95 : 110.58	**98.41** 82.95 : 110.58
Lead	TM181	**107.66** 78.24 : 104.05	**93.02** 78.24 : 104.05	**91.89** 78.24 : 104.05
Manganese	TM181	**109.72** 94.29 : 119.51	**107.5** 94.29 : 119.51	**108.33** 94.29 : 119.51
Mercury	TM181	**90.82** 83.16 : 107.81	**88.65** 83.16 : 107.81	**89.86** 83.16 : 107.81
Molybdenum	TM181	**100.41** 87.11 : 106.87	**98.35** 87.11 : 106.87	**98.77** 87.11 : 106.87
Nickel	TM181	**92.91** 80.26 : 102.28	**89.24** 80.26 : 102.28	**90.71** 80.26 : 102.28
Phosphorus	TM181	**106.87** 94.56 : 124.28	**104.65** 94.56 : 124.28	**105.05** 94.56 : 124.28
Selenium	TM181	**101.96** 82.28 : 110.48	**96.47** 82.28 : 110.48	**99.61** 82.28 : 110.48
Strontium	TM181	**95.55** 79.13 : 102.79	**93.32** 79.13 : 102.79	**98.22** 79.13 : 102.79
Thallium	TM181	**90.71** 82.94 : 111.86	**86.73** 82.94 : 111.86	**88.94** 82.94 : 111.86
Tin	TM181	**99.62** 86.72 : 110.03	**95.06** 86.72 : 110.03	**98.1** 86.72 : 110.03
Titanium	TM181	**84.73** 66.23 : 102.06	**83.21** 66.23 : 102.06	**90.08** 66.23 : 102.06
Vanadium	TM181	**100.37** 86.19 : 109.45	**95.97** 86.19 : 109.45	**100.73** 86.19 : 109.45
Zinc	TM181	**97.54** 84.68 : 113.99	**94.25** 84.68 : 113.99	**97.95** 84.68 : 113.99

PAH by GCMS

PAH by GCMS

Component	Method Code	QC 2429	QC 2462
Acenaphthene	TM218	**91.5** 76.79 : 103.90	**87.5** 76.79 : 103.90
Acenaphthylene	TM218	**89.0** 74.19 : 106.17	**85.0** 74.19 : 106.17
Anthracene	TM218	**91.0** 70.90 : 109.22	**88.0** 70.90 : 109.22
Benz(a)anthracene	TM218	**95.5** 73.77 : 119.26	**94.0** 73.77 : 119.26
Benzo(a)pyrene	TM218	**97.0** 73.20 : 114.18	**99.0** 73.20 : 114.18
Benzo(b)fluoranthene	TM218	**87.5** 75.36 : 117.58	**91.0** 75.36 : 117.58
Benzo(ghi)perylene	TM218	**94.0** 70.73 : 116.12	**89.5** 70.73 : 116.12
Benzo(k)fluoranthene	TM218	**94.0** 75.98 : 116.59	**92.5** 75.98 : 116.59
Chrysene	TM218	**94.5** 74.82 : 114.18	**90.5** 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	**90.5** 69.17 : 115.30	**88.5** 69.17 : 115.30
Fluoranthene	TM218	**97.0** 66.06 : 114.63	**87.5** 66.06 : 114.63
Fluorene	TM218	**90.5** 76.66 : 107.56	**88.0** 76.66 : 107.56
Indeno(123cd)pyrene	TM218	**84.5** 70.26 : 117.95	**85.0** 70.26 : 117.95
Naphthalene	TM218	**89.5** 74.70 : 101.83	**80.5** 74.70 : 101.83
Phenanthrene	TM218	**94.5** 73.62 : 109.34	**87.5** 73.62 : 109.34
Pyrene	TM218	**95.0** 71.46 : 117.00	**87.5** 71.46 : 117.00

PCBs by GCMS

Component	Method Code	QC 2465
PCB congener 101	TM168	**81.4** 65.66 : 110.06
PCB congener 105	TM168	**77.3** 58.10 : 106.34
PCB congener 114	TM168	**76.9** 59.38 : 106.48
PCB congener 118	TM168	**79.4** 60.02 : 106.23
PCB congener 123	TM168	**82.4** 65.01 : 99.81
PCB congener 126	TM168	**76.5** 59.31 : 109.23
PCB congener 138	TM168	**79.8** 63.95 : 107.63
PCB congener 153	TM168	**83.0** 62.65 : 108.85
PCB congener 156	TM168	**74.7** 61.69 : 112.27

PCBs by GCMS

		QC 2465
PCB congener 157	TM168	**73.2** 55.37 : 104.81
PCB congener 167	TM168	**73.8** 65.58 : 109.14
PCB congener 169	TM168	**74.4** 56.84 : 112.10
PCB congener 180	TM168	**77.8** 66.99 : 111.63
PCB congener 189	TM168	**71.7** 57.75 : 112.59
PCB congener 28	TM168	**86.8** 73.68 : 105.96
PCB congener 52	TM168	**83.8** 67.24 : 107.62
PCB congener 77	TM168	**82.1** 64.87 : 108.49
PCB congener 81	TM168	**82.9** 70.78 : 110.80

pH

Component	Method Code	QC 2465	QC 2436
pH	TM133	**100.59** 98.09 : 101.62	**100.44** 98.09 : 101.62

pH Value of Filtered Water

Component	Method Code	QC 2486
pH	TM256	**100.0** 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2433	QC 2477
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**53.9** 70.71 : 116.42	**51.3** 70.71 : 116.42
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**46.2** 64.54 : 117.79	**43.86** 64.54 : 117.79
Cresols by HPLC (S)	TM062 (S)	**49.27** 74.40 : 108.98	**47.6** 74.40 : 108.98
Phenol by HPLC (S)	TM062 (S)	**52.32** 69.44 : 122.18	**49.67** 69.44 : 122.18
Xylenols by HPLC (S)	TM062 (S)	**52.19** 76.56 : 106.38	**48.85** 76.56 : 106.38

Semi Volatile Organic Compounds

Semi Volatile Organic Compounds

Component	Method Code	QC 2408
4-Bromophenylphenylether (Soil)	TM157	**91.0** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**91.0** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**92.0** 68.25 : 126.75
Naphthalene (Soil)	TM157	**95.0** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**99.5** 66.50 : 123.50
Phenol (Soil)	TM157	**98.5** 69.92 : 114.02

Sulphide

Component	Method Code	QC 2432
Sulphide	TM101	**96.67** 88.90 : 112.50

Total Organic Carbon

Component	Method Code	QC 2472	QC 2456
Total Organic Carbon	TM132	**107.42** 87.02 : 113.45	**94.53** 84.82 : 117.61

VOC MS (S)

Component	Method Code	QC 2485
1,1,1,2-tetrachloroethane	TM116	**109.8** 86.59 : 118.97
1,1,1-Trichloroethane	TM116	**105.4** 86.26 : 117.53
1,1,2-Trichloroethane	TM116	**112.2** 75.16 : 112.70
1,1-Dichloroethane	TM116	**117.0** 83.27 : 122.16
1,2-Dichloroethane	TM116	**125.0** 89.30 : 133.10
1,4-Dichlorobenzene	TM116	**113.8** 82.59 : 123.23
2-Chlorotoluene	TM116	**96.4** 66.81 : 118.43
4-Chlorotoluene	TM116	**98.0** 65.88 : 114.76
Benzene	TM116	**104.2** 93.16 : 123.63
Carbon Disulphide	TM116	**101.0** 75.11 : 124.81

		QC 2485
Carbontetrachloride	TM116	**105.8** 82.35 : 126.46
Chlorobenzene	TM116	**109.0** 85.07 : 118.13
Chloroform	TM116	**115.2** 88.13 : 122.71
Chloromethane	TM116	**78.8** 61.62 : 145.66
Cis-1,2-Dichloroethene	TM116	**112.6** 88.41 : 121.33
Dibromomethane	TM116	**115.4** 77.47 : 121.29
Dichloromethane	TM116	**132.0** 87.89 : 134.72
Ethylbenzene	TM116	**92.8** 76.29 : 106.31
Hexachlorobutadiene	TM116	**91.6** 16.78 : 153.29
Isopropylbenzene	TM116	**79.6** 59.16 : 110.07
Naphthalene	TM116	**113.6** 79.29 : 125.59
o-Xylene	TM116	**85.6** 72.86 : 102.10
p/m-Xylene	TM116	**84.9** 68.99 : 102.40
Sec-Butylbenzene	TM116	**68.4** 44.71 : 117.87
Tetrachloroethene	TM116	**102.2** 77.82 : 125.00
Toluene	TM116	**101.2** 87.82 : 116.21
Trichloroethene	TM116	**102.0** 79.80 : 112.33
Trichlorofluoromethane	TM116	**108.0** 80.52 : 132.12
Vinyl Chloride	TM116	**103.6** 74.57 : 146.88

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
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Deeside
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Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	12 July 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210625-44
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	605211

This report has been revised and directly supersedes 604312 in its entirety.

We received 10 samples on Friday June 25, 2021 and 2 of these samples were scheduled for analysis which was completed on Monday July 12, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	604312

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24509290	BH12	ES10	7.00 - 7.10	23/06/2021
24509233	BH12	ES11	8.00 - 8.10	23/06/2021
24509220	BH13	ES1	0.40	22/06/2021
24509241	BH13	ES2	0.70	22/06/2021
24509250	BH13	ES3	1.15 - 1.20	22/06/2021
24509268	BH13	ES5	1.50 - 1.60	23/06/2021
24509273	BH13	ES6	2.50 - 2.60	23/06/2021
24509280	BH13	ES8	4.50 - 4.60	23/06/2021
24509286	BH13	ES11	6.50 - 6.60	23/06/2021
24509258	BH18 IBC DISPOSAL	EW1	0.00 - 0.00	22/06/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Bypa	**Order Number:**	7001649	**Superseded Report:**	604312

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)							24509268				24509258
Customer Sample Reference							BH13				BH18 IBC DISPOSAL
AGS Reference							ES5				EW1
Depth (m)							1.50 - 1.60				0.00 - 0.00
Container							1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	Vial (ALE297)
Sample Type							S	S	S	GW	GW	GW
Alkalinity as CaCO3	All	NDPs: 0 Tests: 1									X	
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 1						X				
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 2					X			X		
Ammonium Soil by Titration	All	NDPs: 0 Tests: 1						X				
Anions by Kone (soil)	All	NDPs: 0 Tests: 1						X				
Anions by Kone (w)	All	NDPs: 0 Tests: 1									X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1					X					
Boron Water Soluble	All	NDPs: 0 Tests: 1						X				
CEN Readings	All	NDPs: 0 Tests: 1					X					
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 3					X	X		X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2					X				X	
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1								X		
EPH	All	NDPs: 0 Tests: 1						X				
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1						X				
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 1								X		

CERTIFICATE OF ANALYSIS

SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Bypa	**Order Number:**	7001649	**Superseded Report:**	604312

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)							24509268					24509258
Customer Sample Reference							BH13					BH18 IBC DISPOSAL
AGS Reference							ES5					EW1
Depth (m)							1.50 - 1.60					0.00 - 0.00
Container							1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	Vial (ALE297)
Sample Type							S	S	S	GW	GW	GW
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 1								X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 1						X				
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1							X			
GRO by GC-FID (W)	All	NDPs: 0 Tests: 1										X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1						X				
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1					X					
Mercury Dissolved	All	NDPs: 0 Tests: 2					X				X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 1						X				
Nitrite by Kone (w)	All	NDPs: 0 Tests: 1								X		
PAH by GCMS	All	NDPs: 0 Tests: 1						X				
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 1								X		
PCBs by GCMS	All	NDPs: 0 Tests: 1						X				
pH	All	NDPs: 0 Tests: 1						X				
pH Value	All	NDPs: 0 Tests: 1									X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 1					X					

CERTIFICATE OF ANALYSIS

SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	604312

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24509268						24509258		
Customer Sample Reference			BH13						BH18 IBC DISPOSAL		
AGS Reference			ES5						EW1		
Depth (m)			1.50 - 1.60						0.00 - 0.00		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	Vial (ALE297)			
Sample Type			S	S	S	GW	GW	GW			
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1		X							
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1				X					
Sample description	All	NDPs: 0 Tests: 1		X							
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1		X							
Sulphide	All	NDPs: 0 Tests: 1	X								
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 1				X					
Total Organic Carbon	All	NDPs: 0 Tests: 1		X							
TPH CWG (W)	All	NDPs: 0 Tests: 1				X					
TPH CWG GC (S)	All	NDPs: 0 Tests: 1		X							
VOC MS (S)	All	NDPs: 0 Tests: 1			X						
VOC MS (W)	All	NDPs: 0 Tests: 1						X			

CERTIFICATE OF ANALYSIS

SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	604312

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24509268	BH13	1.50 - 1.60	Dark Brown	Silty Sand	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	604312

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH13	BH18 IBC DISPOSAL
			Depth (m)	1.50 - 1.60	0.00 - 0.00
			Sample Type	Soil/Solid (S)	Ground Water (GW)
			Date Sampled	23/06/2021	22/06/2021
			Sampled Time	.	.
			Date Received	25/06/2021	25/06/2021
			SDG Ref	210625-44	210625-44
			Lab Sample No.(s)	24509268	24509258
			AGS Reference	ES5	EW1
Alkalinity, Total as CaCO3	<2 mg/l	TM043			125 #
Carbon, Organic (diss.filt)	<3 mg/l	TM090			10
Ammoniacal Nitrogen as NH3	<0.2 mg/l	TM099			<0.2 2 #
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099			<0.3 2 #
Antimony (diss.filt)	<1 µg/l	TM152			<1 2 #
Arsenic (diss.filt)	<0.5 µg/l	TM152			1.61 2 #
Barium (diss.filt)	<0.2 µg/l	TM152			33.4 2 #
Beryllium (diss.filt)	<0.1 µg/l	TM152			<0.1 2 #
Boron (diss.filt)	<10 µg/l	TM152			584 2 #
Cadmium (diss.filt)	<0.08 µg/l	TM152			<0.08 2 #
Chromium (diss.filt)	<1 µg/l	TM152			<1 2 #
Copper (diss.filt)	<0.3 µg/l	TM152			<0.3 2 #
Lead (diss.filt)	<0.2 µg/l	TM152			<0.2 2 #
Molybdenum (diss.filt)	<3 µg/l	TM152			16.3 2 #
Nickel (diss.filt)	<0.4 µg/l	TM152			1.34 2 #
Selenium (diss.filt)	<1 µg/l	TM152			<1 2 #
Zinc (diss.filt)	<1 µg/l	TM152			<1 2 #
Mercury (diss.filt)	<0.01 µg/l	TM183			<0.01 2 #
Nitrite as NO2	<0.05 mg/l	TM184			0.166 2 #
Sulphate	<2 mg/l	TM184			1670 #
Chloride	<2 mg/l	TM184			23.5 #
Nitrate as NO3	<0.3 mg/l	TM184			1.23
Cyanide, Total	<0.05 mg/l	TM227			<0.05 2 #
pH	<1 pH Units	TM256			7.71 #
Phenol	<0.002 mg/l	TM259			<0.002 2 #
Moisture Content Ratio (% of as received sample)	%	PM024		14	
Exchangeable Ammonia as N	<12 mg/kg	TM024		<12 M	
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 M	
Cresols	<0.01 mg/kg	TM062 (S)		<0.01 M	
Xylenols	<0.015 mg/kg	TM062 (S)		<0.015 M	
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 M	
Soil Organic Matter (SOM)	<0.35 %	TM132		4.69 #	

CERTIFICATE OF ANALYSIS

SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	604312

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH13	BH18 IBC DISPOSAL
			Depth (m)	1.50 - 1.60	0.00 - 0.00
			Sample Type	Soil/Solid (S)	Ground Water (GW)
			Date Sampled	23/06/2021	22/06/2021
			Sampled Time	.	.
			Date Received	25/06/2021	25/06/2021
			SDG Ref	210625-44	210625-44
			Lab Sample No.(s)	24509268	24509258
			AGS Reference	ES5	EW1
pH	1 pH Units	TM133		10.8 M	
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	
Cyanide, Total	<1 mg/kg	TM153		<1 M	
PCB congener 118	<0.003 mg/kg	TM168		<0.003 M	
PCB congener 81	<0.003 mg/kg	TM168		<0.003 M	
PCB congener 77	<0.003 mg/kg	TM168		<0.003 M	
PCB congener 123	<0.003 mg/kg	TM168		<0.003 M	
PCB congener 114	<0.003 mg/kg	TM168		<0.003 M	
PCB congener 105	<0.003 mg/kg	TM168		<0.003 M	
PCB congener 126	<0.003 mg/kg	TM168		<0.003 M	
PCB congener 167	<0.003 mg/kg	TM168		<0.003 M	
PCB congener 156	<0.003 mg/kg	TM168		<0.003 M	
PCB congener 157	<0.003 mg/kg	TM168		<0.003 M	
PCB congener 169	<0.003 mg/kg	TM168		<0.003 M	
PCB congener 189	<0.003 mg/kg	TM168		<0.003 M	
Sum of detected WHO 12 PCBs	<0.036 mg/kg	TM168		<0.036	
Arsenic	<0.6 mg/kg	TM181		111 M	
Cadmium	<0.02 mg/kg	TM181		0.412 M	
Chromium	<0.9 mg/kg	TM181		42.8 M	
Copper	<1.4 mg/kg	TM181		80.7 M	
Iron	<1000 mg/kg	TM181		25400 #	
Lead	<0.7 mg/kg	TM181		43.9 M	
Mercury	<0.1 mg/kg	TM181		0.184 M	
Nickel	<0.2 mg/kg	TM181		51.3 M	
Selenium	<1 mg/kg	TM181		1.55 #	
Vanadium	<0.2 mg/kg	TM181		113 #	
Zinc	<1.9 mg/kg	TM181		61.8 M	
Boron, water soluble	<1 mg/kg	TM222		18.3 M	
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.422 M	
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248		4.89	
EPH (C5-C40)	<35 mg/kg	TM415		<35	
EPH Surrogate % recovery**	%	TM415		104	

CERTIFICATE OF ANALYSIS

SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	604312

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH13	BH18 IBC DISPOSAL
			Depth (m)	1.50 - 1.60	0.00 - 0.00
			Sample Type	Soil/Solid (S)	Ground Water (GW)
			Date Sampled	23/06/2021	22/06/2021
			Sampled Time	.	.
			Date Received	25/06/2021	25/06/2021
			SDG Ref	210625-44	210625-44
			Lab Sample No.(s)	24509268	24509258
			AGS Reference	ES5	EW1
EPH >C10-C40	<35 mg/kg	TM415		<35 M	

CERTIFICATE OF ANALYSIS

SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	604312

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH13							
Depth (m)	1.50 - 1.60							
Sample Type	Soil/Solid (S)							
Date Sampled	23/06/2021							
Sampled Time	.							
Date Received	25/06/2021							
SDG Ref	210625-44							
Lab Sample No.(s)	24509268							
AGS Reference	ES5							
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	34.7					
Acenaphthene-d10 % recovery**	%	TM218	33.4					
Phenanthrene-d10 % recovery**	%	TM218	12.3					
Chrysene-d12 % recovery**	%	TM218	1.48					
Perylene-d12 % recovery**	%	TM218	0.72					
Naphthalene	<0.009 mg/kg	TM218	0.0138 M					
Acenaphthylene	<0.012 mg/kg	TM218	<0.012 M					
Acenaphthene	<0.008 mg/kg	TM218	<0.008 M					
Fluorene	<0.01 mg/kg	TM218	<0.01 M					
Phenanthrene	<0.015 mg/kg	TM218	<0.015 M					
Anthracene	<0.016 mg/kg	TM218	<0.016 M					
Fluoranthene	<0.017 mg/kg	TM218	<0.017 M					
Pyrene	<0.015 mg/kg	TM218	<0.015 M					
Benz(a)anthracene	<0.014 mg/kg	TM218	<0.014 M					
Chrysene	<0.01 mg/kg	TM218	<0.01 M					
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	<0.015 M					
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	<0.014 M					
Benzo(a)pyrene	<0.015 mg/kg	TM218	<0.015 M					
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	<0.018 M					
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	<0.023 M					
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	<0.024 M					
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	<0.118					

CERTIFICATE OF ANALYSIS

SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	604312

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH18 IBC DISPOSAL
Depth (m)	0.00 - 0.00
Sample Type	Ground Water (GW)
Date Sampled	22/06/2021
Sampled Time	.
Date Received	25/06/2021
SDG Ref	210625-44
Lab Sample No.(s)	24509258
AGS Reference	EW1

Component	LOD/Units	Method	
Naphthalene (aq)	<0.01 µg/l	TM178	<0.01 #
Acenaphthene (aq)	<0.005 µg/l	TM178	<0.005 #
Acenaphthylene (aq)	<0.005 µg/l	TM178	<0.005 #
Fluoranthene (aq)	<0.005 µg/l	TM178	<0.005 #
Anthracene (aq)	<0.005 µg/l	TM178	<0.005 #
Phenanthrene (aq)	<0.005 µg/l	TM178	<0.005 #
Fluorene (aq)	<0.005 µg/l	TM178	<0.005 #
Chrysene (aq)	<0.005 µg/l	TM178	<0.005 #
Pyrene (aq)	<0.005 µg/l	TM178	<0.005 #
Benzo(a)anthracene (aq)	<0.005 µg/l	TM178	<0.005 #
Benzo(b)fluoranthene (aq)	<0.005 µg/l	TM178	<0.005 #
Benzo(k)fluoranthene (aq)	<0.005 µg/l	TM178	<0.005 #
Benzo(a)pyrene (aq)	<0.002 µg/l	TM178	<0.002 #
Dibenzo(a,h)anthracene (aq)	<0.005 µg/l	TM178	<0.005 #
Benzo(g,h,i)perylene (aq)	<0.005 µg/l	TM178	<0.005 #
Indeno(1,2,3-cd)pyrene (aq)	<0.005 µg/l	TM178	<0.005 #
PAH, Total Detected USEPA 16 (aq)	<0.082 µg/l	TM178	<0.082 #

CERTIFICATE OF ANALYSIS

SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	604312

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH13
Depth (m)	1.50 - 1.60
Sample Type	Soil/Solid (S)
Date Sampled	23/06/2021
Sampled Time	.
Date Received	25/06/2021
SDG Ref	210625-44
Lab Sample No.(s)	24509268
AGS Reference	ES5

Component	LOD/Units	Method	
Phenol	<0.1 mg/kg	TM157	<0.1
Pentachlorophenol	<0.1 mg/kg	TM157	<0.1
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157	<0.1
Nitrobenzene	<0.1 mg/kg	TM157	<0.1
Isophorone	<0.1 mg/kg	TM157	<0.1
Hexachloroethane	<0.1 mg/kg	TM157	<0.1
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157	<0.1
Hexachlorobutadiene	<0.1 mg/kg	TM157	<0.1
Hexachlorobenzene	<0.1 mg/kg	TM157	<0.1
n-Dioctyl phthalate	<0.1 mg/kg	TM157	<0.1
Dimethyl phthalate	<0.1 mg/kg	TM157	<0.1
Diethyl phthalate	<0.1 mg/kg	TM157	<0.1
n-Dibutyl phthalate	<0.1 mg/kg	TM157	<0.1
Dibenzofuran	<0.1 mg/kg	TM157	<0.1
Carbazole	<0.1 mg/kg	TM157	<0.1
Butylbenzyl phthalate	<0.1 mg/kg	TM157	<0.1
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157	<0.1
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157	<0.1
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157	<0.1
Azobenzene	<0.1 mg/kg	TM157	<0.1
4-Nitrophenol	<0.1 mg/kg	TM157	<0.1
4-Nitroaniline	<0.1 mg/kg	TM157	<0.1
4-Methylphenol	<0.1 mg/kg	TM157	<0.1
4-Chlorophenylphenylether	<0.1 mg/kg	TM157	<0.1
4-Chloroaniline	<0.1 mg/kg	TM157	<0.1
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157	<0.1
4-Bromophenylphenylether	<0.1 mg/kg	TM157	<0.1
3-Nitroaniline	<0.1 mg/kg	TM157	<0.1
2-Nitrophenol	<0.1 mg/kg	TM157	<0.1
2-Nitroaniline	<0.1 mg/kg	TM157	<0.1
2-Methylphenol	<0.1 mg/kg	TM157	<0.1
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157	<0.1

CERTIFICATE OF ANALYSIS

SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	604312

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH13							
Depth (m)	1.50 - 1.60							
Sample Type	Soil/Solid (S)							
Date Sampled	23/06/2021							
Sampled Time	.							
Date Received	25/06/2021							
SDG Ref	210625-44							
Lab Sample No.(s)	24509268							
AGS Reference	ES5							
Component	**LOD/Units**	**Method**						
2-Chlorophenol	<0.1 mg/kg	TM157	<0.1					
2,6-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1					
2,4-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1					
2,4-Dimethylphenol	<0.1 mg/kg	TM157	<0.1					
2,4-Dichlorophenol	<0.1 mg/kg	TM157	<0.1					
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157	<0.1					
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157	<0.1					
1,4-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1					
1,3-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1					
1,2-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1					
2-Chloronaphthalene	<0.1 mg/kg	TM157	<0.1					
2-Methylnaphthalene	<0.1 mg/kg	TM157	<0.1					
Acenaphthylene	<0.1 mg/kg	TM157	<0.1					
Acenaphthene	<0.1 mg/kg	TM157	<0.1					
Anthracene	<0.1 mg/kg	TM157	<0.1					
Benzo(a)anthracene	<0.1 mg/kg	TM157	<0.1					
Benzo(b)fluoranthene	<0.1 mg/kg	TM157	<0.1					
Benzo(k)fluoranthene	<0.1 mg/kg	TM157	<0.1					
Benzo(a)pyrene	<0.1 mg/kg	TM157	<0.1					
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157	<0.1					
Chrysene	<0.1 mg/kg	TM157	<0.1					
Fluoranthene	<0.1 mg/kg	TM157	<0.1					
Fluorene	<0.1 mg/kg	TM157	<0.1					
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157	<0.1					
Phenanthrene	<0.1 mg/kg	TM157	<0.1					
Pyrene	<0.1 mg/kg	TM157	<0.1					
Naphthalene	<0.1 mg/kg	TM157	<0.1					
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157	<0.1					
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157	<0.1					

CERTIFICATE OF ANALYSIS

SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	604312

SVOC MS (W) - Aqueous

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH18 IBC DISPOSAL
Depth (m)	0.00 - 0.00
Sample Type	Ground Water (GW)
Date Sampled	22/06/2021
Sampled Time	.
Date Received	25/06/2021
SDG Ref	210625-44
Lab Sample No.(s)	24509258
AGS Reference	EW1

Component	LOD/Units	Method	
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176	<1 #
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176	<1 #
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176	<1 #
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176	<1 #
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176	<1 #
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176	<1 #
2,4-Dichlorophenol (aq)	<1 µg/l	TM176	<1 #
2,4-Dimethylphenol (aq)	<1 µg/l	TM176	<1 #
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176	<1 #
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176	<1 #
2-Chloronaphthalene (aq)	<1 µg/l	TM176	<1 #
2-Chlorophenol (aq)	<1 µg/l	TM176	<1 #
2-Methylnaphthalene (aq)	<1 µg/l	TM176	<1 #
2-Methylphenol (aq)	<1 µg/l	TM176	<1 #
2-Nitroaniline (aq)	<1 µg/l	TM176	<1 #
2-Nitrophenol (aq)	<1 µg/l	TM176	<1 #
3-Nitroaniline (aq)	<1 µg/l	TM176	<1 #
4-Bromophenylphenylether (aq)	<1 µg/l	TM176	<1 #
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176	<1 #
4-Chloroaniline (aq)	<1 µg/l	TM176	<1
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176	<1 #
4-Methylphenol (aq)	<1 µg/l	TM176	<1 #
4-Nitroaniline (aq)	<1 µg/l	TM176	<1 #
4-Nitrophenol (aq)	<1 µg/l	TM176	<1
Azobenzene (aq)	<1 µg/l	TM176	<1 #
Acenaphthylene (aq)	<1 µg/l	TM176	<1 #
Acenaphthene (aq)	<1 µg/l	TM176	<1 #
Anthracene (aq)	<1 µg/l	TM176	<1 #
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176	<1 #
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176	<1 #
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176	<2 #
Butylbenzyl phthalate (aq)	<1 µg/l	TM176	<1 #

CERTIFICATE OF ANALYSIS

SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	604312

SVOC MS (W) - Aqueous

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH18 IBC DISPOSAL
Depth (m)	0.00 - 0.00
Sample Type	Ground Water (GW)
Date Sampled	22/06/2021
Sampled Time	.
Date Received	25/06/2021
SDG Ref	210625-44
Lab Sample No.(s)	24509258
AGS Reference	EW1

Component	LOD/Units	Method	
Benzo(a)anthracene (aq)	<1 µg/l	TM176	<1 #
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176	<1 #
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176	<1 #
Benzo(a)pyrene (aq)	<1 µg/l	TM176	<1 #
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176	<1 #
Carbazole (aq)	<1 µg/l	TM176	<1 #
Chrysene (aq)	<1 µg/l	TM176	<1 #
Dibenzofuran (aq)	<1 µg/l	TM176	<1 #
n-Dibutyl phthalate (aq)	<1 µg/l	TM176	<1 #
Diethyl phthalate (aq)	<1 µg/l	TM176	<1 #
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176	<1 #
Dimethyl phthalate (aq)	<1 µg/l	TM176	<1 #
n-Dioctyl phthalate (aq)	<5 µg/l	TM176	<5 #
Fluoranthene (aq)	<1 µg/l	TM176	<1 #
Fluorene (aq)	<1 µg/l	TM176	<1 #
Hexachlorobenzene (aq)	<1 µg/l	TM176	<1 #
Hexachlorobutadiene (aq)	<1 µg/l	TM176	<1 #
Pentachlorophenol (aq)	<1 µg/l	TM176	<1
Phenol (aq)	<1 µg/l	TM176	<1
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176	<1 #
Hexachloroethane (aq)	<1 µg/l	TM176	<1 #
Nitrobenzene (aq)	<1 µg/l	TM176	<1 #
Naphthalene (aq)	<1 µg/l	TM176	<1 #
Isophorone (aq)	<1 µg/l	TM176	<1 #
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176	<1
Phenanthrene (aq)	<1 µg/l	TM176	<1 #
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176	<1 #
Pyrene (aq)	<1 µg/l	TM176	<1 #

CERTIFICATE OF ANALYSIS

SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	604312

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH13							
Depth (m)	1.50 - 1.60							
Sample Type	Soil/Solid (S)							
Date Sampled	23/06/2021							
Sampled Time	.							
Date Received	25/06/2021							
SDG Ref	210625-44							
Lab Sample No.(s)	24509268							
AGS Reference	ES5							
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	6.7 4					
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01 4					
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01 4					
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01 4					
Aliphatics >C10-C12	<1 mg/kg	TM414	<1 #					
Aliphatics >C12-C16	<1 mg/kg	TM414	<1 #					
Aliphatics >C16-C21	<1 mg/kg	TM414	<1 #					
Aliphatics >C21-C35	<1 mg/kg	TM414	<1 #					
Aliphatics >C35-C44	<1 mg/kg	TM414	<1					
Total Aliphatics >C10-C44	<5 mg/kg	TM414	<5					
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414	<10					
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01 4					
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01 4					
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	<0.01 4					
Aromatics > EC10-EC12	<1 mg/kg	TM414	<1 #					
Aromatics > EC12-EC16	<1 mg/kg	TM414	<1 #					
Aromatics > EC16-EC21	<1 mg/kg	TM414	<1 #					
Aromatics > EC21-EC35	<1 mg/kg	TM414	<1 #					
Aromatics >EC35-EC44	<1 mg/kg	TM414	<1					
Aromatics > EC40-EC44	<1 mg/kg	TM414	<1					
Total Aromatics > EC10-EC44	<5 mg/kg	TM414	<5					
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414	<10					
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089	<0.05 4					
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089	<0.05 4					
GRO >C5-C10	<0.02 mg/kg	TM089	<0.02 4					

CERTIFICATE OF ANALYSIS

SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	604312

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref. BH18 IBC DISPOSAL				
			Depth (m) 0.00 - 0.00				
			Sample Type Ground Water (GW)				
			Date Sampled 22/06/2021				
			Sampled Time .				
			Date Received 25/06/2021				
			SDG Ref 210625-44				
			Lab Sample No.(s) 24509258				
			AGS Reference EW1				
GRO Surrogate % recovery**	%	TM245	101				
GRO >C5-C12	<50 µg/l	TM245	3070 #				
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245	<3 #				
Benzene	<7 µg/l	TM245	<7 #				
Toluene	<4 µg/l	TM245	<4 #				
Ethylbenzene	<5 µg/l	TM245	<5 #				
m,p-Xylene	<8 µg/l	TM245	<8 #				
o-Xylene	<3 µg/l	TM245	<3 #				
Sum of detected Xylenes	<11 µg/l	TM245	<11				
Sum of detected BTEX	<28 µg/l	TM245	<28				
Aliphatics >C5-C6	<10 µg/l	TM245	716				
Aliphatics >C6-C8	<10 µg/l	TM245	1790				
Aliphatics >C8-C10	<10 µg/l	TM245	197				
Aliphatics >C10-C12	<10 µg/l	TM245	141				
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174	68				
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174	382				
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174	2440				
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174	2890				
Aromatics >EC5-EC7	<10 µg/l	TM245	<10				
Aromatics >EC7-EC8	<10 µg/l	TM245	<10				
Aromatics >EC8-EC10	<10 µg/l	TM245	131				
Aromatics >EC10-EC12	<10 µg/l	TM245	94				
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174	34				
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174	97				
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174	320				
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174	451				
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174	6420				
Aliphatics >C16-C35 Aqueous	<10 µg/l	TM174	2820				

CERTIFICATE OF ANALYSIS

SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	604312

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH13
Depth (m)	1.50 - 1.60
Sample Type	Soil/Solid (S)
Date Sampled	23/06/2021
Sampled Time	.
Date Received	25/06/2021
SDG Ref	210625-44
Lab Sample No.(s)	24509268
AGS Reference	ES5

Component	LOD/Units	Method	
Dibromofluoromethane**	%	TM116	123
Toluene-d8**	%	TM116	98.6
4-Bromofluorobenzene**	%	TM116	92.1
Dichlorodifluoromethane	<0.006 mg/kg	TM116	<0.12 M
Chloromethane	<0.007 mg/kg	TM116	<0.14 #
Vinyl Chloride	<0.006 mg/kg	TM116	<0.12 M
Bromomethane	<0.01 mg/kg	TM116	<0.2 M
Chloroethane	<0.01 mg/kg	TM116	<0.2 M
Trichlorofluorormethane	<0.006 mg/kg	TM116	<0.12 M
1,1-Dichloroethene	<0.01 mg/kg	TM116	<0.2 #
Carbon Disulphide	<0.007 mg/kg	TM116	<0.14 M
Dichloromethane	<0.01 mg/kg	TM116	<0.2 #
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.2 M
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116	<0.2 M
1,1-Dichloroethane	<0.008 mg/kg	TM116	<0.16 M
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116	<0.12 M
2,2-Dichloropropane	<0.01 mg/kg	TM116	<0.2
Bromochloromethane	<0.01 mg/kg	TM116	<0.2 M
Chloroform	<0.008 mg/kg	TM116	<0.16 M
1,1,1-Trichloroethane	<0.007 mg/kg	TM116	<0.14 M
1,1-Dichloropropene	<0.01 mg/kg	TM116	<0.2 M
Carbontetrachloride	<0.01 mg/kg	TM116	<0.2 M
1,2-Dichloroethane	<0.005 mg/kg	TM116	<0.1 M
Benzene	<0.009 mg/kg	TM116	<0.18 M
Trichloroethene	<0.009 mg/kg	TM116	<0.18 #
1,2-Dichloropropane	<0.01 mg/kg	TM116	<0.2 M
Dibromomethane	<0.009 mg/kg	TM116	<0.18 M
Bromodichloromethane	<0.007 mg/kg	TM116	<0.14 M
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.2 M
Toluene	<0.007 mg/kg	TM116	<0.14 M
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.2
1,1,2-Trichloroethane	<0.01 mg/kg	TM116	<0.2 M

CERTIFICATE OF ANALYSIS

SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	604312

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
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*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH13
Depth (m)	1.50 - 1.60
Sample Type	Soil/Solid (S)
Date Sampled	23/06/2021
Sampled Time	.
Date Received	25/06/2021
SDG Ref	210625-44
Lab Sample No.(s)	24509268
AGS Reference	ES5

Component	LOD/Units	Method					
1,3-Dichloropropane	<0.007 mg/kg	TM116	<0.14 M				
Tetrachloroethene	<0.005 mg/kg	TM116	<0.1 M				
Dibromochloromethane	<0.01 mg/kg	TM116	<0.2 M				
1,2-Dibromoethane	<0.01 mg/kg	TM116	<0.2 M				
Chlorobenzene	<0.005 mg/kg	TM116	<0.1 M				
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.2 M				
Ethylbenzene	<0.004 mg/kg	TM116	<0.08 M				
p/m-Xylene	<0.01 mg/kg	TM116	<0.2 #				
o-Xylene	<0.01 mg/kg	TM116	<0.2 M				
Styrene	<0.01 mg/kg	TM116	<0.2 #				
Bromoform	<0.01 mg/kg	TM116	<0.2 M				
Isopropylbenzene	<0.005 mg/kg	TM116	<0.1 #				
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.2 #				
1,2,3-Trichloropropane	<0.016 mg/kg	TM116	<0.32 M				
Bromobenzene	<0.01 mg/kg	TM116	<0.2 M				
Propylbenzene	<0.01 mg/kg	TM116	<0.2 M				
2-Chlorotoluene	<0.009 mg/kg	TM116	<0.18 M				
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116	<0.16 M				
4-Chlorotoluene	<0.01 mg/kg	TM116	<0.2 M				
tert-Butylbenzene	<0.014 mg/kg	TM116	<0.28 M				
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116	<0.18 #				
sec-Butylbenzene	<0.01 mg/kg	TM116	<0.2				
4-Isopropyltoluene	<0.01 mg/kg	TM116	<0.2 M				
1,3-Dichlorobenzene	<0.008 mg/kg	TM116	<0.16 M				
1,4-Dichlorobenzene	<0.005 mg/kg	TM116	<0.1 M				
n-Butylbenzene	<0.011 mg/kg	TM116	<0.22				
1,2-Dichlorobenzene	<0.01 mg/kg	TM116	<0.2 M				
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116	<0.28 M				
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.2 #				
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116	<0.4				
Hexachlorobutadiene	<0.02 mg/kg	TM116	<0.4				
Naphthalene	<0.013 mg/kg	TM116	<0.26 M				

CERTIFICATE OF ANALYSIS

SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	604312

VOC MS (S)

Results Legend

#	ISO17025 accredited.
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**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	
			Depth (m)	BH13 1.50 - 1.60
			Sample Type	Soil/Solid (S)
			Date Sampled	23/06/2021
			Sampled Time	.
			Date Received	25/06/2021
			SDG Ref	210625-44
			Lab Sample No.(s)	24509268
			AGS Reference	ES5
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4 #
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4
Sum of BTEX	<0.04 mg/kg	TM116		<0.8

CERTIFICATE OF ANALYSIS

SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	604312

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
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(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH18 IBC DISPOSAL
Depth (m)	0.00 - 0.00
Sample Type	Ground Water (GW)
Date Sampled	22/06/2021
Sampled Time	.
Date Received	25/06/2021
SDG Ref	210625-44
Lab Sample No.(s)	24509258
AGS Reference	EW1

Component	LOD/Units	Method	
Dibromofluoromethane**	%	TM208	107
Toluene-d8**	%	TM208	99.6
4-Bromofluorobenzene**	%	TM208	98
Dichlorodifluoromethane	<1 µg/l	TM208	<1 #
Chloromethane	<1 µg/l	TM208	<1 #
Vinyl chloride	<1 µg/l	TM208	<1 #
Bromomethane	<1 µg/l	TM208	<1 #
Chloroethane	<1 µg/l	TM208	<1 #
Trichlorofluoromethane	<1 µg/l	TM208	<1 #
1,1-Dichloroethene	<1 µg/l	TM208	<1 #
Carbon disulphide	<1 µg/l	TM208	<1 #
Dichloromethane	<3 µg/l	TM208	<3 #
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208	<1 #
trans-1,2-Dichloroethene	<1 µg/l	TM208	<1 #
1,1-Dichloroethane	<1 µg/l	TM208	<1 #
cis-1,2-Dichloroethene	<1 µg/l	TM208	<1 #
2,2-Dichloropropane	<1 µg/l	TM208	<1
Bromochloromethane	<1 µg/l	TM208	<1 #
Chloroform	<1 µg/l	TM208	<1 #
1,1,1-Trichloroethane	<1 µg/l	TM208	<1 #
1,1-Dichloropropene	<1 µg/l	TM208	<1 #
Carbontetrachloride	<1 µg/l	TM208	<1 #
1,2-Dichloroethane	<1 µg/l	TM208	<1 #
Benzene	<1 µg/l	TM208	<1 #
Trichloroethene	<1 µg/l	TM208	<1 #
1,2-Dichloropropane	<1 µg/l	TM208	<1 #
Dibromomethane	<1 µg/l	TM208	<1 #
Bromodichloromethane	<1 µg/l	TM208	<1 #
cis-1,3-Dichloropropene	<1 µg/l	TM208	<1 #
Toluene	<1 µg/l	TM208	<1 #
trans-1,3-Dichloropropene	<1 µg/l	TM208	<1 #
1,1,2-Trichloroethane	<1 µg/l	TM208	<1 #

CERTIFICATE OF ANALYSIS

SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	604312

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
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**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH18 IBC DISPOSAL
Depth (m)	0.00 - 0.00
Sample Type	Ground Water (GW)
Date Sampled	22/06/2021
Sampled Time	.
Date Received	25/06/2021
SDG Ref	210625-44
Lab Sample No.(s)	24509258
AGS Reference	EW1

Component	LOD/Units	Method					
1,3-Dichloropropane	<1 µg/l	TM208	<1 #				
Tetrachloroethene	<1 µg/l	TM208	<1 #				
Dibromochloromethane	<1 µg/l	TM208	<1 #				
1,2-Dibromoethane	<1 µg/l	TM208	<1 #				
Chlorobenzene	<1 µg/l	TM208	<1 #				
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208	<1 #				
Ethylbenzene	<1 µg/l	TM208	<1 #				
m,p-Xylene	<1 µg/l	TM208	<1 #				
o-Xylene	<1 µg/l	TM208	<1 #				
Styrene	<1 µg/l	TM208	<1 #				
Bromoform	<1 µg/l	TM208	<1 #				
Isopropylbenzene	<1 µg/l	TM208	<1 #				
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208	<1 #				
1,2,3-Trichloropropane	<1 µg/l	TM208	<1 #				
Bromobenzene	<1 µg/l	TM208	<1 #				
Propylbenzene	<1 µg/l	TM208	<1 #				
2-Chlorotoluene	<1 µg/l	TM208	<1 #				
1,3,5-Trimethylbenzene	<1 µg/l	TM208	<1 #				
4-Chlorotoluene	<1 µg/l	TM208	<1 #				
tert-Butylbenzene	<1 µg/l	TM208	<1 #				
1,2,4-Trimethylbenzene	<1 µg/l	TM208	<1 #				
sec-Butylbenzene	<1 µg/l	TM208	<1 #				
4-iso-Propyltoluene	<1 µg/l	TM208	<1 #				
1,3-Dichlorobenzene	<1 µg/l	TM208	<1 #				
1,4-Dichlorobenzene	<1 µg/l	TM208	<1 #				
n-Butylbenzene	<1 µg/l	TM208	<1 #				
1,2-Dichlorobenzene	<1 µg/l	TM208	<1 #				
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208	<1				
1,2,4-Trichlorobenzene	<1 µg/l	TM208	<1 #				
Hexachlorobutadiene	<1 µg/l	TM208	<1 #				
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1 #				
Naphthalene	<1 µg/l	TM208	<1 #				

CERTIFICATE OF ANALYSIS

SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	604312

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BH18 IBC DISPOSAL	0.00 - 0.00	Ground Water (GW)	22/06/2021	.	25/06/2021	210625-44	24509258	EW1
1,2,3-Trichlorobenzene	<1 µg/l	TM208	<1 #								
1,3,5-Trichlorobenzene	<1 µg/l	TM208	<1								

CERTIFICATE OF ANALYSIS

SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	604312

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref.	BH13ES5 1.50 - 1.60	30/06/2021	Agnieszka Chelmowska	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	SOLID										
Sample Type	23/06/2021 00:00:00										
Date Sampled	25/06/2021 05:00:00										
Date Receieved	210625-44										
SDG	24509268										
Original Sample	TM048										
Method Number											

CERTIFICATE OF ANALYSIS

SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	604312

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.107	**Natural Moisture Content (%)**	18.4
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	84.4
Particle Size <4mm	>95%		

Case	
SDG	210625-44
Lab Sample Number(s)	24509268
Sampled Date	23-Jun-2021
Customer Sample Ref.	BH13 ES5
Depth (m)	1.50 - 1.60

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.173	<0.00145	1.73	<0.0145	-	-	-
Boron	1.14	<0.01	11.4	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.19	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	0.0334	<0.001	0.334	<0.01	-	-	-
Vanadium	0.17	<0.001	1.7	<0.01	-	-	-
Zinc	0.00108	<0.001	0.0108	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	26-Jun-2021
pH (pH Units)	10.34
Conductivity (µS/cm)	397.00
Temperature (°C)	20.00
Volume Leachant (Litres)	0.883

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Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	604312

Test Completion Dates

Lab Sample No(s)	24509268	24509258
Customer Sample Ref.	BH13	BH18 IBC DISPOSAL
AGS Ref.	ES5	EW1
Depth	1.50 - 1.60	0.00 - 0.00
Type	Soil/Solid (S)	Ground Water
Alkalinity as CaCO3		02-Jul-2021
Ammoniacal N as NH4 in 2:1 extract	29-Jun-2021	
Ammoniacal Nitrogen	01-Jul-2021	04-Jul-2021
Ammonium Soil by Titration	01-Jul-2021	
Anions by Kone (soil)	02-Jul-2021	
Anions by Kone (w)		30-Jun-2021
Asbestos ID in Solid Samples	30-Jun-2021	
Boron Water Soluble	29-Jun-2021	
CEN 10:1 Leachate (1 Stage)	29-Jun-2021	
CEN Readings	01-Jul-2021	
Cyanide Comp/Free/Total/Thiocyanate	02-Jul-2021	02-Jul-2021
Dissolved Metals by ICP-MS	01-Jul-2021	30-Jun-2021
Dissolved Organic/Inorganic Carbon		12-Jul-2021
EPH	30-Jun-2021	
EPH by GCxGC-FID	30-Jun-2021	
EPH CWG (Aliphatic) Aqueous GC (W)		02-Jul-2021
EPH CWG (Aromatic) Aqueous GC (W)		02-Jul-2021
EPH CWG GC (S)	29-Jun-2021	
GRO by GC-FID (S)	29-Jun-2021	
GRO by GC-FID (W)		02-Jul-2021
Hexavalent Chromium (s)	01-Jul-2021	
Hexavalent Chromium (w)	01-Jul-2021	
Mercury Dissolved	01-Jul-2021	01-Jul-2021
Metals in solid samples by OES	30-Jun-2021	
Moisture at 105C	26-Jun-2021	
Nitrite by Kone (w)		29-Jun-2021
PAH by GCMS	02-Jul-2021	
PAH Spec MS - Aqueous (W)		01-Jul-2021
PCBs by GCMS	29-Jun-2021	
pH	29-Jun-2021	
pH Value		29-Jun-2021
pH Value of Filtered Water	01-Jul-2021	
Phenols by HPLC (S)	29-Jun-2021	
Phenols by HPLC (W)		30-Jun-2021
Sample description	25-Jun-2021	
Semi Volatile Organic Compounds	02-Jul-2021	
Sulphide	01-Jul-2021	
SVOC MS (W) - Aqueous		01-Jul-2021
Total Organic Carbon	30-Jun-2021	
TPH CWG (W)		02-Jul-2021
TPH CWG GC (S)	29-Jun-2021	
VOC MS (S)	28-Jun-2021	
VOC MS (W)		02-Jul-2021

ASSOCIATED AQC DATA

Alkalinity as CaCO3

Component	Method Code	QC 2473
Total Alkalinity as CaCO3	TM043	**101.01** 96.11 : 105.65

Ammoniacal Nitrogen

Component	Method Code	QC 2473	QC 2483
Ammoniacal Nitrogen as N	TM099	**97.6** 88.02 : 104.70	**96.4** 88.02 : 104.70

Ammonium Soil by Titration

Component	Method Code	QC 2467
Exchangeable Ammonium as NH4	TM024	**88.56** 74.04 : 103.44

Anions by Kone (soil)

Component	Method Code	QC 2418
Chloride (soluble)	TM243	**135.23** 83.05 : 116.28
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**153.27** 70.00 : 130.00

Anions by Kone (w)

Component	Method Code	QC 2471
Chloride	TM184	**99.3** 91.40 : 109.10
Sulphate (soluble)	TM184	**100.8** 91.99 : 109.30
TON as NO3	TM184	**102.5** 90.35 : 108.35

Boron Water Soluble

Component	Method Code	QC 2433
Water Soluble Boron	TM222	**96.5** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2431	QC 2417
Free Cyanide	TM153	**99.01** 78.00 : 114.00	
Free Cyanide (W)	TM227		**84.0** 90.67 : 122.67
Thiocyanate	TM153	**98.08** 94.53 : 113.33	
Thiocyanate (W)	TM227		**105.25** 92.25 : 117.75
Total Cyanide	TM153	**97.9** 77.13 : 111.53	
Total Cyanide (W)	TM227		**104.25** 88.75 : 111.25

Dissolved Metals by ICP-MS

Component	Method Code	QC 2409	QC 2412
Aluminium	TM152	**100.0** 94.21 : 111.52	**100.67** 94.21 : 111.52
Antimony	TM152	**98.33** 88.37 : 130.57	**99.67** 88.37 : 130.57
Arsenic	TM152	**100.17** 92.62 : 113.52	**100.17** 92.62 : 113.52
Barium	TM152	**100.83** 88.62 : 113.14	**100.5** 88.62 : 113.14
Beryllium	TM152	**100.33** 87.08 : 111.38	**100.33** 87.08 : 111.38
Bismuth	TM152	**101.5** 92.62 : 115.02	**100.83** 92.62 : 115.02
Boron	TM152	**99.67** 86.31 : 120.88	**100.33** 86.31 : 120.88
Cadmium	TM152	**100.33** 93.85 : 111.65	**101.33** 93.85 : 111.65
Calcium	TM152	**102.0** 89.20 : 126.91	**100.67** 89.20 : 126.91
Chromium	TM152	**98.33** 92.50 : 113.03	**100.0** 92.50 : 113.03
Cobalt	TM152	**97.33** 85.01 : 114.87	**99.67** 85.01 : 114.87
Copper	TM152	**96.0** 89.87 : 119.73	**99.33** 89.87 : 119.73
Iron	TM152	**98.67** 93.02 : 113.86	**100.67** 93.02 : 113.86
Lead	TM152	**101.33** 91.11 : 116.98	**101.67** 91.11 : 116.98
Lithium	TM152	**99.0** 87.70 : 115.90	**100.0** 87.70 : 115.90
Magnesium	TM152	**100.67** 89.60 : 116.61	**98.67** 89.60 : 116.61
Manganese	TM152	**102.17** 93.97 : 112.46	**101.17** 93.97 : 112.46
Molybdenum	TM152	**96.5** 89.07 : 110.96	**99.83** 89.07 : 110.96
Nickel	TM152	**98.0** 93.70 : 112.15	**100.17** 93.70 : 112.15

Dissolved Metals by ICP-MS

		QC 2409	QC 2412
Phosphorus	TM152	**103.5** 89.24 : 114.18	**99.33** 89.24 : 114.18
Potassium	TM152	**104.0** 93.20 : 115.55	**101.33** 93.20 : 115.55
Selenium	TM152	**102.0** 91.69 : 117.12	**95.0** 91.69 : 117.12
Silver	TM152	**96.5** 90.93 : 121.73	**99.5** 90.93 : 121.73
Sodium	TM152	**101.33** 92.42 : 113.24	**100.0** 92.42 : 113.24
Strontium	TM152	**101.33** 92.14 : 116.24	**101.0** 92.14 : 116.24
Tellurium	TM152	**99.83** 89.88 : 111.78	**99.17** 89.88 : 111.78
Thallium	TM152	**102.17** 82.43 : 113.83	**102.33** 82.43 : 113.83
Tin	TM152	**98.33** 94.62 : 107.79	**99.17** 94.62 : 107.79
Titanium	TM152	**98.83** 90.29 : 115.23	**101.5** 90.29 : 115.23
Tungsten	TM152	**97.17** 77.61 : 132.31	**98.67** 77.61 : 132.31
Uranium	TM152	**98.33** 86.97 : 115.76	**98.33** 86.97 : 115.76
Vanadium	TM152	**98.67** 89.61 : 115.48	**102.67** 89.61 : 115.48
Zinc	TM152	**99.67** 87.51 : 116.26	**101.0** 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2413
Dissolved Inorganic Carbon	TM090	**99.17** 93.58 : 112.28
Dissolved Organic Carbon	TM090	**100.33** 96.13 : 109.53

EPH CWG (Aliphatic) Aqueous GC (W)

Component	Method Code	QC 2422
Total Aliphatics >C10-C40	TM174	**107.1** 69.79 : 134.39

EPH CWG (Aromatic) Aqueous GC (W)

EPH CWG (Aromatic) Aqueous GC (W)

Component	Method Code	QC 2430
Total Aromatics >EC10-EC40	TM174	**94.39** 59.92 : 128.54

GRO by GC-FID (S)

Component	Method Code	QC 2434
QC	TM089	**94.13** 68.78 : 110.61

GRO by GC-FID (W)

Component	Method Code	QC 2493
Benzene by GC	TM245	**99.5** 81.54 : 119.70
Ethylbenzene by GC	TM245	**101.0** 80.99 : 121.09
m & p Xylene by GC	TM245	**101.75** 82.77 : 123.19
MTBE GC-FID	TM245	**93.5** 80.06 : 123.27
o Xylene by GC	TM245	**102.5** 84.26 : 121.50
QC	TM245	**102.14** 67.65 : 138.14
Toluene by GC	TM245	**100.0** 82.78 : 121.99

Hexavalent Chromium (s)

Component	Method Code	QC 2495
Hexavalent Chromium	TM151	**102.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2412
Hexavalent Chromium	TM241	**102.2** 94.17 : 106.17

Mercury Dissolved

Mercury Dissolved

Component	Method Code	QC 2449	QC 2489
Mercury Dissolved (CVAF)	TM183	**90.8** 0.00 : 0.00	**109.0** 0.00 : 0.00

Metals in solid samples by OES

Component	Method Code	QC 2456
Aluminium	TM181	**100.0** 73.56 : 108.85
Antimony	TM181	**88.62** 76.89 : 111.24
Arsenic	TM181	**99.71** 88.53 : 111.01
Barium	TM181	**100.92** 77.67 : 105.35
Beryllium	TM181	**100.37** 85.44 : 109.61
Boron	TM181	**93.41** 73.51 : 104.66
Cadmium	TM181	**93.42** 77.67 : 104.12
Chromium	TM181	**89.86** 79.64 : 105.83
Cobalt	TM181	**98.43** 84.60 : 104.13
Copper	TM181	**100.35** 82.40 : 105.45
Iron	TM181	**99.21** 82.95 : 110.58
Lead	TM181	**92.79** 78.24 : 104.05
Manganese	TM181	**108.33** 94.29 : 119.51
Mercury	TM181	**90.1** 83.16 : 107.81
Molybdenum	TM181	**97.12** 87.11 : 106.87
Nickel	TM181	**91.69** 80.26 : 102.28
Phosphorus	TM181	**105.45** 94.56 : 124.28
Selenium	TM181	**96.47** 82.28 : 110.48
Strontium	TM181	**96.88** 79.13 : 102.79
Thallium	TM181	**90.27** 82.94 : 111.86
Tin	TM181	**100.0** 86.72 : 110.03
Titanium	TM181	**90.08** 66.23 : 102.06

Metals in solid samples by OES

		QC 2456
Vanadium	TM181	**99.63** 86.19 : 109.45
Zinc	TM181	**99.38** 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2400
Acenaphthene	TM218	**87.5** 73.47 : 109.80
Acenaphthylene	TM218	**89.0** 70.00 : 130.00
Anthracene	TM218	**93.0** 68.68 : 111.89
Benz(a)anthracene	TM218	**97.5** 68.12 : 118.39
Benzo(a)pyrene	TM218	**100.0** 71.72 : 115.31
Benzo(b)fluoranthene	TM218	**93.5** 66.89 : 120.40
Benzo(ghi)perylene	TM218	**94.5** 67.82 : 118.49
Benzo(k)fluoranthene	TM218	**97.0** 73.10 : 117.03
Chrysene	TM218	**96.0** 69.58 : 115.47
Dibenzo(ah)anthracene	TM218	**92.0** 67.32 : 121.35
Fluoranthene	TM218	**94.5** 75.16 : 117.28
Fluorene	TM218	**88.0** 73.81 : 108.66
Indeno(123cd)pyrene	TM218	**97.5** 68.91 : 117.62
Naphthalene	TM218	**84.5** 72.12 : 106.18
Phenanthrene	TM218	**94.0** 69.01 : 113.72
Pyrene	TM218	**95.0** 64.28 : 115.75

PAH Spec MS - Aqueous (W)

Component	Method Code	QC 2438
Acenaphthene by GCMS	TM178	**104.4** 97.60 : 116.80
Acenaphthylene by GCMS	TM178	**103.2** 89.20 : 113.20
Anthracene by GCMS	TM178	**101.2** 92.40 : 116.40
Benz(a)anthracene by GCMS	TM178	**104.8** 84.40 : 110.80
Benzo(a)pyrene by GCMS	TM178	**106.0** 88.40 : 110.00

PAH Spec MS - Aqueous (W)

		QC 2438
Benzo(b)fluoranthene by GCMS	TM178	**103.6** 81.20 : 114.80
Benzo(ghi)perylene by GCMS	TM178	**106.0** 93.60 : 112.80
Benzo(k)fluoranthene by GCMS	TM178	**101.2** 90.40 : 119.20
Chrysene by GCMS	TM178	**104.4** 96.80 : 113.60
Dibenzo(ah)anthracene by GCMS	TM178	**104.4** 88.00 : 112.00
Fluoranthene by GCMS	TM178	**105.2** 93.49 : 118.20
Fluorene by GCMS	TM178	**101.2** 94.39 : 118.66
Indeno(123cd)pyrene by GCMS	TM178	**99.2** 90.40 : 114.40
Naphthalene by GCMS	TM178	**102.0** 94.00 : 115.60
Phenanthrene by GCMS	TM178	**100.0** 94.80 : 114.00
Pyrene by GCMS	TM178	**110.4** 96.40 : 115.60

PCBs by GCMS

Component	Method Code	QC 2485
PCB congener 101	TM168	**83.2** 65.66 : 110.06
PCB congener 105	TM168	**79.6** 58.10 : 106.34
PCB congener 114	TM168	**80.4** 59.38 : 106.48
PCB congener 118	TM168	**82.8** 60.02 : 106.23
PCB congener 123	TM168	**84.2** 65.01 : 99.81
PCB congener 126	TM168	**80.2** 59.31 : 109.23
PCB congener 138	TM168	**85.4** 63.95 : 107.63
PCB congener 153	TM168	**88.8** 62.65 : 108.85
PCB congener 156	TM168	**82.9** 61.69 : 112.27
PCB congener 157	TM168	**81.5** 55.37 : 104.81
PCB congener 167	TM168	**81.0** 65.58 : 109.14
PCB congener 169	TM168	**82.0** 56.84 : 112.10
PCB congener 180	TM168	**88.1** 66.99 : 111.63
PCB congener 189	TM168	**81.7** 57.75 : 112.59

PCBs by GCMS

		QC 2485
PCB congener 28	TM168	**88.0** 73.68 : 105.96
PCB congener 52	TM168	**86.5** 67.24 : 107.62
PCB congener 77	TM168	**84.1** 64.87 : 108.49
PCB congener 81	TM168	**83.8** 70.78 : 110.80

pH

Component	Method Code	QC 2412
pH	TM133	**99.56** 98.09 : 101.62

pH Value

Component	Method Code	QC 2444
pH	TM256	**99.87** 99.33 : 102.54

pH Value of Filtered Water

Component	Method Code	QC 2466
pH	TM256	**100.27** 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2442
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**50.65** 70.71 : 116.42
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**44.44** 64.54 : 117.79
Cresols by HPLC (S)	TM062 (S)	**46.56** 74.40 : 108.98
Phenol by HPLC (S)	TM062 (S)	**49.67** 69.44 : 122.18
Xylenols by HPLC (S)	TM062 (S)	**49.27** 76.56 : 106.38

Phenols by HPLC (W)

Phenols by HPLC (W)

Component	Method Code	QC 2462
2.3.5 Trimethyl-Phenol by HPLC (W)	TM259	**99.61** 77.41 : 127.55
2-Isopropyl Phenol by HPLC (W)	TM259	**93.69** 82.77 : 126.51
Cresols by HPLC (W)	TM259	**100.0** 76.60 : 126.28
Napthol by HPLC (W)	TM259	**105.47** 75.40 : 129.40
Phenol by HPLC (W)	TM259	**96.41** 85.77 : 125.91
Xylenols by HPLC (W)	TM259	**99.05** 79.09 : 131.82

Semi Volatile Organic Compounds

Component	Method Code	QC 2422
4-Bromophenylphenylether (Soil)	TM157	**97.5** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**99.0** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**95.0** 68.25 : 126.75
Naphthalene (Soil)	TM157	**97.0** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**94.5** 66.50 : 123.50
Phenol (Soil)	TM157	**100.0** 69.92 : 114.02

Sulphide

Component	Method Code	QC 2493
Sulphide	TM101	**100.0** 88.90 : 112.50

SVOC MS (W) - Aqueous

Component	Method Code	QC 2417
4-Bromophenylphenylether	TM176	**80.8** 61.60 : 106.72
Benzo(a)anthracene	TM176	**80.0** 64.64 : 115.52
Benzo(a)pyrene	TM176	**76.88** 60.56 : 115.28
Butylbenzyl phthalate	TM176	**73.68** 57.12 : 116.16
Hexachlorobutadiene	TM176	**68.8** 52.88 : 95.12
Naphthalene	TM176	**88.8** 65.68 : 110.32
Nitrobenzene	TM176	**77.52** 57.12 : 109.44

SVOC MS (W) - Aqueous

		QC 2417
Phenol	TM176	**49.12** 37.60 : 70.72

Total Organic Carbon

Component	Method Code	QC 2444
Total Organic Carbon	TM132	**92.97** 84.82 : 117.61

VOC MS (S)

Component	Method Code	QC 2464
1,1,1,2-tetrachloroethane	TM116	**95.6** 84.84 : 116.25
1,1,1-Trichloroethane	TM116	**99.0** 73.73 : 118.05
1,1,2-Trichloroethane	TM116	**91.0** 77.12 : 116.04
1,1-Dichloroethane	TM116	**104.0** 74.46 : 129.15
1,2-Dichloroethane	TM116	**108.0** 92.38 : 131.65
1,4-Dichlorobenzene	TM116	**96.0** 83.64 : 126.18
2-Chlorotoluene	TM116	**89.4** 76.03 : 113.25
4-Chlorotoluene	TM116	**86.4** 66.90 : 112.46
Benzene	TM116	**100.8** 88.60 : 113.80
Carbon Disulphide	TM116	**99.2** 74.91 : 122.14
Carbontetrachloride	TM116	**100.4** 80.31 : 124.50
Chlorobenzene	TM116	**97.8** 83.81 : 114.18
Chloroform	TM116	**104.6** 87.40 : 122.49
Chloromethane	TM116	**105.8** 65.89 : 136.93
Cis-1,2-Dichloroethene	TM116	**104.0** 80.67 : 126.72
Dibromomethane	TM116	**94.8** 73.23 : 118.35
Dichloromethane	TM116	**110.6** 81.11 : 133.25
Ethylbenzene	TM116	**86.6** 75.92 : 110.41
Hexachlorobutadiene	TM116	**55.8** 12.82 : 152.73

VOC MS (S)

		QC 2464
Isopropylbenzene	TM116	**70.4** 54.30 : 105.91
Naphthalene	TM116	**107.2** 80.86 : 128.81
o-Xylene	TM116	**82.4** 69.99 : 108.74
p/m-Xylene	TM116	**82.5** 68.32 : 108.91
Sec-Butylbenzene	TM116	**63.4** 38.50 : 101.50
Tetrachloroethene	TM116	**94.0** 76.95 : 121.02
Toluene	TM116	**89.4** 74.24 : 107.42
Trichloroethene	TM116	**95.4** 85.28 : 109.36
Trichlorofluoromethane	TM116	**104.6** 81.46 : 120.52
Vinyl Chloride	TM116	**105.0** 68.02 : 143.37

VOC MS (W)

Component	Method Code	QC 2480
1,1,1,2-Tetrachloroethane	TM208	**101.0** 87.33 : 109.74
1,1,1-Trichloroethane	TM208	**98.0** 84.51 : 110.07
1,1-Dichloroethane	TM208	**99.5** 79.60 : 118.57
1,2-Dichloroethane	TM208	**101.5** 77.72 : 133.33
2-Chlorotoluene	TM208	**102.0** 82.89 : 116.61
4-Chlorotoluene	TM208	**99.5** 79.46 : 115.88
Benzene	TM208	**100.5** 81.22 : 118.60
Bromomethane	TM208	**98.5** 79.31 : 116.90
Carbontetrachloride	TM208	**104.5** 86.16 : 119.10
Chlorobenzene	TM208	**102.0** 87.25 : 116.65
Chloroform	TM208	**100.5** 83.01 : 121.64
Chloromethane	TM208	**98.0** 77.95 : 136.54
Cis-1,2-Dichloroethene	TM208	**98.5** 85.03 : 112.75
Dichloromethane	TM208	**99.5** 78.23 : 120.65
Ethylbenzene	TM208	**97.5** 79.55 : 110.51

VOC MS (W)

		QC 2480
Hexachlorobutadiene	TM208	**95.0** 68.58 : 117.78
o-Xylene	TM208	**99.0** 85.06 : 114.91
p/m-Xylene	TM208	**98.75** 82.09 : 109.18
Tert-butyl methyl ether	TM208	**80.0** 68.39 : 125.81
Tetrachloroethene	TM208	**102.0** 82.09 : 113.14
Toluene	TM208	**100.0** 79.88 : 116.83
Trichloroethene	TM208	**101.5** 82.30 : 112.45
Vinyl Chloride	TM208	**97.0** 71.34 : 122.34

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

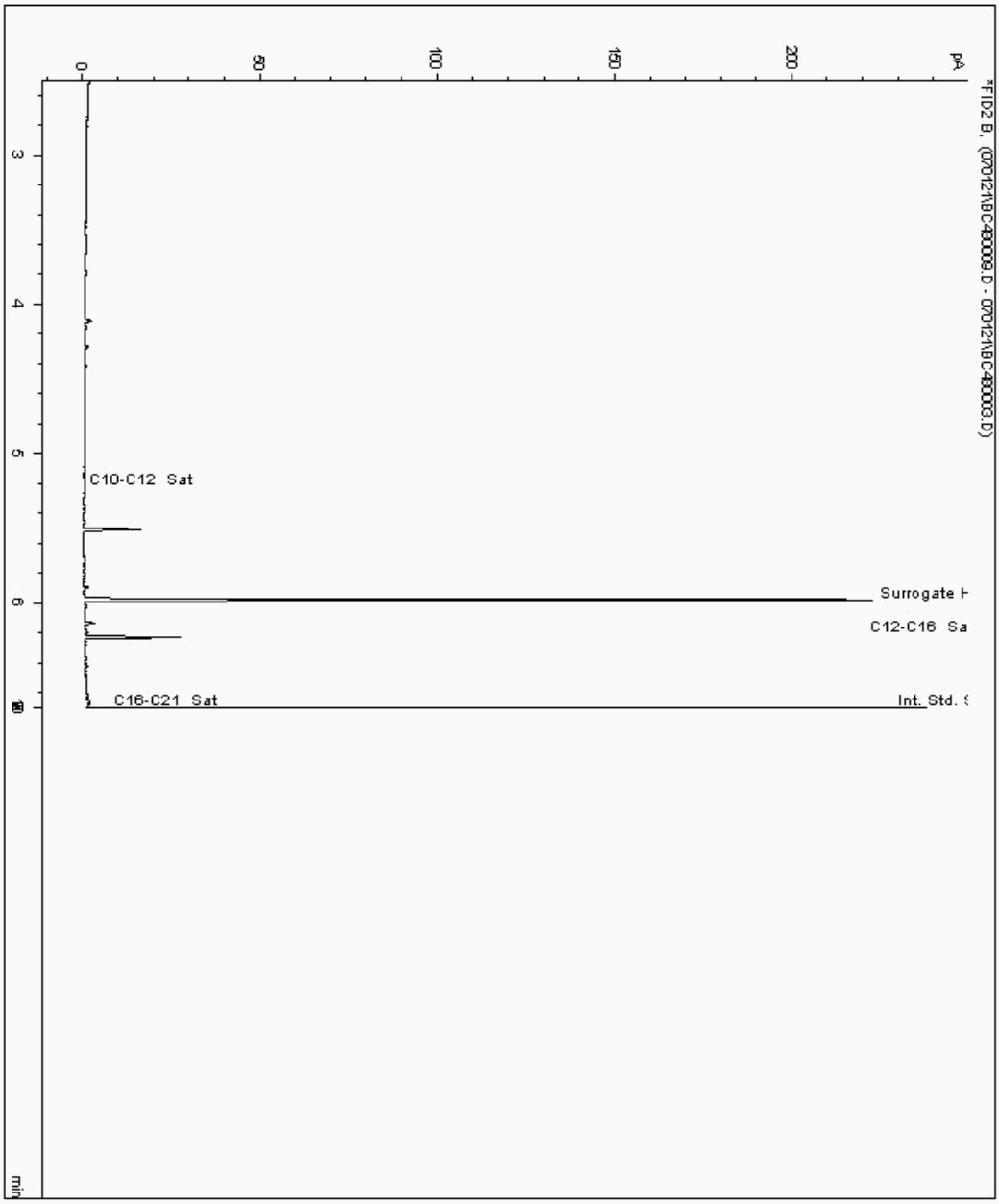
SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	604312

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24529915 **Depth :** 0.00 - 0.00
Sample ID : BH18 IBC DISPOSAL

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 22957936-
Date Acquired : 02/07/2021 00:34:19 PM
Units : ppb
Dilution : SE BH18 IBC DISPOS[0.00 - ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

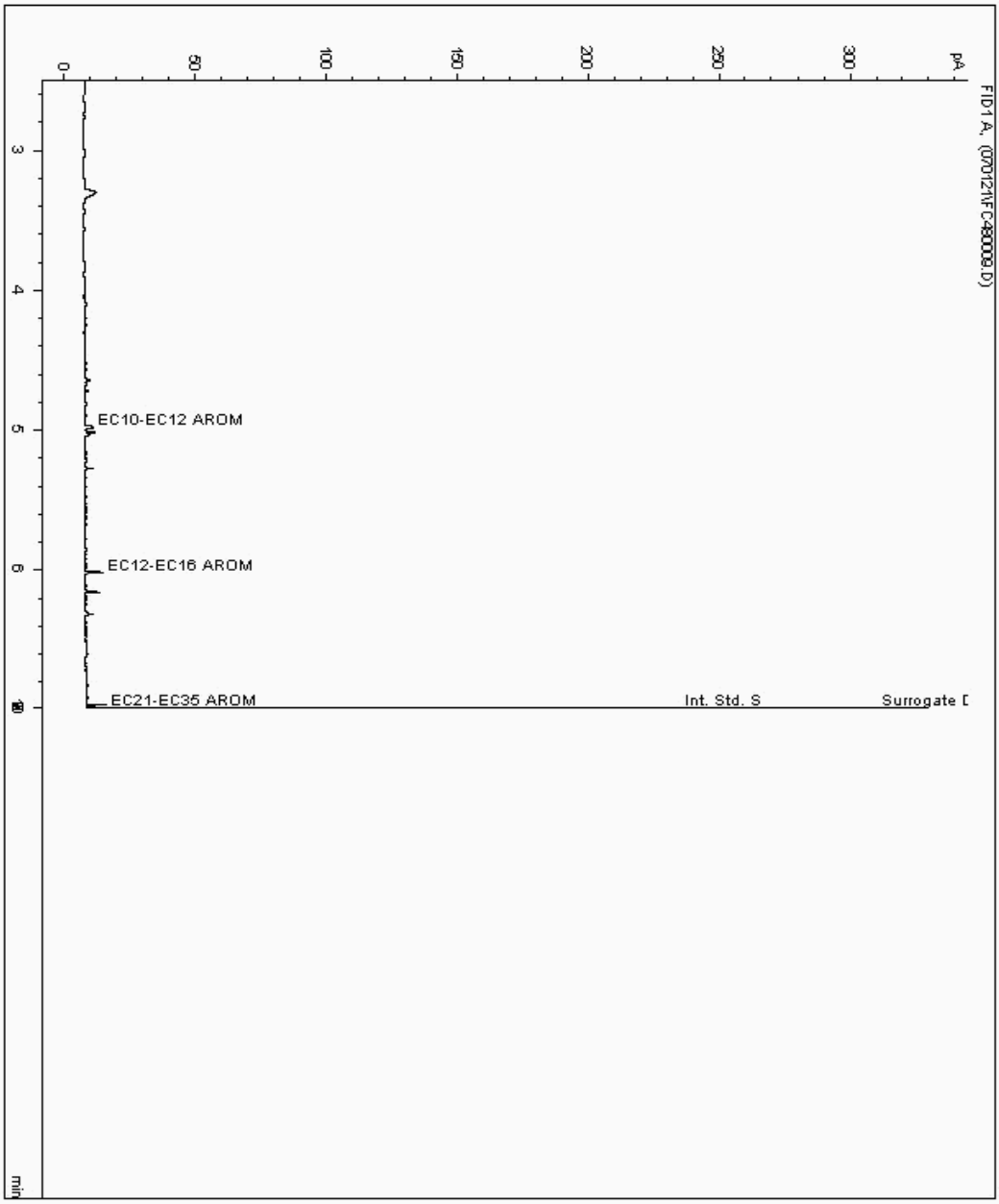
SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	604312

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24529915 **Depth :** 0.00 - 0.00
Sample ID : BH18 IBC DISPOSAL

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 22957937-
Date Acquired : 02/07/2021 00:34:19 PM
Units : ppb
Dilution : SE BH18 IBC DISPOS[0.00 - ->
CF : 1
Multiplier : 0.025



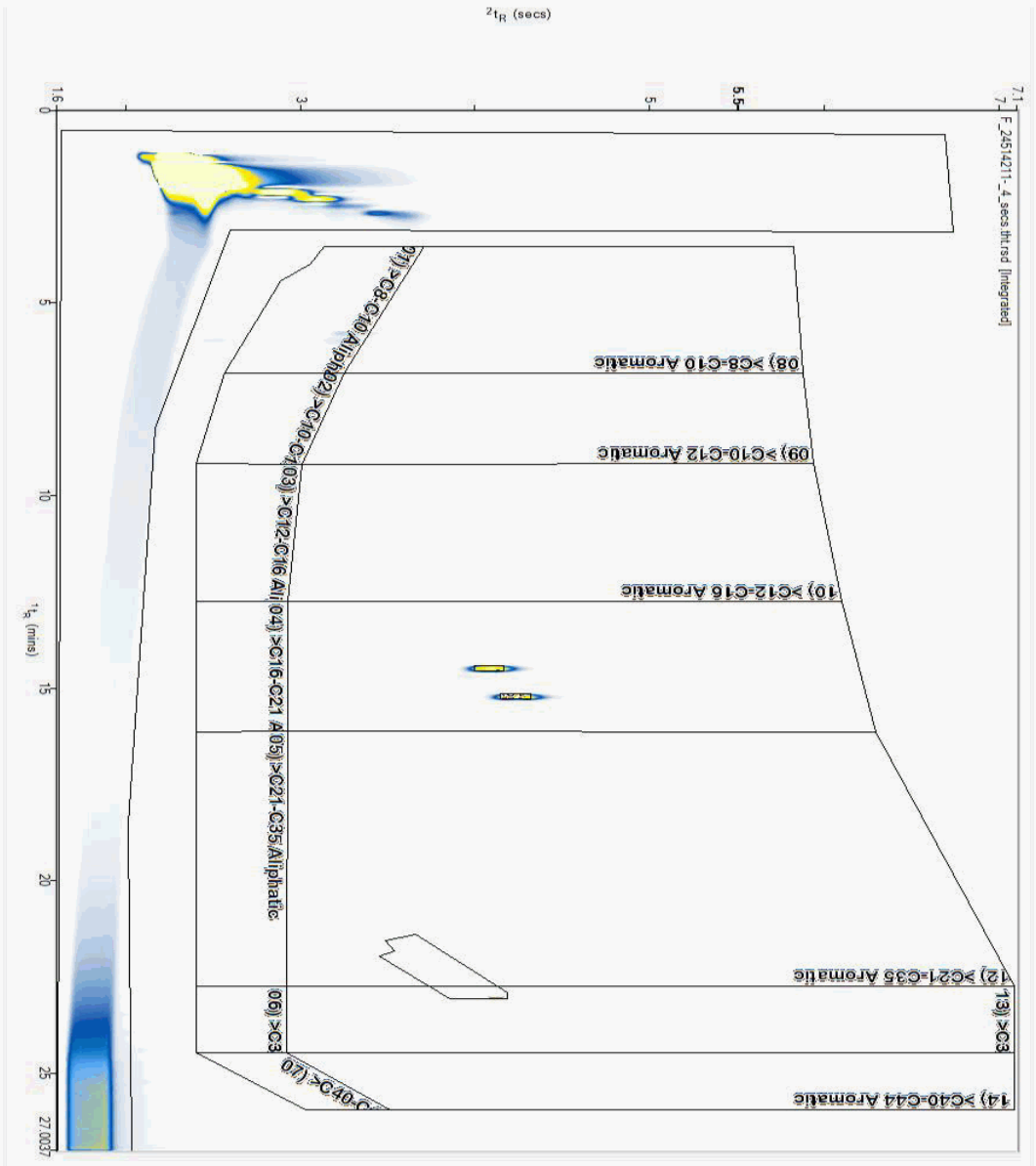
CERTIFICATE OF ANALYSIS

SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	604312

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 24514211 **Depth :** 1.50 - 1.60
Sample ID : BH13

```
   ChromSpace LIMS export
  Current batch
Sample Identity:  F_24514211-_4_secs.tht
Date Acquired   :  28/06/21 10:10:02
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
```



CERTIFICATE OF ANALYSIS

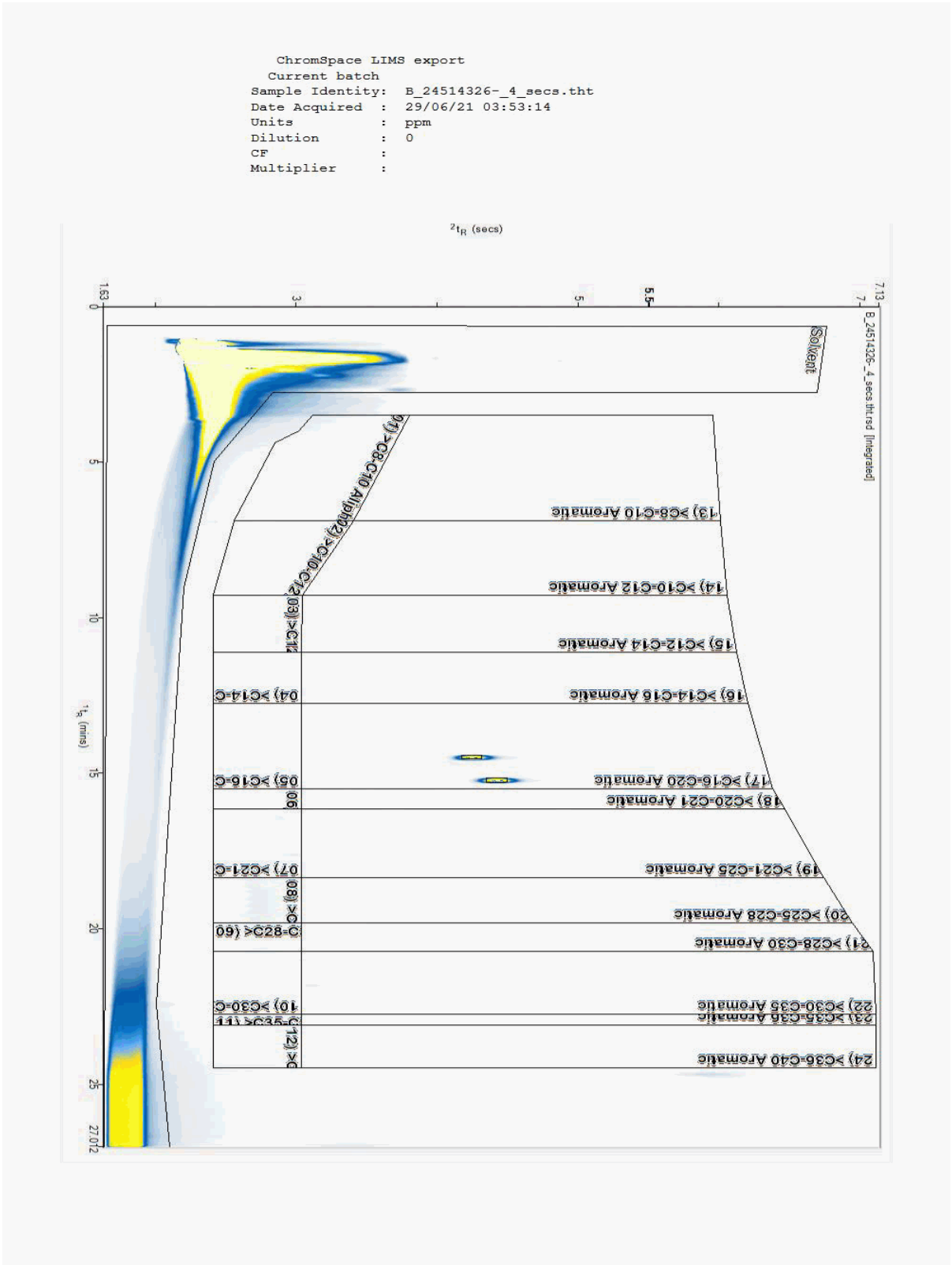
SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	604312

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 24514326
Sample ID : BH13

Depth : 1.50 - 1.60

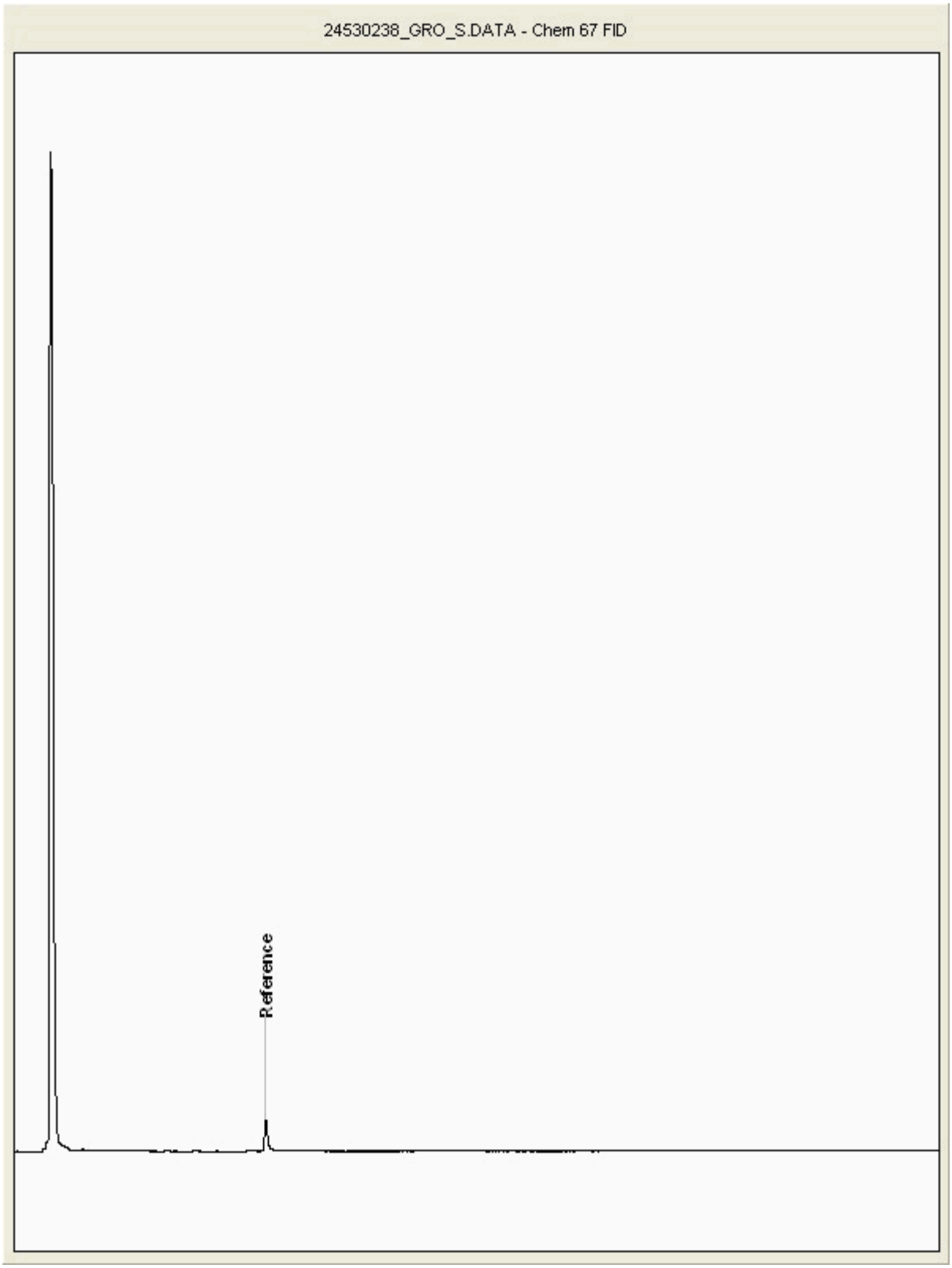


CERTIFICATE OF ANALYSIS

SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	604312

Chromatogram

Analysis: GRO by GC-FID (S) **Sample No :** 24530238 **Sample ID :** BH13 **Depth :** 1.50 - 1.60



CERTIFICATE OF ANALYSIS

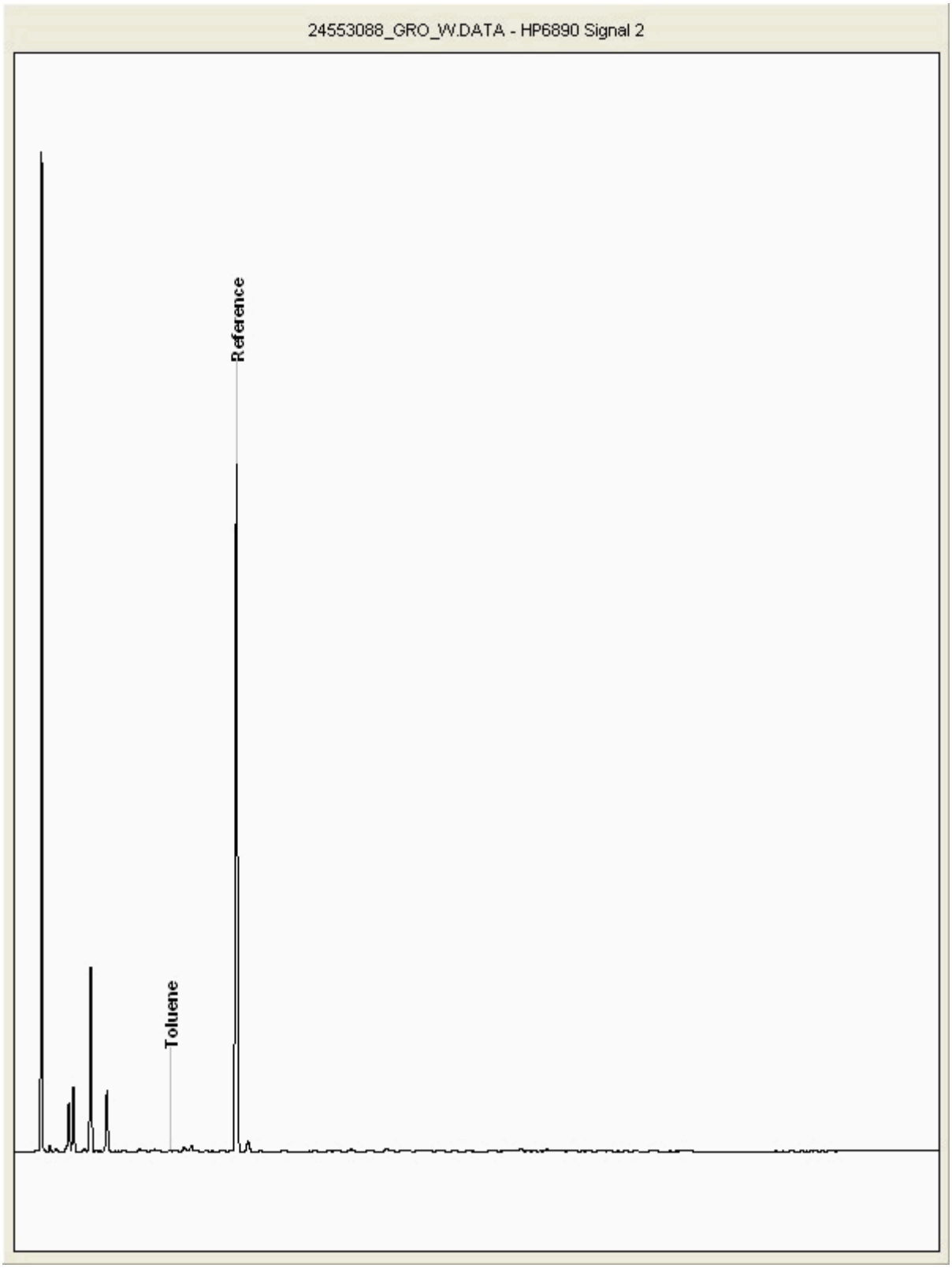
SDG:	210625-44	**Client Reference:**	784-B026948	**Report Number:**	605211
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	604312

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 24553088
Sample ID : BH18 IBC DISPOSAL

Depth : 0.00 - 0.00



Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	04 July 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210625-100
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	604357

We received 7 samples on Friday June 25, 2021 and 1 of these samples were scheduled for analysis which was completed on Sunday July 04, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

So

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210625-100	**Client Reference:**	784-B026948	**Report Number:**	604357
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24513062	BH13	ES17	10.40 - 10.50	24/06/2021
24513076	BH13	ES19	12.50 - 12.60	24/06/2021
24513088	BH13	ES21	13.40 - 13.50	24/06/2021
24513098	BH13	ES23	14.40 - 14.50	24/06/2021
24513050	BH13	ES13	7.50 - 7.60	24/06/2021
24513044	BH13	ES15	8.40 - 8.50	24/06/2021
24513031	BH13	ES16	9.40 - 9.50	24/06/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	210625-100	**Client Reference:**	784-B026948	**Report Number:**	604357
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24513098			
Customer Sample Reference			BH13			
AGS Reference			ES23			
Depth (m)			14.40 - 14.50			
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 1		X		
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1	X			
Ammonium Soil by Titration	All	NDPs: 0 Tests: 1		X		
Anions by Kone (soil)	All	NDPs: 0 Tests: 1		X		
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1	X			
Boron Water Soluble	All	NDPs: 0 Tests: 1		X		
CEN Readings	All	NDPs: 0 Tests: 1	X			
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2	X	X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1	X			
EPH	All	NDPs: 0 Tests: 1		X		
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1		X		
EPH CWG GC (S)	All	NDPs: 0 Tests: 1		X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1			X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1		X		
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1	X			

CERTIFICATE OF ANALYSIS

SDG:	210625-100	**Client Reference:**	784-B026948	**Report Number:**	604357
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)			24513098
			Customer Sample Reference			BH13
			AGS Reference			ES23
			Depth (m)			14.40 - 14.50
			Container	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
			Sample Type	S	S	S
Mercury Dissolved	All	NDPs: 0 Tests: 1		X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 1			X	
PAH by GCMS	All	NDPs: 0 Tests: 1			X	
PCBs by GCMS	All	NDPs: 0 Tests: 1			X	
pH	All	NDPs: 0 Tests: 1			X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 1		X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1			X	
Sample description	All	NDPs: 0 Tests: 1			X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1			X	
Sulphide	All	NDPs: 0 Tests: 1		X		
Total Organic Carbon	All	NDPs: 0 Tests: 1			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 1			X	
VOC MS (S)	All	NDPs: 0 Tests: 1				X

CERTIFICATE OF ANALYSIS

SDG:	210625-100	**Client Reference:**	784-B026948	**Report Number:**	604357
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24513098	BH13	14.40 - 14.50	Light Brown	Sand	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210625-100	**Client Reference:**	784-B026948	**Report Number:**	604357
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	Depth (m)	Sample Type	Date Sampled	Sample Time	Date Received	SDG Ref	Lab Sample No.(s)	AGS Reference
			BH13	14.40 - 14.50	Soil/Solid (S)	24/06/2021	.	25/06/2021	210625-100	24513098	ES23
Moisture Content Ratio (% of as received sample)	%	PM024	6.8								
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12 M								
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M								
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M								
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M								
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M								
Soil Organic Matter (SOM)	<0.35 %	TM132	<0.35 #								
pH	1 pH Units	TM133	8.53 M								
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #								
Cyanide, Total	<1 mg/kg	TM153	<1 M								
PCB congener 118	<0.003 mg/kg	TM168	<0.003 M								
PCB congener 81	<0.003 mg/kg	TM168	<0.003 M								
PCB congener 77	<0.003 mg/kg	TM168	<0.003 M								
PCB congener 123	<0.003 mg/kg	TM168	<0.003 M								
PCB congener 114	<0.003 mg/kg	TM168	<0.003 M								
PCB congener 105	<0.003 mg/kg	TM168	<0.003 M								
PCB congener 126	<0.003 mg/kg	TM168	<0.003 M								
PCB congener 167	<0.003 mg/kg	TM168	<0.003 M								
PCB congener 156	<0.003 mg/kg	TM168	<0.003 M								
PCB congener 157	<0.003 mg/kg	TM168	<0.003 M								
PCB congener 169	<0.003 mg/kg	TM168	<0.003 M								
PCB congener 189	<0.003 mg/kg	TM168	<0.003 M								
Sum of detected WHO 12 PCBs	<0.036 mg/kg	TM168	<0.036								
Arsenic	<0.6 mg/kg	TM181	5.58 M								
Cadmium	<0.02 mg/kg	TM181	0.304 M								
Chromium	<0.9 mg/kg	TM181	3.29 M								
Copper	<1.4 mg/kg	TM181	4.04 M								
Iron	<1000 mg/kg	TM181	12000 #								
Lead	<0.7 mg/kg	TM181	6.4 M								
Mercury	<0.1 mg/kg	TM181	<0.1 M								
Nickel	<0.2 mg/kg	TM181	7.68 M								
Selenium	<1 mg/kg	TM181	<1 #								
Vanadium	<0.2 mg/kg	TM181	9.78 #								

Validated

CERTIFICATE OF ANALYSIS

SDG:	210625-100	**Client Reference:**	784-B026948	**Report Number:**	604357
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.	BH13
Depth (m)	14.40 - 14.50
Sample Type	Soil/Solid (S)
Date Sampled	24/06/2021
Sample Time	.
Date Received	25/06/2021
SDG Ref	210625-100
Lab Sample No.(s)	24513098
AGS Reference	ES23

Component	LOD/Units	Method	
Zinc	<1.9 mg/kg	TM181	28.3 M
Boron, water soluble	<1 mg/kg	TM222	<1 M
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0136 M
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248	6.21
EPH (C5-C40)	<35 mg/kg	TM415	<35
EPH Surrogate % recovery**	%	TM415	103
EPH >C10-C40	<35 mg/kg	TM415	<35 M

Validated

CERTIFICATE OF ANALYSIS

SDG:	210625-100	**Client Reference:**	784-B026948	**Report Number:**	604357
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH13
Depth (m)	14.40 - 14.50
Sample Type	Soil/Solid (S)
Date Sampled	24/06/2021
Sample Time	.
Date Received	25/06/2021
SDG Ref	210625-100
Lab Sample No.(s)	24513098
AGS Reference	ES23

Component	LOD/Units	Method	
Naphthalene-d8 % recovery**	%	TM218	84
Acenaphthene-d10 % recovery**	%	TM218	84.4
Phenanthrene-d10 % recovery**	%	TM218	85
Chrysene-d12 % recovery**	%	TM218	79
Perylene-d12 % recovery**	%	TM218	79.5
Naphthalene	<0.009 mg/kg	TM218	<0.009 M
Acenaphthylene	<0.012 mg/kg	TM218	<0.012 M
Acenaphthene	<0.008 mg/kg	TM218	<0.008 M
Fluorene	<0.01 mg/kg	TM218	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218	<0.015 M
Anthracene	<0.016 mg/kg	TM218	<0.016 M
Fluoranthene	<0.017 mg/kg	TM218	<0.017 M
Pyrene	<0.015 mg/kg	TM218	<0.015 M
Benz(a)anthracene	<0.014 mg/kg	TM218	<0.014 M
Chrysene	<0.01 mg/kg	TM218	<0.01 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	<0.015 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	<0.014 M
Benzo(a)pyrene	<0.015 mg/kg	TM218	<0.015 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	<0.018 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	<0.023 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	<0.024 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	<0.118

CERTIFICATE OF ANALYSIS

SDG:	210625-100	**Client Reference:**	784-B026948	**Report Number:**	604357
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH13
Depth (m)	14.40 - 14.50
Sample Type	Soil/Solid (S)
Date Sampled	24/06/2021
Sample Time	.
Date Received	25/06/2021
SDG Ref	210625-100
Lab Sample No.(s)	24513098
AGS Reference	ES23

Component	LOD/Units	Method	
Phenol	<0.1 mg/kg	TM157	<0.1
Pentachlorophenol	<0.1 mg/kg	TM157	<0.1
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157	<0.1
Nitrobenzene	<0.1 mg/kg	TM157	<0.1
Isophorone	<0.1 mg/kg	TM157	<0.1
Hexachloroethane	<0.1 mg/kg	TM157	<0.1
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157	<0.1
Hexachlorobutadiene	<0.1 mg/kg	TM157	<0.1
Hexachlorobenzene	<0.1 mg/kg	TM157	<0.1
n-Dioctyl phthalate	<0.1 mg/kg	TM157	<0.1
Dimethyl phthalate	<0.1 mg/kg	TM157	<0.1
Diethyl phthalate	<0.1 mg/kg	TM157	<0.1
n-Dibutyl phthalate	<0.1 mg/kg	TM157	<0.1
Dibenzofuran	<0.1 mg/kg	TM157	<0.1
Carbazole	<0.1 mg/kg	TM157	<0.1
Butylbenzyl phthalate	<0.1 mg/kg	TM157	<0.1
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157	<0.1
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157	<0.1
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157	<0.1
Azobenzene	<0.1 mg/kg	TM157	<0.1
4-Nitrophenol	<0.1 mg/kg	TM157	<0.1
4-Nitroaniline	<0.1 mg/kg	TM157	<0.1
4-Methylphenol	<0.1 mg/kg	TM157	<0.1
4-Chlorophenylphenylether	<0.1 mg/kg	TM157	<0.1
4-Chloroaniline	<0.1 mg/kg	TM157	<0.1
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157	<0.1
4-Bromophenylphenylether	<0.1 mg/kg	TM157	<0.1
3-Nitroaniline	<0.1 mg/kg	TM157	<0.1
2-Nitrophenol	<0.1 mg/kg	TM157	<0.1
2-Nitroaniline	<0.1 mg/kg	TM157	<0.1
2-Methylphenol	<0.1 mg/kg	TM157	<0.1
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157	<0.1
2-Chlorophenol	<0.1 mg/kg	TM157	<0.1

Validated

CERTIFICATE OF ANALYSIS

SDG:	210625-100	**Client Reference:**	784-B026948	**Report Number:**	604357
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.			BH13
Depth (m)			14.40 - 14.50
Sample Type			Soil/Solid (S)
Date Sampled			24/06/2021
Sample Time			.
Date Received			25/06/2021
SDG Ref			210625-100
Lab Sample No.(s)			24513098
AGS Reference			ES23
Component	**LOD/Units**	**Method**	
2,6-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1
2,4-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1
2,4-Dimethylphenol	<0.1 mg/kg	TM157	<0.1
2,4-Dichlorophenol	<0.1 mg/kg	TM157	<0.1
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157	<0.1
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157	<0.1
1,4-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1
1,3-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1
1,2-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1
2-Chloronaphthalene	<0.1 mg/kg	TM157	<0.1
2-Methylnaphthalene	<0.1 mg/kg	TM157	<0.1
Acenaphthylene	<0.1 mg/kg	TM157	<0.1
Acenaphthene	<0.1 mg/kg	TM157	<0.1
Anthracene	<0.1 mg/kg	TM157	<0.1
Benzo(a)anthracene	<0.1 mg/kg	TM157	<0.1
Benzo(b)fluoranthene	<0.1 mg/kg	TM157	<0.1
Benzo(k)fluoranthene	<0.1 mg/kg	TM157	<0.1
Benzo(a)pyrene	<0.1 mg/kg	TM157	<0.1
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157	<0.1
Chrysene	<0.1 mg/kg	TM157	<0.1
Fluoranthene	<0.1 mg/kg	TM157	<0.1
Fluorene	<0.1 mg/kg	TM157	<0.1
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157	<0.1
Phenanthrene	<0.1 mg/kg	TM157	<0.1
Pyrene	<0.1 mg/kg	TM157	<0.1
Naphthalene	<0.1 mg/kg	TM157	<0.1
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157	<0.1
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157	<0.1

Validated

CERTIFICATE OF ANALYSIS

SDG:	210625-100	**Client Reference:**	784-B026948	**Report Number:**	604357
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH13
Depth (m)	14.40 - 14.50
Sample Type	Soil/Solid (S)
Date Sampled	24/06/2021
Sample Time	.
Date Received	25/06/2021
SDG Ref	210625-100
Lab Sample No.(s)	24513098
AGS Reference	ES23

Component	LOD/Units	Method	
GRO Surrogate % recovery**	%	TM089	108
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01
Aliphatics >C10-C12	<1 mg/kg	TM414	<1 #
Aliphatics >C12-C16	<1 mg/kg	TM414	<1 #
Aliphatics >C16-C21	<1 mg/kg	TM414	<1 #
Aliphatics >C21-C35	<1 mg/kg	TM414	<1 #
Aliphatics >C35-C44	<1 mg/kg	TM414	<1
Total Aliphatics >C10-C44	<5 mg/kg	TM414	<5
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414	<10
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	<0.01
Aromatics > EC10-EC12	<1 mg/kg	TM414	<1 #
Aromatics > EC12-EC16	<1 mg/kg	TM414	<1 #
Aromatics > EC16-EC21	<1 mg/kg	TM414	<1 #
Aromatics > EC21-EC35	<1 mg/kg	TM414	<1 #
Aromatics >EC35-EC44	<1 mg/kg	TM414	<1
Aromatics > EC40-EC44	<1 mg/kg	TM414	<1
Total Aromatics > EC10-EC44	<5 mg/kg	TM414	<5
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414	<10
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089	<0.05
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089	<0.05
GRO >C5-C10	<0.02 mg/kg	TM089	<0.02

CERTIFICATE OF ANALYSIS

SDG:	210625-100	**Client Reference:**	784-B026948	**Report Number:**	604357
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Customer Sample Ref.	BH13
Depth (m)	14.40 - 14.50
Sample Type	Soil/Solid (S)
Date Sampled	24/06/2021
Sample Time	.
Date Received	25/06/2021
SDG Ref	210625-100
Lab Sample No.(s)	24513098
AGS Reference	ES23

Component	LOD/Units	Method	
Dibromofluoromethane**	%	TM116	124
Toluene-d8**	%	TM116	102
4-Bromofluorobenzene**	%	TM116	101
Dichlorodifluoromethane	<0.006 mg/kg	TM116	<0.12 M
Chloromethane	<0.007 mg/kg	TM116	<0.14 #
Vinyl Chloride	<0.006 mg/kg	TM116	<0.12 M
Bromomethane	<0.01 mg/kg	TM116	<0.2 M
Chloroethane	<0.01 mg/kg	TM116	<0.2 M
Trichlorofluorormethane	<0.006 mg/kg	TM116	<0.12 M
1,1-Dichloroethene	<0.01 mg/kg	TM116	<0.2 #
Carbon Disulphide	<0.007 mg/kg	TM116	<0.14 M
Dichloromethane	<0.01 mg/kg	TM116	<0.2 #
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.2 M
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116	<0.2 M
1,1-Dichloroethane	<0.008 mg/kg	TM116	<0.16 M
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116	<0.12 M
2,2-Dichloropropane	<0.01 mg/kg	TM116	<0.2
Bromochloromethane	<0.01 mg/kg	TM116	<0.2 M
Chloroform	<0.008 mg/kg	TM116	<0.16 M
1,1,1-Trichloroethane	<0.007 mg/kg	TM116	<0.14 M
1,1-Dichloropropene	<0.01 mg/kg	TM116	<0.2 M
Carbontetrachloride	<0.01 mg/kg	TM116	<0.2 M
1,2-Dichloroethane	<0.005 mg/kg	TM116	<0.1 M
Benzene	<0.009 mg/kg	TM116	<0.18 M
Trichloroethene	<0.009 mg/kg	TM116	<0.18 #
1,2-Dichloropropane	<0.01 mg/kg	TM116	<0.2 M
Dibromomethane	<0.009 mg/kg	TM116	<0.18 M
Bromodichloromethane	<0.007 mg/kg	TM116	<0.14 M
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.2 M
Toluene	<0.007 mg/kg	TM116	<0.14 M
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.2
1,1,2-Trichloroethane	<0.01 mg/kg	TM116	<0.2 M
1,3-Dichloropropane	<0.007 mg/kg	TM116	<0.14 M

CERTIFICATE OF ANALYSIS

SDG:	210625-100	**Client Reference:**	784-B026948	**Report Number:**	604357
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.	BH13
Depth (m)	14.40 - 14.50
Sample Type	Soil/Solid (S)
Date Sampled	24/06/2021
Sample Time	.
Date Received	25/06/2021
SDG Ref	210625-100
Lab Sample No.(s)	24513098
AGS Reference	ES23

Component	LOD/Units	Method	
Tetrachloroethene	<0.005 mg/kg	TM116	<0.1 M
Dibromochloromethane	<0.01 mg/kg	TM116	<0.2 M
1,2-Dibromoethane	<0.01 mg/kg	TM116	<0.2 M
Chlorobenzene	<0.005 mg/kg	TM116	<0.1 M
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.2 M
Ethylbenzene	<0.004 mg/kg	TM116	<0.08 M
p/m-Xylene	<0.01 mg/kg	TM116	<0.2 #
o-Xylene	<0.01 mg/kg	TM116	<0.2 M
Styrene	<0.01 mg/kg	TM116	<0.2 #
Bromoform	<0.01 mg/kg	TM116	<0.2 M
Isopropylbenzene	<0.005 mg/kg	TM116	<0.1 #
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.2 #
1,2,3-Trichloropropane	<0.016 mg/kg	TM116	<0.32 M
Bromobenzene	<0.01 mg/kg	TM116	<0.2 M
Propylbenzene	<0.01 mg/kg	TM116	<0.2 M
2-Chlorotoluene	<0.009 mg/kg	TM116	<0.18 M
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116	<0.16 M
4-Chlorotoluene	<0.01 mg/kg	TM116	<0.2 M
tert-Butylbenzene	<0.014 mg/kg	TM116	<0.28 M
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116	<0.18 #
sec-Butylbenzene	<0.01 mg/kg	TM116	<0.2
4-Isopropyltoluene	<0.01 mg/kg	TM116	<0.2 M
1,3-Dichlorobenzene	<0.008 mg/kg	TM116	<0.16 M
1,4-Dichlorobenzene	<0.005 mg/kg	TM116	<0.1 M
n-Butylbenzene	<0.011 mg/kg	TM116	<0.22
1,2-Dichlorobenzene	<0.01 mg/kg	TM116	<0.2 M
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116	<0.28 M
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.2 #
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116	<0.4
Hexachlorobutadiene	<0.02 mg/kg	TM116	<0.4
Naphthalene	<0.013 mg/kg	TM116	<0.26 M
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116	<0.4 #
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116	<0.4

Validated

CERTIFICATE OF ANALYSIS

SDG:	210625-100	**Client Reference:**	784-B026948	**Report Number:**	604357
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Customer Sample Ref.	BH13
Depth (m)	14.40 - 14.50
Sample Type	Soil/Solid (S)
Date Sampled	24/06/2021
Sample Time	.
Date Received	25/06/2021
SDG Ref	210625-100
Lab Sample No.(s)	24513098
AGS Reference	ES23

Component	LOD/Units	Method	
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4
Sum of BTEX	<0.04 mg/kg	TM116	<0.8

CERTIFICATE OF ANALYSIS

SDG:	210625-100	**Client Reference:**	784-B026948	**Report Number:**	604357
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref.	BH13ES23	30/06/2021	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	14.40 - 14.50										
Sample Type	SOLID										
Date Sampled	24/06/2021 00:00:00										
Date Receieved	25/06/2021 05:00:00										
SDG	210625-100										
Original Sample	24513098										
Method Number	TM048										

CERTIFICATE OF ANALYSIS

SDG:	210625-100	**Client Reference:**	784-B026948	**Report Number:**	604357
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.097	**Natural Moisture Content (%)**	7.32
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	93.2
Particle Size <4mm	>95%		

Case	
SDG	210625-100
Lab Sample Number(s)	24513098
Sampled Date	24-Jun-2021
Customer Sample Ref.	BH13 ES23
Depth (m)	14.40 - 14.50

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.00251	<0.0005	0.0251	<0.005	-	-	-
Boron	0.0579	<0.01	0.579	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.0832	<0.001	0.832	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.227	<0.019	2.27	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	0.00102	<0.001	0.0102	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0034	<0.001	0.034	<0.01	-	-	-
Sulphide	0.0561	<0.01	0.561	<0.1	-	-	-

Leach Test Information

Date Prepared	29-Jun-2021
pH (pH Units)	8.79
Conductivity (µS/cm)	38.90
Temperature (°C)	19.90
Volume Leachant (Litres)	0.893

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210625-100	**Client Reference:**	784-B026948	**Report Number:**	604357
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24513098
Customer Sample Ref.	BH13
AGS Ref.	ES23
Depth	14.40 - 14.50
Type	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	04-Jul-2021
Ammoniacal Nitrogen	01-Jul-2021
Ammonium Soil by Titration	01-Jul-2021
Anions by Kone (soil)	30-Jun-2021
Asbestos ID in Solid Samples	30-Jun-2021
Boron Water Soluble	29-Jun-2021
CEN 10:1 Leachate (1 Stage)	29-Jun-2021
CEN Readings	01-Jul-2021
Cyanide Comp/Free/Total/Thiocyanate	02-Jul-2021
Dissolved Metals by ICP-MS	01-Jul-2021
EPH	30-Jun-2021
EPH by GCxGC-FID	30-Jun-2021
EPH CWG GC (S)	29-Jun-2021
GRO by GC-FID (S)	30-Jun-2021
Hexavalent Chromium (s)	01-Jul-2021
Hexavalent Chromium (w)	01-Jul-2021
Mercury Dissolved	01-Jul-2021
Metals in solid samples by OES	30-Jun-2021
Moisture at 105C	29-Jun-2021
PAH by GCMS	30-Jun-2021
PCBs by GCMS	29-Jun-2021
pH	30-Jun-2021
pH Value of Filtered Water	01-Jul-2021
Phenols by HPLC (S)	01-Jul-2021
Sample description	26-Jun-2021
Semi Volatile Organic Compounds	01-Jul-2021
Sulphide	01-Jul-2021
Total Organic Carbon	30-Jun-2021
TPH CWG GC (S)	30-Jun-2021
VOC MS (S)	29-Jun-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2473
Ammoniacal Nitrogen as N	TM099	**97.6** 88.02 : 104.70

Ammonium Soil by Titration

Component	Method Code	QC 2467
Exchangeable Ammonium as NH4	TM024	**88.56** 74.04 : 103.44

Anions by Kone (soil)

Component	Method Code	QC 2434
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**155.14** 70.00 : 130.00

Boron Water Soluble

Component	Method Code	QC 2436
Water Soluble Boron	TM222	**97.5** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2463	QC 2417
Free Cyanide	TM153	**100.0** 78.00 : 114.00	
Free Cyanide (W)	TM227		**84.0** 90.67 : 122.67
Thiocyanate	TM153	**99.36** 94.53 : 113.33	
Thiocyanate (W)	TM227		**105.25** 92.25 : 117.75
Total Cyanide	TM153	**98.6** 77.13 : 111.53	
Total Cyanide (W)	TM227		**104.25** 88.75 : 111.25

Dissolved Metals by ICP-MS

CERTIFICATE OF ANALYSIS

SDG:	210625-100	**Client Reference:**	784-B026948	**Report Number:**	604357
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Dissolved Metals by ICP-MS

Component	Method Code	QC 2412
Aluminium	TM152	**100.67** 94.21 : 111.52
Antimony	TM152	**99.67** 88.37 : 130.57
Arsenic	TM152	**100.17** 92.62 : 113.52
Barium	TM152	**100.5** 88.62 : 113.14
Beryllium	TM152	**100.33** 87.08 : 111.38
Bismuth	TM152	**100.83** 92.62 : 115.02
Boron	TM152	**100.33** 86.31 : 120.88
Cadmium	TM152	**101.33** 93.85 : 111.65
Calcium	TM152	**100.67** 89.20 : 126.91
Chromium	TM152	**100.0** 92.50 : 113.03
Cobalt	TM152	**99.67** 85.01 : 114.87
Copper	TM152	**99.33** 89.87 : 119.73
Iron	TM152	**100.67** 93.02 : 113.86
Lead	TM152	**101.67** 91.11 : 116.98
Lithium	TM152	**100.0** 87.70 : 115.90
Magnesium	TM152	**98.67** 89.60 : 116.61
Manganese	TM152	**101.17** 93.97 : 112.46
Molybdenum	TM152	**99.83** 89.07 : 110.96
Nickel	TM152	**100.17** 93.70 : 112.15
Phosphorus	TM152	**99.33** 89.24 : 114.18
Potassium	TM152	**101.33** 93.20 : 115.55
Selenium	TM152	**95.0** 91.69 : 117.12
Silver	TM152	**99.5** 90.93 : 121.73
Sodium	TM152	**100.0** 92.42 : 113.24
Strontium	TM152	**101.0** 92.14 : 116.24
Tellurium	TM152	**99.17** 89.88 : 111.78
Thallium	TM152	**102.33** 82.43 : 113.83

Dissolved Metals by ICP-MS

		QC 2412
Tin	TM152	**99.17** 94.62 : 107.79
Titanium	TM152	**101.5** 90.29 : 115.23
Tungsten	TM152	**98.67** 77.61 : 132.31
Uranium	TM152	**98.33** 86.97 : 115.76
Vanadium	TM152	**102.67** 89.61 : 115.48
Zinc	TM152	**101.0** 87.51 : 116.26

GRO by GC-FID (S)

Component	Method Code	QC 2400
QC	TM089	**94.06** 68.78 : 110.61

Hexavalent Chromium (s)

Component	Method Code	QC 2432
Hexavalent Chromium	TM151	**104.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2412
Hexavalent Chromium	TM241	**102.2** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2421
Mercury Dissolved (CVAF)	TM183	**114.0** 0.00 : 0.00

Metals in solid samples by OES

Metals in solid samples by OES

Component	Method Code	QC 2425
Aluminium	TM181	**95.58** 73.56 : 108.85
Antimony	TM181	**93.5** 76.89 : 111.24
Arsenic	TM181	**97.67** 88.53 : 111.01
Barium	TM181	**95.41** 77.67 : 105.35
Beryllium	TM181	**99.25** 85.44 : 109.61
Boron	TM181	**90.54** 73.51 : 104.66
Cadmium	TM181	**90.53** 77.67 : 104.12
Chromium	TM181	**86.21** 79.64 : 105.83
Cobalt	TM181	**96.23** 84.60 : 104.13
Copper	TM181	**97.54** 82.40 : 105.45
Iron	TM181	**94.44** 82.95 : 110.58
Lead	TM181	**93.24** 78.24 : 104.05
Manganese	TM181	**106.11** 94.29 : 119.51
Mercury	TM181	**87.92** 83.16 : 107.81
Molybdenum	TM181	**97.53** 87.11 : 106.87
Nickel	TM181	**89.24** 80.26 : 102.28
Phosphorus	TM181	**104.85** 94.56 : 124.28
Selenium	TM181	**100.39** 82.28 : 110.48
Strontium	TM181	**93.76** 79.13 : 102.79
Thallium	TM181	**88.94** 82.94 : 111.86
Tin	TM181	**96.58** 86.72 : 110.03
Titanium	TM181	**87.02** 66.23 : 102.06
Vanadium	TM181	**97.07** 86.19 : 109.45
Zinc	TM181	**95.69** 84.68 : 113.99

PAH by GCMS

PAH by GCMS

Component	Method Code	QC 2467
Acenaphthene	TM218	**92.5** 76.79 : 103.90
Acenaphthylene	TM218	**90.5** 74.19 : 106.17
Anthracene	TM218	**91.0** 70.90 : 109.22
Benz(a)anthracene	TM218	**89.5** 73.77 : 119.26
Benzo(a)pyrene	TM218	**90.5** 73.20 : 114.18
Benzo(b)fluoranthene	TM218	**91.0** 75.36 : 117.58
Benzo(ghi)perylene	TM218	**85.5** 70.73 : 116.12
Benzo(k)fluoranthene	TM218	**90.0** 75.98 : 116.59
Chrysene	TM218	**89.0** 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	**84.5** 69.17 : 115.30
Fluoranthene	TM218	**91.5** 66.06 : 114.63
Fluorene	TM218	**91.0** 76.66 : 107.56
Indeno(123cd)pyrene	TM218	**81.5** 70.26 : 117.95
Naphthalene	TM218	**89.5** 74.70 : 101.83
Phenanthrene	TM218	**91.5** 73.62 : 109.34
Pyrene	TM218	**90.5** 71.46 : 117.00

PCBs by GCMS

Component	Method Code	QC 2485
PCB congener 101	TM168	**83.2** 65.66 : 110.06
PCB congener 105	TM168	**79.6** 58.10 : 106.34
PCB congener 114	TM168	**80.4** 59.38 : 106.48
PCB congener 118	TM168	**82.8** 60.02 : 106.23
PCB congener 123	TM168	**84.2** 65.01 : 99.81
PCB congener 126	TM168	**80.2** 59.31 : 109.23
PCB congener 138	TM168	**85.4** 63.95 : 107.63
PCB congener 153	TM168	**88.8** 62.65 : 108.85
PCB congener 156	TM168	**82.9** 61.69 : 112.27

PCBs by GCMS

		QC 2485
PCB congener 157	TM168	**81.5** 55.37 : 104.81
PCB congener 167	TM168	**81.0** 65.58 : 109.14
PCB congener 169	TM168	**82.0** 56.84 : 112.10
PCB congener 180	TM168	**88.1** 66.99 : 111.63
PCB congener 189	TM168	**81.7** 57.75 : 112.59
PCB congener 28	TM168	**88.0** 73.68 : 105.96
PCB congener 52	TM168	**86.5** 67.24 : 107.62
PCB congener 77	TM168	**84.1** 64.87 : 108.49
PCB congener 81	TM168	**83.8** 70.78 : 110.80

pH

Component	Method Code	QC 2489
pH	TM133	**99.56** 98.09 : 101.62

pH Value of Filtered Water

Component	Method Code	QC 2466
pH	TM256	**100.27** 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2458
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**50.0** 70.71 : 116.42
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**42.69** 64.54 : 117.79
Cresols by HPLC (S)	TM062 (S)	**45.51** 74.40 : 108.98
Phenol by HPLC (S)	TM062 (S)	**49.67** 69.44 : 122.18
Xylenols by HPLC (S)	TM062 (S)	**47.71** 76.56 : 106.38

Semi Volatile Organic Compounds

Semi Volatile Organic Compounds

Component	Method Code	QC 2462
4-Bromophenylphenylether (Soil)	TM157	**95.0** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**98.5** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**94.0** 68.25 : 126.75
Naphthalene (Soil)	TM157	**96.5** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**94.0** 66.50 : 123.50
Phenol (Soil)	TM157	**100.0** 69.92 : 114.02

Sulphide

Component	Method Code	QC 2493
Sulphide	TM101	**100.0** 88.90 : 112.50

Total Organic Carbon

Component	Method Code	QC 2458
Total Organic Carbon	TM132	**102.73** 84.82 : 117.61

VOC MS (S)

Component	Method Code	QC 2470
1,1,1,2-tetrachloroethane	TM116	**112.6** 86.59 : 118.97
1,1,1-Trichloroethane	TM116	**106.0** 86.26 : 117.53
1,1,2-Trichloroethane	TM116	**98.6** 75.16 : 112.70
1,1-Dichloroethane	TM116	**109.4** 83.27 : 122.16
1,2-Dichloroethane	TM116	**114.8** 89.30 : 133.10
1,4-Dichlorobenzene	TM116	**119.6** 82.59 : 123.23
2-Chlorotoluene	TM116	**107.8** 66.81 : 118.43
4-Chlorotoluene	TM116	**103.8** 65.88 : 114.76
Benzene	TM116	**99.0** 93.16 : 123.63
Carbon Disulphide	TM116	**107.0** 75.11 : 124.81

VOC MS (S)

		QC 2470
Carbontetrachloride	TM116	**106.6** 82.35 : 126.46
Chlorobenzene	TM116	**109.6** 85.07 : 118.13
Chloroform	TM116	**112.4** 88.13 : 122.71
Chloromethane	TM116	**116.8** 61.62 : 145.66
Cis-1,2-Dichloroethene	TM116	**106.8** 88.41 : 121.33
Dibromomethane	TM116	**102.2** 77.47 : 121.29
Dichloromethane	TM116	**118.6** 87.89 : 134.72
Ethylbenzene	TM116	**100.0** 76.29 : 106.31
Hexachlorobutadiene	TM116	**128.8** 16.78 : 153.29
Isopropylbenzene	TM116	**93.4** 59.16 : 110.07
Naphthalene	TM116	**118.6** 79.29 : 125.59
o-Xylene	TM116	**93.6** 72.86 : 102.10
p/m-Xylene	TM116	**92.8** 68.99 : 102.40
Sec-Butylbenzene	TM116	**100.8** 44.71 : 117.87
Tetrachloroethene	TM116	**110.6** 77.82 : 125.00
Toluene	TM116	**95.0** 87.82 : 116.21
Trichloroethene	TM116	**99.8** 79.80 : 112.33
Trichlorofluoromethane	TM116	**119.0** 80.52 : 132.12
Vinyl Chloride	TM116	**112.8** 74.57 : 146.88

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
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Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	09 July 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210701-84
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	605006

We received 6 samples on Wednesday June 30, 2021 and 1 of these samples were scheduled for analysis which was completed on Friday July 09, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210701-84	**Client Reference:**	784-B026948	**Report Number:**	605006
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24549119	BH09	ES1	0.30 - 0.40	29/06/2021
24549123	BH09	ES2	0.90 - 1.00	29/06/2021
24549127	BH09	ES3	1.20 - 1.30	29/06/2021
24549071	BH42	ES1	0.40	29/06/2021
24549093	BH42	ES2	0.60	29/06/2021
24549106	BH42	ES3	1.00	29/06/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	210701-84	**Client Reference:**	784-B026948	**Report Number:**	605006
Location:	A46 Newark Northern Bypa	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	24549106
			Customer Sample Reference	BH42
			AGS Reference	ES3
			Depth (m)	1.00
			Container	1kg TUB with Handle (ALE260) / 250g Amber Jar (ALE210) / 60g VOC (ALE215)
			Sample Type	S / S / S
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 1		X	
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1	X		
Ammonium Soil by Titration	All	NDPs: 0 Tests: 1		X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 1		X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1	X		
Boron Water Soluble	All	NDPs: 0 Tests: 1		X	
CEN Readings	All	NDPs: 0 Tests: 1	X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2	X	X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1	X		
EPH	All	NDPs: 0 Tests: 1		X	
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1		X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 1		X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1		X	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1	X		

CERTIFICATE OF ANALYSIS

SDG:	210701-84	**Client Reference:**	784-B026948	**Report Number:**	605006
Location:	A46 Newark Northern Bypa	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24549106			
Customer Sample Reference			BH42			
AGS Reference			ES3			
Depth (m)			1.00			
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	
Mercury Dissolved	All	NDPs: 0 Tests: 1	X			
Metals in solid samples by OES	All	NDPs: 0 Tests: 1		X		
PAH by GCMS	All	NDPs: 0 Tests: 1		X		
pH	All	NDPs: 0 Tests: 1		X		
pH Value of Filtered Water	All	NDPs: 0 Tests: 1	X			
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1		X		
Sample description	All	NDPs: 0 Tests: 1		X		
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1		X		
Sulphide	All	NDPs: 0 Tests: 1	X			
Total Organic Carbon	All	NDPs: 0 Tests: 1		X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 1		X		
VOC MS (S)	All	NDPs: 0 Tests: 1			X	

CERTIFICATE OF ANALYSIS

SDG:	210701-84	**Client Reference:**	784-B026948	**Report Number:**	605006
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24549106	BH42	1.00	Grey	Silty Sand	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210701-84	**Client Reference:**	784-B026948	**Report Number:**	605006
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH42
Depth (m)	1.00
Sample Type	Soil/Solid (S)
Date Sampled	29/06/2021
Sampled Time	.
Date Received	30/06/2021
SDG Ref	210701-84
Lab Sample No.(s)	24549106
AGS Reference	ES3

Component	LOD/Units	Method	
Moisture Content Ratio (% of as received sample)	%	PM024	8
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12 M
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M
Soil Organic Matter (SOM)	<0.35 %	TM132	2.41 #
pH	1 pH Units	TM133	8.14 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #
Cyanide, Total	<1 mg/kg	TM153	<1 M
Arsenic	<0.6 mg/kg	TM181	85.7 M
Cadmium	<0.02 mg/kg	TM181	0.35 M
Chromium	<0.9 mg/kg	TM181	32.8 M
Copper	<1.4 mg/kg	TM181	63.6 M
Iron	<1000 mg/kg	TM181	32100 #
Lead	<0.7 mg/kg	TM181	39.9 M
Mercury	<0.1 mg/kg	TM181	0.223 M
Nickel	<0.2 mg/kg	TM181	42.3 M
Selenium	<1 mg/kg	TM181	1.17 #
Vanadium	<0.2 mg/kg	TM181	90.2 #
Zinc	<1.9 mg/kg	TM181	62 M
Boron, water soluble	<1 mg/kg	TM222	5.29 M
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	1.19 M
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248	5.94
EPH (C5-C40)	<35 mg/kg	TM415	<35
EPH Surrogate % recovery**	%	TM415	89.8
EPH >C10-C40	<35 mg/kg	TM415	<35 M

CERTIFICATE OF ANALYSIS

SDG:	210701-84	**Client Reference:**	784-B026948	**Report Number:**	605006
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH42							
Depth (m)	1.00							
Sample Type	Soil/Solid (S)							
Date Sampled	29/06/2021							
Sampled Time	.							
Date Received	30/06/2021							
SDG Ref	210701-84							
Lab Sample No.(s)	24549106							
AGS Reference	ES3							
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	74.6					
Acenaphthene-d10 % recovery**	%	TM218	71.1					
Phenanthrene-d10 % recovery**	%	TM218	37.3					
Chrysene-d12 % recovery**	%	TM218	8.9					
Perylene-d12 % recovery**	%	TM218	3.1					
Naphthalene	<0.009 mg/kg	TM218	<0.009 M					
Acenaphthylene	<0.012 mg/kg	TM218	<0.012 M					
Acenaphthene	<0.008 mg/kg	TM218	<0.008 M					
Fluorene	<0.01 mg/kg	TM218	<0.01 M					
Phenanthrene	<0.015 mg/kg	TM218	<0.015 M					
Anthracene	<0.016 mg/kg	TM218	<0.016 M					
Fluoranthene	<0.017 mg/kg	TM218	<0.017 M					
Pyrene	<0.015 mg/kg	TM218	<0.015 M					
Benz(a)anthracene	<0.014 mg/kg	TM218	<0.014 M					
Chrysene	<0.01 mg/kg	TM218	<0.01 M					
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	<0.015 M					
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	<0.014 M					
Benzo(a)pyrene	<0.015 mg/kg	TM218	<0.015 M					
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	<0.018 M					
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	<0.023 M					
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	<0.024 M					
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	<0.118					

CERTIFICATE OF ANALYSIS

SDG:	210701-84	**Client Reference:**	784-B026948	**Report Number:**	605006
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH42
Depth (m)	1.00
Sample Type	Soil/Solid (S)
Date Sampled	29/06/2021
Sampled Time	.
Date Received	30/06/2021
SDG Ref	210701-84
Lab Sample No.(s)	24549106
AGS Reference	ES3

Component	LOD/Units	Method	
Phenol	<0.1 mg/kg	TM157	<0.1
Pentachlorophenol	<0.1 mg/kg	TM157	<0.1
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157	<0.1
Nitrobenzene	<0.1 mg/kg	TM157	<0.1
Isophorone	<0.1 mg/kg	TM157	<0.1
Hexachloroethane	<0.1 mg/kg	TM157	<0.1
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157	<0.1
Hexachlorobutadiene	<0.1 mg/kg	TM157	<0.1
Hexachlorobenzene	<0.1 mg/kg	TM157	<0.1
n-Dioctyl phthalate	<0.1 mg/kg	TM157	<0.1
Dimethyl phthalate	<0.1 mg/kg	TM157	<0.1
Diethyl phthalate	<0.1 mg/kg	TM157	<0.1
n-Dibutyl phthalate	<0.1 mg/kg	TM157	<0.1
Dibenzofuran	<0.1 mg/kg	TM157	<0.1
Carbazole	<0.1 mg/kg	TM157	<0.1
Butylbenzyl phthalate	<0.1 mg/kg	TM157	<0.1
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157	<0.1
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157	<0.1
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157	<0.1
Azobenzene	<0.1 mg/kg	TM157	<0.1
4-Nitrophenol	<0.1 mg/kg	TM157	<0.1
4-Nitroaniline	<0.1 mg/kg	TM157	<0.1
4-Methylphenol	<0.1 mg/kg	TM157	<0.1
4-Chlorophenylphenylether	<0.1 mg/kg	TM157	<0.1
4-Chloroaniline	<0.1 mg/kg	TM157	<0.1
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157	<0.1
4-Bromophenylphenylether	<0.1 mg/kg	TM157	<0.1
3-Nitroaniline	<0.1 mg/kg	TM157	<0.1
2-Nitrophenol	<0.1 mg/kg	TM157	<0.1
2-Nitroaniline	<0.1 mg/kg	TM157	<0.1
2-Methylphenol	<0.1 mg/kg	TM157	<0.1
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157	<0.1

CERTIFICATE OF ANALYSIS

SDG:	210701-84	**Client Reference:**	784-B026948	**Report Number:**	605006
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH42
Depth (m)	1.00
Sample Type	Soil/Solid (S)
Date Sampled	29/06/2021
Sampled Time	.
Date Received	30/06/2021
SDG Ref	210701-84
Lab Sample No.(s)	24549106
AGS Reference	ES3

Component	LOD/Units	Method	
2-Chlorophenol	<0.1 mg/kg	TM157	<0.1
2,6-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1
2,4-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1
2,4-Dimethylphenol	<0.1 mg/kg	TM157	<0.1
2,4-Dichlorophenol	<0.1 mg/kg	TM157	<0.1
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157	<0.1
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157	<0.1
1,4-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1
1,3-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1
1,2-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1
2-Chloronaphthalene	<0.1 mg/kg	TM157	<0.1
2-Methylnaphthalene	<0.1 mg/kg	TM157	<0.1
Acenaphthylene	<0.1 mg/kg	TM157	<0.1
Acenaphthene	<0.1 mg/kg	TM157	<0.1
Anthracene	<0.1 mg/kg	TM157	<0.1
Benzo(a)anthracene	<0.1 mg/kg	TM157	<0.1
Benzo(b)fluoranthene	<0.1 mg/kg	TM157	<0.1
Benzo(k)fluoranthene	<0.1 mg/kg	TM157	<0.1
Benzo(a)pyrene	<0.1 mg/kg	TM157	<0.1
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157	<0.1
Chrysene	<0.1 mg/kg	TM157	<0.1
Fluoranthene	<0.1 mg/kg	TM157	<0.1
Fluorene	<0.1 mg/kg	TM157	<0.1
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157	<0.1
Phenanthrene	<0.1 mg/kg	TM157	<0.1
Pyrene	<0.1 mg/kg	TM157	<0.1
Naphthalene	<0.1 mg/kg	TM157	<0.1
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157	<0.1
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157	<0.1

CERTIFICATE OF ANALYSIS

SDG:	210701-84	**Client Reference:**	784-B026948	**Report Number:**	605006
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH42							
Depth (m)	1.00							
Sample Type	Soil/Solid (S)							
Date Sampled	29/06/2021							
Sampled Time	.							
Date Received	30/06/2021							
SDG Ref	210701-84							
Lab Sample No.(s)	24549106							
AGS Reference	ES3							
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	49 4					
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01 4					
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01 4					
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01 4					
Aliphatics >C10-C12	<1 mg/kg	TM414	<1 #					
Aliphatics >C12-C16	<1 mg/kg	TM414	<1 #					
Aliphatics >C16-C21	<1 mg/kg	TM414	<1 #					
Aliphatics >C21-C35	<1 mg/kg	TM414	3.57 #					
Aliphatics >C35-C44	<1 mg/kg	TM414	<1					
Total Aliphatics >C10-C44	<5 mg/kg	TM414	<5					
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414	<10					
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01 4					
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01 4					
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	<0.01 4					
Aromatics > EC10-EC12	<1 mg/kg	TM414	<1 #					
Aromatics > EC12-EC16	<1 mg/kg	TM414	<1 #					
Aromatics > EC16-EC21	<1 mg/kg	TM414	<1 #					
Aromatics > EC21-EC35	<1 mg/kg	TM414	<1 #					
Aromatics >EC35-EC44	<1 mg/kg	TM414	<1					
Aromatics > EC40-EC44	<1 mg/kg	TM414	<1					
Total Aromatics > EC10-EC44	<5 mg/kg	TM414	<5					
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414	<10					
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089	<0.05 4					
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089	<0.05 4					
GRO >C5-C10	<0.02 mg/kg	TM089	<0.02 4					

CERTIFICATE OF ANALYSIS

SDG:	210701-84	**Client Reference:**	784-B026948	**Report Number:**	605006
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH42
Depth (m)	1.00
Sample Type	Soil/Solid (S)
Date Sampled	29/06/2021
Sampled Time	.
Date Received	30/06/2021
SDG Ref	210701-84
Lab Sample No.(s)	24549106
AGS Reference	ES3

Component	LOD/Units	Method	
Dibromofluoromethane**	%	TM116	119
Toluene-d8**	%	TM116	99.3
4-Bromofluorobenzene**	%	TM116	95.8
Dichlorodifluoromethane	<0.006 mg/kg	TM116	<0.12 M
Chloromethane	<0.007 mg/kg	TM116	<0.14 #
Vinyl Chloride	<0.006 mg/kg	TM116	<0.12 ♦ M
Bromomethane	<0.01 mg/kg	TM116	<0.2 M
Chloroethane	<0.01 mg/kg	TM116	<0.2 M
Trichlorofluorormethane	<0.006 mg/kg	TM116	<0.12 M
1,1-Dichloroethene	<0.01 mg/kg	TM116	<0.2 #
Carbon Disulphide	<0.007 mg/kg	TM116	<0.14 M
Dichloromethane	<0.01 mg/kg	TM116	<0.2 #
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.2 M
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116	<0.2 M
1,1-Dichloroethane	<0.008 mg/kg	TM116	<0.16 M
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116	<0.12 M
2,2-Dichloropropane	<0.01 mg/kg	TM116	<0.2
Bromochloromethane	<0.01 mg/kg	TM116	<0.2 M
Chloroform	<0.008 mg/kg	TM116	<0.16 M
1,1,1-Trichloroethane	<0.007 mg/kg	TM116	<0.14 M
1,1-Dichloropropene	<0.01 mg/kg	TM116	<0.2 M
Carbontetrachloride	<0.01 mg/kg	TM116	<0.2 M
1,2-Dichloroethane	<0.005 mg/kg	TM116	<0.1 M
Benzene	<0.009 mg/kg	TM116	<0.18 M
Trichloroethene	<0.009 mg/kg	TM116	<0.18 #
1,2-Dichloropropane	<0.01 mg/kg	TM116	<0.2 M
Dibromomethane	<0.009 mg/kg	TM116	<0.18 M
Bromodichloromethane	<0.007 mg/kg	TM116	<0.14 M
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.2 M
Toluene	<0.007 mg/kg	TM116	<0.14 M
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.2
1,1,2-Trichloroethane	<0.01 mg/kg	TM116	<0.2 M

CERTIFICATE OF ANALYSIS

SDG:	210701-84	**Client Reference:**	784-B026948	**Report Number:**	605006
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH42
Depth (m)	1.00
Sample Type	Soil/Solid (S)
Date Sampled	29/06/2021
Sampled Time	.
Date Received	30/06/2021
SDG Ref	210701-84
Lab Sample No.(s)	24549106
AGS Reference	ES3

Component	LOD/Units	Method	
1,3-Dichloropropane	<0.007 mg/kg	TM116	<0.14 M
Tetrachloroethene	<0.005 mg/kg	TM116	<0.1 M
Dibromochloromethane	<0.01 mg/kg	TM116	<0.2 M
1,2-Dibromoethane	<0.01 mg/kg	TM116	<0.2 M
Chlorobenzene	<0.005 mg/kg	TM116	<0.1 M
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.2 M
Ethylbenzene	<0.004 mg/kg	TM116	<0.08 M
p/m-Xylene	<0.01 mg/kg	TM116	<0.2 #
o-Xylene	<0.01 mg/kg	TM116	<0.2 M
Styrene	<0.01 mg/kg	TM116	<0.2 ♦ #
Bromoform	<0.01 mg/kg	TM116	<0.2 M
Isopropylbenzene	<0.005 mg/kg	TM116	<0.1 #
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.2 #
1,2,3-Trichloropropane	<0.016 mg/kg	TM116	<0.32 M
Bromobenzene	<0.01 mg/kg	TM116	<0.2 M
Propylbenzene	<0.01 mg/kg	TM116	<0.2 M
2-Chlorotoluene	<0.009 mg/kg	TM116	<0.18 M
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116	<0.16 M
4-Chlorotoluene	<0.01 mg/kg	TM116	<0.2 M
tert-Butylbenzene	<0.014 mg/kg	TM116	<0.28 M
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116	<0.18 #
sec-Butylbenzene	<0.01 mg/kg	TM116	<0.2
4-Isopropyltoluene	<0.01 mg/kg	TM116	<0.2 M
1,3-Dichlorobenzene	<0.008 mg/kg	TM116	<0.16 M
1,4-Dichlorobenzene	<0.005 mg/kg	TM116	<0.1 M
n-Butylbenzene	<0.011 mg/kg	TM116	<0.22
1,2-Dichlorobenzene	<0.01 mg/kg	TM116	<0.2 M
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116	<0.28 M
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.2 #
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116	<0.4
Hexachlorobutadiene	<0.02 mg/kg	TM116	<0.4
Naphthalene	<0.013 mg/kg	TM116	<0.26 3 M

CERTIFICATE OF ANALYSIS

SDG:	210701-84	**Client Reference:**	784-B026948	**Report Number:**	605006
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+S@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref. BH42					
			Depth (m)	1.00				
			Sample Type	Soil/Solid (S)				
			Date Sampled	29/06/2021				
			Sampled Time	.				
			Date Received	30/06/2021				
			SDG Ref	210701-84				
			Lab Sample No.(s)	24549106				
			AGS Reference	ES3				
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116	<0.4 #					
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116	<0.4					
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4					
Sum of BTEX	<0.04 mg/kg	TM116	<0.8					

CERTIFICATE OF ANALYSIS

SDG:	210701-84	**Client Reference:**	784-B026948	**Report Number:**	605006
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref.	BH42ES3 1.00	06/07/2021	Paul Poynton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	SOLID										
Sample Type	29/06/2021 00:00:00										
Date Sampled	30/06/2021 05:00:00										
Date Receieved	210701-84										
SDG	24549106										
Original Sample	TM048										
Method Number											

CERTIFICATE OF ANALYSIS

SDG:	210701-84	**Client Reference:**	784-B026948	**Report Number:**	605006
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.100	**Natural Moisture Content (%)**	11.5
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	89.7
Particle Size <4mm	>95%		

Case	
SDG	210701-84
Lab Sample Number(s)	24549106
Sampled Date	29-Jun-2021
Customer Sample Ref.	BH42 ES3
Depth (m)	1.00

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.0822	<0.0005	0.822	<0.005	-	-	-
Boron	0.446	<0.01	4.46	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.19	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	0.00657	<0.001	0.0657	<0.01	-	-	-
Vanadium	0.0424	<0.001	0.424	<0.01	-	-	-
Zinc	0.00145	<0.001	0.0145	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	02-Jul-2021
pH (pH Units)	8.40
Conductivity (µS/cm)	787.00
Temperature (°C)	19.80
Volume Leachant (Litres)	0.890

09/07/2021 11:33:40

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210701-84	**Client Reference:**	784-B026948	**Report Number:**	605006
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24549106
Customer Sample Ref.	BH42
AGS Ref.	ES3
Depth	1.00
Type	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	09-Jul-2021
Ammoniacal Nitrogen	06-Jul-2021
Ammonium Soil by Titration	05-Jul-2021
Anions by Kone (soil)	05-Jul-2021
Asbestos ID in Solid Samples	06-Jul-2021
Boron Water Soluble	05-Jul-2021
CEN 10:1 Leachate (1 Stage)	02-Jul-2021
CEN Readings	07-Jul-2021
Cyanide Comp/Free/Total/Thiocyanate	07-Jul-2021
Dissolved Metals by ICP-MS	06-Jul-2021
EPH	07-Jul-2021
EPH by GCxGC-FID	05-Jul-2021
EPH CWG GC (S)	05-Jul-2021
GRO by GC-FID (S)	07-Jul-2021
Hexavalent Chromium (s)	07-Jul-2021
Hexavalent Chromium (w)	07-Jul-2021
Mercury Dissolved	07-Jul-2021
Metals in solid samples by OES	06-Jul-2021
Moisture at 105C	02-Jul-2021
PAH by GCMS	07-Jul-2021
pH	02-Jul-2021
pH Value of Filtered Water	08-Jul-2021
Phenols by HPLC (S)	05-Jul-2021
Sample description	01-Jul-2021
Semi Volatile Organic Compounds	06-Jul-2021
Sulphide	08-Jul-2021
Total Organic Carbon	08-Jul-2021
TPH CWG GC (S)	07-Jul-2021
VOC MS (S)	07-Jul-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2421
Ammoniacal Nitrogen as N	TM099	**90.8** 88.02 : 104.70

Anions by Kone (soil)

Component	Method Code	QC 2457
Chloride (soluble)	TM243	**132.64** 80.93 : 111.66
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**151.87** 70.00 : 130.00

Boron Water Soluble

Component	Method Code	QC 2481
Water Soluble Boron	TM222	**101.5** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2488	QC 2468
Free Cyanide	TM153	**96.53** 78.00 : 114.00	
Free Cyanide (W)	TM227		**81.25** 90.67 : 122.67
Thiocyanate	TM153	**96.15** 94.53 : 113.33	
Thiocyanate (W)	TM227		**102.5** 92.25 : 117.75
Total Cyanide	TM153	**102.8** 77.13 : 111.53	
Total Cyanide (W)	TM227		**105.0** 88.75 : 111.25

Dissolved Metals by ICP-MS

Component	Method Code	QC 2456
Aluminium	TM152	**101.0** 94.21 : 111.52
Antimony	TM152	**102.17** 88.37 : 130.57
Arsenic	TM152	**98.83** 92.62 : 113.52
Barium	TM152	**105.17** 88.62 : 113.14

CERTIFICATE OF ANALYSIS

SDG:	210701-84	**Client Reference:**	784-B026948	**Report Number:**	605006
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Dissolved Metals by ICP-MS

		QC 2456
Beryllium	TM152	**102.67** 87.08 : 111.38
Bismuth	TM152	**101.67** 92.62 : 115.02
Boron	TM152	**104.33** 86.31 : 120.88
Cadmium	TM152	**100.5** 93.85 : 111.65
Calcium	TM152	**102.67** 89.20 : 126.91
Chromium	TM152	**98.67** 92.50 : 113.03
Cobalt	TM152	**98.17** 85.01 : 114.87
Copper	TM152	**97.83** 89.87 : 119.73
Iron	TM152	**99.33** 93.02 : 113.86
Lead	TM152	**103.33** 91.11 : 116.98
Lithium	TM152	**103.0** 87.70 : 115.90
Magnesium	TM152	**100.67** 89.60 : 116.61
Manganese	TM152	**101.17** 93.97 : 112.46
Molybdenum	TM152	**97.5** 89.07 : 110.96
Nickel	TM152	**99.17** 93.70 : 112.15
Phosphorus	TM152	**102.5** 89.24 : 114.18
Potassium	TM152	**103.33** 93.20 : 115.55
Selenium	TM152	**100.83** 91.69 : 117.12
Silver	TM152	**98.67** 90.93 : 121.73
Sodium	TM152	**102.67** 92.42 : 113.24
Strontium	TM152	**102.0** 92.14 : 116.24
Tellurium	TM152	**99.33** 89.88 : 111.78
Thallium	TM152	**97.83** 82.43 : 113.83
Tin	TM152	**101.83** 94.62 : 107.79
Titanium	TM152	**100.67** 90.29 : 115.23
Tungsten	TM152	**100.83** 77.61 : 132.31
Uranium	TM152	**102.17** 86.97 : 115.76

Dissolved Metals by ICP-MS

		QC 2456
Vanadium	TM152	**94.5** 89.61 : 115.48
Zinc	TM152	**100.0** 87.51 : 116.26

GRO by GC-FID (S)

Component	Method Code	QC 2486
QC	TM089	**84.22** 72.28 : 114.54

Hexavalent Chromium (s)

Component	Method Code	QC 2494
Hexavalent Chromium	TM151	**98.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2400
Hexavalent Chromium	TM241	**100.4** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2454
Mercury Dissolved (CVAF)	TM183	**100.0** 0.00 : 0.00

Metals in solid samples by OES

Component	Method Code	QC 2448
Aluminium	TM181	**93.81** 73.56 : 108.85
Antimony	TM181	**96.34** 76.89 : 111.24
Arsenic	TM181	**96.22** 88.53 : 111.01
Barium	TM181	**97.25** 77.67 : 105.35
Beryllium	TM181	**97.01** 85.44 : 109.61

Metals in solid samples by OES

		QC 2448
Boron	TM181	**88.25** 73.51 : 104.66
Cadmium	TM181	**90.53** 77.67 : 104.12
Chromium	TM181	**87.42** 79.64 : 105.83
Cobalt	TM181	**94.65** 88.24 : 109.65
Copper	TM181	**96.65** 82.40 : 105.45
Iron	TM181	**93.65** 82.95 : 110.58
Lead	TM181	**93.02** 78.24 : 104.05
Manganese	TM181	**103.61** 94.29 : 119.51
Mercury	TM181	**87.68** 79.02 : 103.11
Molybdenum	TM181	**95.88** 87.11 : 106.87
Nickel	TM181	**89.24** 80.26 : 102.28
Phosphorus	TM181	**104.24** 94.56 : 124.28
Selenium	TM181	**97.25** 82.28 : 110.48
Strontium	TM181	**93.1** 79.13 : 102.79
Thallium	TM181	**98.67** 82.94 : 111.86
Tin	TM181	**97.72** 86.72 : 110.03
Titanium	TM181	**83.21** 66.23 : 102.06
Vanadium	TM181	**96.7** 86.19 : 109.45
Zinc	TM181	**96.1** 84.68 : 113.99

PAH by GCMS

Component	Method Code	QC 2479
Acenaphthene	TM218	**90.0** 78.59 : 112.16
Acenaphthylene	TM218	**88.5** 75.11 : 109.01
Anthracene	TM218	**84.5** 73.99 : 113.85
Benz(a)anthracene	TM218	**92.0** 69.31 : 119.18
Benzo(a)pyrene	TM218	**96.0** 66.97 : 114.92
Benzo(b)fluoranthene	TM218	**89.5** 67.41 : 114.46

PAH by GCMS

		QC 2479
Benzo(ghi)perylene	TM218	**90.5** 62.92 : 114.36
Benzo(k)fluoranthene	TM218	**95.0** 69.98 : 116.49
Chrysene	TM218	**90.0** 69.86 : 114.50
Dibenzo(ah)anthracene	TM218	**89.0** 64.54 : 115.22
Fluoranthene	TM218	**84.5** 72.56 : 111.70
Fluorene	TM218	**88.5** 79.13 : 111.49
Indeno(123cd)pyrene	TM218	**92.5** 61.22 : 113.25
Naphthalene	TM218	**90.0** 77.96 : 110.91
Phenanthrene	TM218	**86.5** 76.83 : 113.25
Pyrene	TM218	**83.5** 72.45 : 110.77

pH

Component	Method Code	QC 2489
pH	TM133	**99.12** 98.09 : 101.62

pH Value of Filtered Water

Component	Method Code	QC 2403
pH	TM256	**100.53** 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2485
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**49.35** 70.71 : 116.42
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**43.86** 64.54 : 117.79
Cresols by HPLC (S)	TM062 (S)	**45.3** 74.40 : 108.98
Phenol by HPLC (S)	TM062 (S)	**49.67** 69.44 : 122.18
Xylenols by HPLC (S)	TM062 (S)	**48.12** 76.56 : 106.38

Semi Volatile Organic Compounds

Semi Volatile Organic Compounds

Component	Method Code	QC 2497
4-Bromophenylphenylether (Soil)	TM157	**92.5** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**100.0** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**94.0** 68.25 : 126.75
Naphthalene (Soil)	TM157	**93.5** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**90.0** 66.50 : 123.50
Phenol (Soil)	TM157	**97.5** 69.92 : 114.02

Sulphide

Component	Method Code	QC 2429
Sulphide	TM101	**93.33** 88.90 : 112.50

Total Organic Carbon

Component	Method Code	QC 2475
Total Organic Carbon	TM132	**99.22** 84.82 : 117.61

VOC MS (S)

Component	Method Code	QC 2466
1,1,1,2-tetrachloroethane	TM116	**111.4** 86.59 : 118.97
1,1,1-Trichloroethane	TM116	**103.4** 86.26 : 117.53
1,1,2-Trichloroethane	TM116	**95.8** 75.16 : 112.70
1,1-Dichloroethane	TM116	**100.4** 83.27 : 122.16
1,2-Dichloroethane	TM116	**113.8** 89.30 : 133.10
1,4-Dichlorobenzene	TM116	**106.6** 82.59 : 123.23
2-Chlorotoluene	TM116	**105.8** 66.81 : 118.43
4-Chlorotoluene	TM116	**89.2** 65.88 : 114.76
Benzene	TM116	**94.4** 93.16 : 123.63
Carbon Disulphide	TM116	**89.4** 75.11 : 124.81

VOC MS (S)

		QC 2466
Carbontetrachloride	TM116	**109.0** 82.35 : 126.46
Chlorobenzene	TM116	**105.0** 85.07 : 118.13
Chloroform	TM116	**106.6** 88.13 : 122.71
Chloromethane	TM116	**89.6** 61.62 : 145.66
Cis-1,2-Dichloroethene	TM116	**96.6** 88.41 : 121.33
Dibromomethane	TM116	**96.2** 77.47 : 121.29
Dichloromethane	TM116	**104.4** 87.89 : 134.72
Ethylbenzene	TM116	**97.2** 76.29 : 106.31
Hexachlorobutadiene	TM116	**94.2** 16.78 : 153.29
Isopropylbenzene	TM116	**91.6** 59.16 : 110.07
Naphthalene	TM116	**118.8** 79.29 : 125.59
o-Xylene	TM116	**85.0** 72.86 : 102.10
p/m-Xylene	TM116	**90.4** 68.99 : 102.40
Sec-Butylbenzene	TM116	**89.8** 44.71 : 117.87
Tetrachloroethene	TM116	**108.0** 77.82 : 125.00
Toluene	TM116	**90.4** 87.82 : 116.21
Trichloroethene	TM116	**98.8** 79.80 : 112.33
Trichlorofluoromethane	TM116	**111.6** 80.52 : 132.12
Vinyl Chloride	TM116	**90.6** 74.57 : 146.88

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

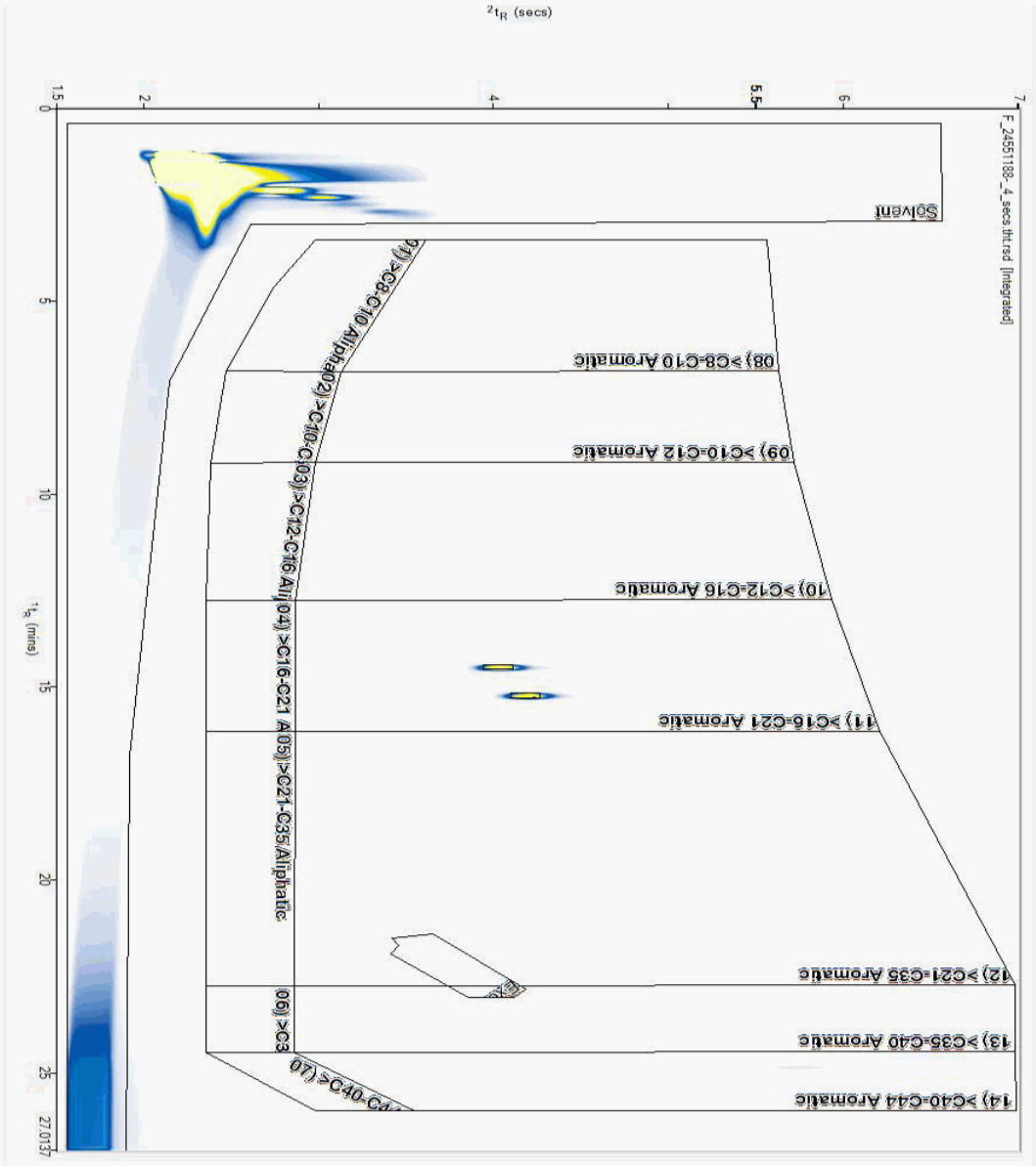
CERTIFICATE OF ANALYSIS

SDG:	210701-84	**Client Reference:**	784-B026948	**Report Number:**	605006
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 24551188 **Depth :** 1.00
Sample ID : BH42

```
   ChromSpace LIMS export
  Current batch
Sample Identity:  F_24551188-_4_secs.tht
Date Acquired   :  03/07/21 08:10:01
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
```



CERTIFICATE OF ANALYSIS

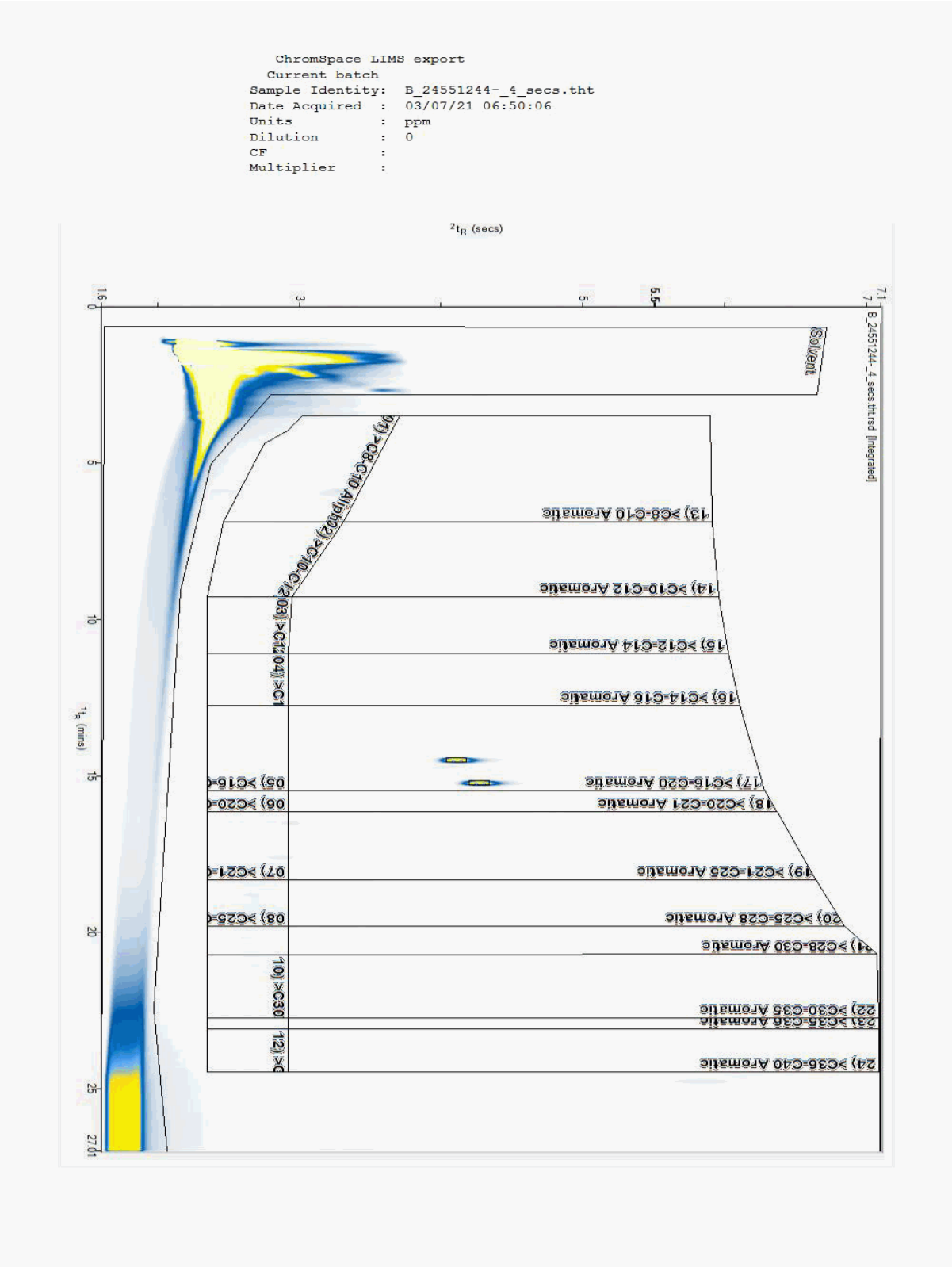
SDG:	210701-84	**Client Reference:**	784-B026948	**Report Number:**	605006
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 24551244
Sample ID : BH42

Depth : 1.00

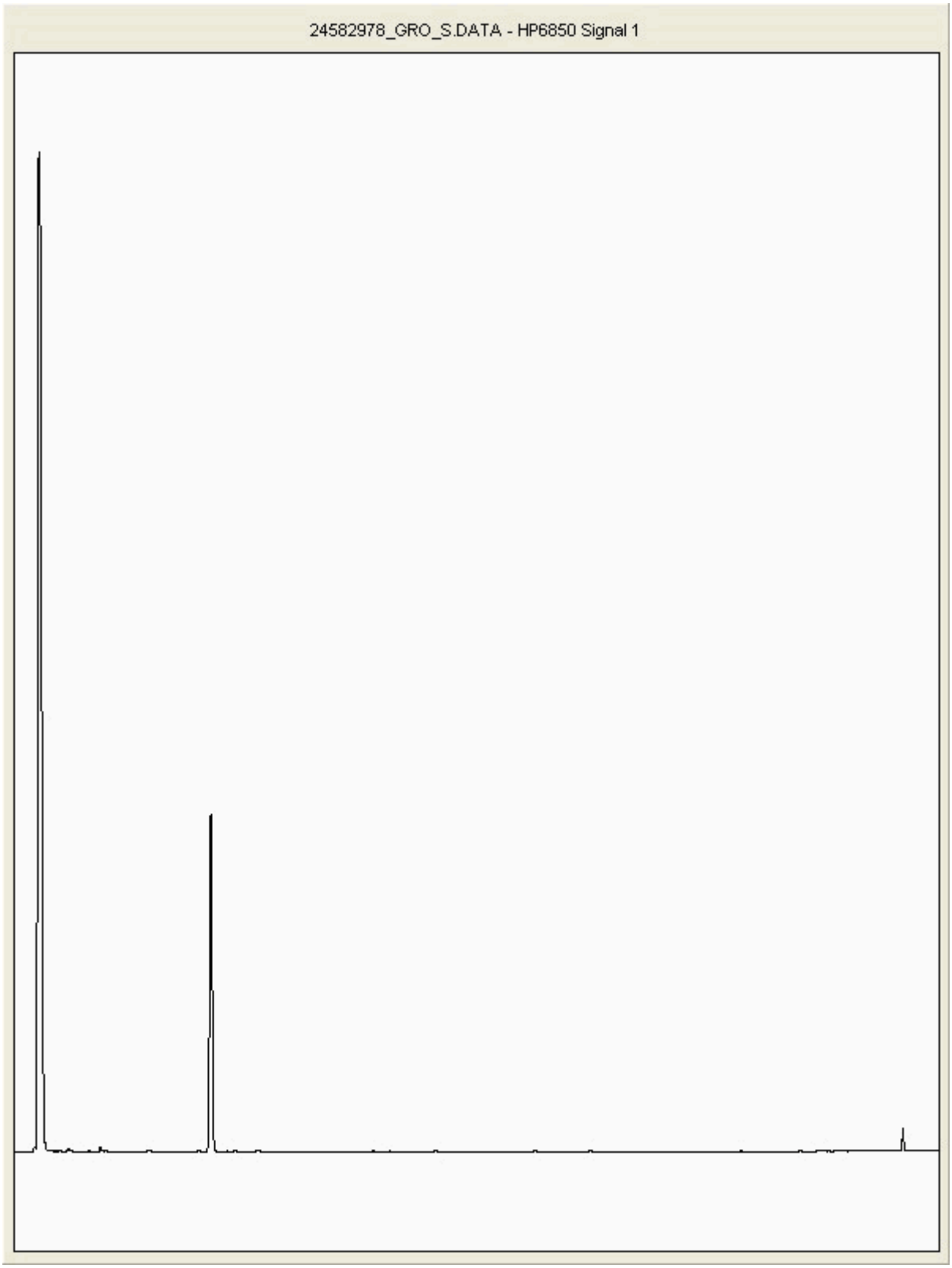


CERTIFICATE OF ANALYSIS

SDG:	210701-84	**Client Reference:**	784-B026948	**Report Number:**	605006
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S) **Sample No :** 24582978 **Depth :** 1.00
Sample ID : BH42



Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	08 July 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210701-147
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	604883

We received 17 samples on Thursday July 01, 2021 and 4 of these samples were scheduled for analysis which was completed on Thursday July 08, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

So

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210701-147	**Client Reference:**	784-B026948	**Report Number:**	604883
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24552080	BH08	ES1	0.10 - 0.10	30/06/2021
24552090	BH08	ES2	0.60 - 0.60	30/06/2021
24552099	BH08	ES3	1.00 - 1.00	30/06/2021
24552112	BH08	ES4	2.50 - 2.60	30/06/2021
24551976	BH08	ES6	4.50 - 4.60	30/06/2021
24551981	BH08	ES7	6.50 - 6.60	30/06/2021
24552000	BH08	ES9	8.60 - 8.70	30/06/2021
24552005	BH10	ES3	0.10 - 0.20	30/06/2021
24552047	BH10	ES18	0.70 - 0.80	30/06/2021
24552017	BH10	ES8	1.80 - 1.90	30/06/2021
24552025	BH10	ES11	2.80 - 2.90	30/06/2021
24552035	BH10	ES14	3.80 - 3.90	30/06/2021
24551972	BH42	ES4	1.50 - 1.60	30/06/2021
24552054	BH42	ES5	2.50 - 2.60	30/06/2021
24552065	BH42	ES7	4.50 - 4.60	30/06/2021
24552069	BH42	ES9	6.50 - 6.60	30/06/2021
24552074	BH42	ES11	9.80 - 9.90	30/06/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	210701-147	**Client Reference:**	784-B026948	**Report Number:**	604883
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24552090			24552000			24552005			24552074	
Customer Sample Reference			BH08			BH08			BH10			BH42	
AGS Reference			ES2			ES9			ES3			ES11	
Depth (m)			0.60 - 0.60			8.60 - 8.70			0.10 - 0.20			9.80 - 9.90	
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 4		X			X			X			X	
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 3	X			X						X		
Ammonium Soil by Titration	All	NDPs: 0 Tests: 4		X			X			X			X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 4		X			X			X			X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 4	X			X			X			X		
Boron Water Soluble	All	NDPs: 0 Tests: 4		X			X			X			X	
CEN Readings	All	NDPs: 0 Tests: 3	X			X						X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 7	X	X		X	X			X		X	X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 3	X			X						X		
EPH	All	NDPs: 0 Tests: 4		X			X			X			X	
EPH by GCxGC-FID	All	NDPs: 0 Tests: 4		X			X			X			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 4		X			X			X			X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 4			X			X			X			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 4		X			X			X			X	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 3	X			X						X		

Validated

CERTIFICATE OF ANALYSIS

SDG:	210701-147	**Client Reference:**	784-B026948	**Report Number:**	604883
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24552090			24552000			24552005			24552074		
Customer Sample Reference			BH08			BH08			BH10			BH42		
AGS Reference			ES2			ES9			ES3			ES11		
Depth (m)			0.60 - 0.60			8.60 - 8.70			0.10 - 0.20			9.80 - 9.90		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S	S	S	S	S	S	S	S	S	S
Mercury Dissolved	All	NDPs: 0 Tests: 3	X			X						X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 4		X			X			X			X	
PAH by GCMS	All	NDPs: 0 Tests: 4		X			X			X			X	
pH	All	NDPs: 0 Tests: 4		X			X			X			X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 3	X			X						X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 4		X			X			X			X	
Sample description	All	NDPs: 0 Tests: 4		X			X			X			X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 3		X			X						X	
Sulphide	All	NDPs: 0 Tests: 3	X			X						X		
Total Organic Carbon	All	NDPs: 0 Tests: 4		X			X			X			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 4		X			X			X			X	
VOC MS (S)	All	NDPs: 0 Tests: 4			X			X			X			X

CERTIFICATE OF ANALYSIS

SDG:	210701-147	**Client Reference:**	784-B026948	**Report Number:**	604883
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24552000	BH08	8.60 - 8.70	Light Brown	Sandy Loam	Stones	None
24552090	BH08	0.60 - 0.60	Dark Brown	Sandy Loam	Vegetation	Stones
24552005	BH10	0.10 - 0.20	Dark Brown	Loamy Sand	Vegetation	Stones
24552074	BH42	9.80 - 9.90	Grey	Sandy Loam	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210701-147	**Client Reference:**	784-B026948	**Report Number:**	604883
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH08	BH08	BH10	BH42		
			Depth (m)	0.60 - 0.60	8.60 - 8.70	0.10 - 0.20	9.80 - 9.90		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	30/06/2021	30/06/2021	30/06/2021	30/06/2021		
			Sample Time	.	.	.	.		
			Date Received	01/07/2021	01/07/2021	01/07/2021	01/07/2021		
			SDG Ref	210701-147	210701-147	210701-147	210701-147		
			Lab Sample No.(s)	24552090	24552000	24552005	24552074		
			AGS Reference	ES2	ES9	ES3	ES11		
Moisture Content Ratio (% of as received sample)	%	PM024		6.2	4.2	16	14		
Exchangeable Ammonia as N	<12 mg/kg	TM024		<12 M	<12 M	<12 M	<12 M		
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 M	<0.01 M	<0.01 M	0.0232 M		
Cresols	<0.01 mg/kg	TM062 (S)		<0.01 M	<0.01 M	0.0118 M	<0.01 M		
Xylenols	<0.015 mg/kg	TM062 (S)		<0.015 M	<0.015 M	<0.015 M	<0.015 M		
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 M	<0.035 M	<0.035 M	<0.035 M		
Soil Organic Matter (SOM)	<0.35 %	TM132		0.447 #	<0.35 #	6.28 #	5.07 #		
pH	1 pH Units	TM133		9.09 M	7.87 M	8.1 M	10.3 M		
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #		
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M		
Arsenic	<0.6 mg/kg	TM181		16.2 M	11.8 M	15.7 M	98.6 M		
Cadmium	<0.02 mg/kg	TM181		0.284 M	0.255 M	2.13 M	0.199 M		
Chromium	<0.9 mg/kg	TM181		<0.9 M	<0.9 M	33 M	40.1 M		
Copper	<1.4 mg/kg	TM181		9.06 M	6.88 M	79.5 M	79.3 M		
Iron	<1000 mg/kg	TM181		50800 #	26500 #	24900 #	23400 #		
Lead	<0.7 mg/kg	TM181		22.6 M	8.85 M	246 M	56.9 M		
Mercury	<0.1 mg/kg	TM181		0.154 M	<0.1 M	0.584 M	0.214 M		
Nickel	<0.2 mg/kg	TM181		19.4 M	11.4 M	33.6 M	48.1 M		
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	1.76 #		
Vanadium	<0.2 mg/kg	TM181		42.8 #	13 #	34.8 #	104 #		
Zinc	<1.9 mg/kg	TM181		61.6 M	44.9 M	391 M	64.7 M		
Boron, water soluble	<1 mg/kg	TM222		<1 M	1.39 M	1.28 M	16.4 M		
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.0072 M	0.0526 M	0.023 M	1.35 M		
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248		4.57	5.88	3.41	5.17		
EPH (C5-C40)	<35 mg/kg	TM415		<35	<35	138	44.7		
EPH Surrogate % recovery**	%	TM415		96	107	105	95.5		
EPH >C10-C40	<35 mg/kg	TM415		<35 M	<35 M	138 M	44.7 M		

CERTIFICATE OF ANALYSIS

SDG:	210701-147	**Client Reference:**	784-B026948	**Report Number:**	604883
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH08	BH08	BH10	BH42		
			Depth (m)	0.60 - 0.60	8.60 - 8.70	0.10 - 0.20	9.80 - 9.90		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	30/06/2021	30/06/2021	30/06/2021	30/06/2021		
			Sample Time	.	.	.	.		
			Date Received	01/07/2021	01/07/2021	01/07/2021	01/07/2021		
			SDG Ref	210701-147	210701-147	210701-147	210701-147		
			Lab Sample No.(s)	24552090	24552000	24552005	24552074		
			AGS Reference	ES2	ES9	ES3	ES11		
Naphthalene-d8 % recovery**	%	TM218		82.4	87.4	81.5	66.1		
Acenaphthene-d10 % recovery**	%	TM218		87.5	88.2	85.8	61.7		
Phenanthrene-d10 % recovery**	%	TM218		90.8	87.3	89.3	37.8		
Chrysene-d12 % recovery**	%	TM218		88.3	84	83.6	11.1		
Perylene-d12 % recovery**	%	TM218		89.8	86	80.4	4		
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	<0.009 M	0.0586 M	<0.009 M		
Acenaphthylene	<0.012 mg/kg	TM218		0.0166 M	<0.012 M	0.17 M	<0.012 M		
Acenaphthene	<0.008 mg/kg	TM218		0.0167 M	<0.008 M	0.0425 M	<0.008 M		
Fluorene	<0.01 mg/kg	TM218		0.0258 M	<0.01 M	0.11 M	<0.01 M		
Phenanthrene	<0.015 mg/kg	TM218		0.288 M	<0.015 M	1.28 M	<0.015 M		
Anthracene	<0.016 mg/kg	TM218		0.0566 M	<0.016 M	0.281 M	<0.016 M		
Fluoranthene	<0.017 mg/kg	TM218		0.448 M	<0.017 M	2.24 M	<0.017 M		
Pyrene	<0.015 mg/kg	TM218		0.368 M	<0.015 M	1.83 M	<0.015 M		
Benz(a)anthracene	<0.014 mg/kg	TM218		0.193 M	<0.014 M	1.26 M	<0.014 M		
Chrysene	<0.01 mg/kg	TM218		0.184 M	<0.01 M	1.17 M	<0.01 M		
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		0.235 M	<0.015 M	1.62 M	<0.015 M		
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.0816 M	<0.014 M	0.541 M	<0.014 M		
Benzo(a)pyrene	<0.015 mg/kg	TM218		0.196 M	<0.015 M	1.22 M	<0.015 M		
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		0.142 M	<0.018 M	0.813 M	<0.018 M		
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	<0.023 M	0.163 M	<0.023 M		
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		0.122 M	<0.024 M	0.706 M	<0.024 M		
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		2.37	<0.118	13.5	<0.118		

CERTIFICATE OF ANALYSIS

SDG:	210701-147	**Client Reference:**	784-B026948	**Report Number:**	604883
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH08	BH08	BH42			
			Depth (m)	0.60 - 0.60	8.60 - 8.70	9.80 - 9.90			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	30/06/2021	30/06/2021	30/06/2021			
			Sample Time	.	.	.			
			Date Received	01/07/2021	01/07/2021	01/07/2021			
			SDG Ref	210701-147	210701-147	210701-147			
			Lab Sample No.(s)	24552090	24552000	24552074			
			AGS Reference	ES2	ES9	ES11			
Phenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Pentachlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Nitrobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Isophorone	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Hexachloroethane	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Hexachlorobutadiene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Hexachlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
n-Dioctyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Dimethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Diethyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
n-Dibutyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Dibenzofuran	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Carbazole	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Butylbenzyl phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Azobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Chlorophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Chloroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
4-Bromophenylphenylether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
3-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2-Nitrophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2-Nitroaniline	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2-Methylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2-Chlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			

CERTIFICATE OF ANALYSIS

SDG:	210701-147	**Client Reference:**	784-B026948	**Report Number:**	604883
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH08	BH08	BH42			
			Depth (m)	0.60 - 0.60	8.60 - 8.70	9.80 - 9.90			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	30/06/2021	30/06/2021	30/06/2021			
			Sample Time	.	.	.			
			Date Received	01/07/2021	01/07/2021	01/07/2021			
			SDG Ref	210701-147	210701-147	210701-147			
			Lab Sample No.(s)	24552090	24552000	24552074			
			AGS Reference	ES2	ES9	ES11			
2,6-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2,4-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2,4-Dimethylphenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2,4-Dichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
1,4-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
1,3-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
1,2-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2-Chloronaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
2-Methylnaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Acenaphthylene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Acenaphthene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Anthracene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Benzo(a)anthracene	<0.1 mg/kg	TM157		0.117	<0.1	<0.1			
Benzo(b)fluoranthene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Benzo(k)fluoranthene	<0.1 mg/kg	TM157		0.117	<0.1	<0.1			
Benzo(a)pyrene	<0.1 mg/kg	TM157		0.117	<0.1	<0.1			
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Chrysene	<0.1 mg/kg	TM157		0.128	<0.1	<0.1			
Fluoranthene	<0.1 mg/kg	TM157		0.192	<0.1	<0.1			
Fluorene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Phenanthrene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Pyrene	<0.1 mg/kg	TM157		0.181	<0.1	<0.1			
Naphthalene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157		<0.1	<0.1	<0.1			

Validated

CERTIFICATE OF ANALYSIS

SDG: 210701-147 **Client Reference:** 784-B026948 **Report Number:** 604883
Location: A46 Newark Northern Bypas **Order Number:** 7001649 **Superseded Report:**

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH08	BH08	BH10	BH42		
			Depth (m)	0.60 - 0.60	8.60 - 8.70	0.10 - 0.20	9.80 - 9.90		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	30/06/2021	30/06/2021	30/06/2021	30/06/2021		
			Sample Time	.	.	.	.		
			Date Received	01/07/2021	01/07/2021	01/07/2021	01/07/2021		
			SDG Ref	210701-147	210701-147	210701-147	210701-147		
			Lab Sample No.(s)	24552090	24552000	24552005	24552074		
			AGS Reference	ES2	ES9	ES3	ES11		
GRO Surrogate % recovery**	%	TM089		104	107	108	59.9 4		
Aliphatics >C5-C6	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01 4		
Aliphatics >C6-C8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01 4		
Aliphatics >C8-C10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01 4		
Aliphatics >C10-C12	<1 mg/kg	TM414		<1 #	<1 #	<1 #	<1 #		
Aliphatics >C12-C16	<1 mg/kg	TM414		<1 #	<1 #	<1 #	<1 #		
Aliphatics >C16-C21	<1 mg/kg	TM414		<1 #	<1 #	<1 #	<1 #		
Aliphatics >C21-C35	<1 mg/kg	TM414		<1 #	<1 #	12.8 #	40.2 #		
Aliphatics >C35-C44	<1 mg/kg	TM414		<1	<1	<1	7.52		
Total Aliphatics >C10-C44	<5 mg/kg	TM414		<5	<5	14.2	47.7		
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		<10	<10	64	62.9		
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01 4		
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01 4		
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01	<0.01	<0.01 4		
Aromatics > EC10-EC12	<1 mg/kg	TM414		<1 #	<1 #	<1 #	<1 #		
Aromatics > EC12-EC16	<1 mg/kg	TM414		<1 #	<1 #	<1 #	<1 #		
Aromatics > EC16-EC21	<1 mg/kg	TM414		<1 #	<1 #	9.26 #	<1 #		
Aromatics > EC21-EC35	<1 mg/kg	TM414		<1 #	<1 #	35.8 #	13.3 #		
Aromatics >EC35-EC44	<1 mg/kg	TM414		<1	<1	4.47	<1		
Aromatics > EC40-EC44	<1 mg/kg	TM414		<1	<1	<1	<1		
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		<5	<5	49.8	15.1		
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		<10	<10	64	62.9		
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		<0.05	<0.05	<0.05	<0.05 4		
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		<0.05	<0.05	<0.05	<0.05 4		
GRO >C5-C10	<0.02 mg/kg	TM089		<0.02	<0.02	<0.02	<0.02 4		

CERTIFICATE OF ANALYSIS

SDG:	210701-147	**Client Reference:**	784-B026948	**Report Number:**	604883
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH08	BH08	BH10	BH42		
			Depth (m)	0.60 - 0.60	8.60 - 8.70	0.10 - 0.20	9.80 - 9.90		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	30/06/2021	30/06/2021	30/06/2021	30/06/2021		
			Sample Time	.	.	.	.		
			Date Received	01/07/2021	01/07/2021	01/07/2021	01/07/2021		
			SDG Ref	210701-147	210701-147	210701-147	210701-147		
			Lab Sample No.(s)	24552090	24552000	24552005	24552074		
			AGS Reference	ES2	ES9	ES3	ES11		
Dibromofluoromethane**	%	TM116		102	101	105	111		
Toluene-d8**	%	TM116		101	102	96	96.1		
4-Bromofluorobenzene**	%	TM116		103	104	94	86.5		
Dichlorodifluoromethane	<0.006 mg/kg	TM116		<0.12 M	<0.12 M		<0.12 M		
Chloromethane	<0.007 mg/kg	TM116		<0.14 #	<0.14 #		<0.14 #		
Vinyl Chloride	<0.006 mg/kg	TM116		<0.12 M	<0.12 M		<0.12 M		
Bromomethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M		<0.2 M		
Chloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M		<0.2 M		
Trichlorofluorormethane	<0.006 mg/kg	TM116		<0.12 M	<0.12 M		<0.12 M		
1,1-Dichloroethene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #		<0.2 #		
Carbon Disulphide	<0.007 mg/kg	TM116		<0.14 M	<0.14 M		<0.14 M		
Dichloromethane	<0.01 mg/kg	TM116		<0.2 #	<0.2 #		<0.2 #		
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M	<0.2 M		
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M		<0.2 M		
1,1-Dichloroethane	<0.008 mg/kg	TM116		<0.16 M	<0.16 M		<0.16 M		
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116		<0.12 M	<0.12 M		<0.12 M		
2,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2	<0.2		<0.2		
Bromochloromethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M		<0.2 M		
Chloroform	<0.008 mg/kg	TM116		<0.16 M	<0.16 M		<0.16 M		
1,1,1-Trichloroethane	<0.007 mg/kg	TM116		<0.14 M	<0.14 M		<0.14 M		
1,1-Dichloropropene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M		<0.2 M		
Carbontetrachloride	<0.01 mg/kg	TM116		<0.2 M	<0.2 M		<0.2 M		
1,2-Dichloroethane	<0.005 mg/kg	TM116		<0.1 M	<0.1 M		<0.1 M		
Benzene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M	<0.18 M	<0.18 M		
Trichloroethene	<0.009 mg/kg	TM116		<0.18 #	<0.18 #		<0.18 #		
1,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M		<0.2 M		
Dibromomethane	<0.009 mg/kg	TM116		<0.18 M	<0.18 M		<0.18 M		
Bromodichloromethane	<0.007 mg/kg	TM116		<0.14 M	<0.14 M		<0.14 M		
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M		<0.2 M		
Toluene	<0.007 mg/kg	TM116		<0.14 M	<0.14 M	<0.14 M	<0.14 M		
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2	<0.2		<0.2		
1,1,2-Trichloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M		<0.2 M		
1,3-Dichloropropane	<0.007 mg/kg	TM116		<0.14 M	<0.14 M		<0.14 M		

CERTIFICATE OF ANALYSIS

SDG:	210701-147	**Client Reference:**	784-B026948	**Report Number:**	604883
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH08	BH08	BH10	BH42		
			Depth (m)	0.60 - 0.60	8.60 - 8.70	0.10 - 0.20	9.80 - 9.90		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	30/06/2021	30/06/2021	30/06/2021	30/06/2021		
			Sample Time	.	.	.	.		
			Date Received	01/07/2021	01/07/2021	01/07/2021	01/07/2021		
			SDG Ref	210701-147	210701-147	210701-147	210701-147		
			Lab Sample No.(s)	24552090	24552000	24552005	24552074		
			AGS Reference	ES2	ES9	ES3	ES11		
Tetrachloroethene	<0.005 mg/kg	TM116		<0.1 M	<0.1 M		<0.1 M		
Dibromochloromethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M		<0.2 M		
1,2-Dibromoethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M		<0.2 M		
Chlorobenzene	<0.005 mg/kg	TM116		<0.1 M	<0.1 M		<0.1 M		
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M		<0.2 M		
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 M	<0.08 M	<0.08 M	<0.08 M		
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #	<0.2 #	<0.2 #		
o-Xylene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M	<0.2 M	<0.2 M		
Styrene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #		<0.2 #		
Bromoform	<0.01 mg/kg	TM116		<0.2 M	<0.2 M		<0.2 M		
Isopropylbenzene	<0.005 mg/kg	TM116		<0.1 #	<0.1 #		<0.1 #		
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 #	<0.2 #		<0.2 #		
1,2,3-Trichloropropane	<0.016 mg/kg	TM116		<0.32 M	<0.32 M		<0.32 M		
Bromobenzene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M		<0.2 M		
Propylbenzene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M		<0.2 M		
2-Chlorotoluene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M		<0.18 M		
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116		<0.16 M	<0.16 M		<0.16 M		
4-Chlorotoluene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M		<0.2 M		
tert-Butylbenzene	<0.014 mg/kg	TM116		<0.28 M	<0.28 M		<0.28 M		
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116		<0.18 #	<0.18 #		<0.18 #		
sec-Butylbenzene	<0.01 mg/kg	TM116		<0.2	<0.2		<0.2		
4-Isopropyltoluene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M		<0.2 M		
1,3-Dichlorobenzene	<0.008 mg/kg	TM116		<0.16 M	<0.16 M		<0.16 M		
1,4-Dichlorobenzene	<0.005 mg/kg	TM116		<0.1 M	<0.1 M		<0.1 M		
n-Butylbenzene	<0.011 mg/kg	TM116		<0.22	<0.22		<0.22		
1,2-Dichlorobenzene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M		<0.2 M		
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116		<0.28 M	<0.28 M		<0.28 M		
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.2 #	<0.2 #		<0.2 #		
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4	<0.4		<0.4		
Hexachlorobutadiene	<0.02 mg/kg	TM116		<0.4	<0.4		<0.4		
Naphthalene	<0.013 mg/kg	TM116		<0.26 M	<0.26 M		<0.26 M		
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4 #	<0.4 #		<0.4 #		
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4	<0.4		<0.4		

CERTIFICATE OF ANALYSIS

SDG:	210701-147	**Client Reference:**	784-B026948	**Report Number:**	604883
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH08	BH08	BH10	BH42		
			Depth (m)	0.60 - 0.60	8.60 - 8.70	0.10 - 0.20	9.80 - 9.90		
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)		
			Date Sampled	30/06/2021	30/06/2021	30/06/2021	30/06/2021		
			Sample Time	.	.	.	.		
			Date Received	01/07/2021	01/07/2021	01/07/2021	01/07/2021		
			SDG Ref	210701-147	210701-147	210701-147	210701-147		
			Lab Sample No.(s)	24552090	24552000	24552005	24552074		
			AGS Reference	ES2	ES9	ES3	ES11		
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4	<0.4	<0.4	<0.4		
Sum of BTEX	<0.04 mg/kg	TM116		<0.8	<0.8	<0.8	<0.8		

CERTIFICATE OF ANALYSIS

SDG:	210701-147	**Client Reference:**	784-B026948	**Report Number:**	604883
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&+$@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH08ES2 0.60 - 0.60 SOLID 30/06/2021 00:00:00 01/07/2021 05:00:00 210701-147 24552090 TM048	06.07.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH08ES9 8.60 - 8.70 SOLID 30/06/2021 00:00:00 01/07/2021 05:00:00 210701-147 24552000 TM048	06/07/2021	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH10ES3 0.10 - 0.20 SOLID 30/06/2021 00:00:00 01/07/2021 05:00:00 210701-147 24552005 TM048	06.07.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH42ES11 9.80 - 9.90 SOLID 30/06/2021 00:00:00 01/07/2021 05:00:00 210701-147 24552074 TM048	06/07/2021	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	210701-147	**Client Reference:**	784-B026948	**Report Number:**	604883
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.094	**Natural Moisture Content (%)**	4.94
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	95.3
Particle Size <4mm	>95%		

Case	
SDG	210701-147
Lab Sample Number(s)	24552000
Sampled Date	30-Jun-2021
Customer Sample Ref.	BH08 ES9
Depth (m)	8.60 - 8.70

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.00138	<0.0005	0.0138	<0.005	-	-	-
Boron	0.116	<0.01	1.16	<0.1	-	-	-
Cadmium	0.000738	<0.00008	0.00738	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	1.42	<0.019	14.2	<0.19	-	-	-
Lead	0.000689	<0.0002	0.00689	<0.002	-	-	-
Nickel	0.000812	<0.0004	0.00812	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	0.00101	<0.001	0.0101	<0.01	-	-	-
Zinc	0.0162	<0.001	0.162	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	02-Jul-2021
pH (pH Units)	7.37
Conductivity (µS/cm)	80.10
Temperature (°C)	19.90
Volume Leachant (Litres)	0.896

CERTIFICATE OF ANALYSIS

SDG:	210701-147	**Client Reference:**	784-B026948	**Report Number:**	604883
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.114	**Natural Moisture Content (%)**	27
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	78.7
Particle Size <4mm	>95%		

Case	
SDG	210701-147
Lab Sample Number(s)	24552074
Sampled Date	30-Jun-2021
Customer Sample Ref.	BH42 ES11
Depth (m)	9.80 - 9.90

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.046	<0.0005	0.46	<0.005	-	-	-
Boron	0.577	<0.01	5.77	<0.1	-	-	-
Cadmium	0.000207	<0.00008	0.00207	<0.0008	-	-	-
Chromium	0.00866	<0.001	0.0866	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.19	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	0.0106	<0.001	0.106	<0.01	-	-	-
Vanadium	0.202	<0.001	2.02	<0.01	-	-	-
Zinc	0.00186	<0.001	0.0186	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	02-Jul-2021
pH (pH Units)	10.65
Conductivity (µS/cm)	762.00
Temperature (°C)	19.90
Volume Leachant (Litres)	0.876

CERTIFICATE OF ANALYSIS

SDG:	210701-147	**Client Reference:**	784-B026948	**Report Number:**	604883
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.095	**Natural Moisture Content (%)**	6.09
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	94.3
Particle Size <4mm	>95%		

Case	
SDG	210701-147
Lab Sample Number(s)	24552090
Sampled Date	30-Jun-2021
Customer Sample Ref.	BH08 ES2
Depth (m)	0.60 - 0.60

Eluate Analysis	**C_2 Concⁿ in 10:1 eluate (mg/l)**		**A_2 10:1 concⁿ leached (mg/kg)**				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.00271	<0.0005	0.0271	<0.005	-	-	-
Boron	0.0861	<0.01	0.861	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.00112	<0.001	0.0112	<0.01	-	-	-
Copper	0.000744	<0.0003	0.00744	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.502	<0.019	5.02	<0.19	-	-	-
Lead	0.000636	<0.0002	0.00636	<0.002	-	-	-
Nickel	0.000534	<0.0004	0.00534	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	0.00152	<0.001	0.0152	<0.01	-	-	-
Zinc	0.00395	<0.001	0.0395	<0.01	-	-	-
Sulphide	0.157	<0.01	1.57	<0.1	-	-	-

Leach Test Information

Date Prepared	02-Jul-2021
pH (pH Units)	8.77
Conductivity (µS/cm)	117.00
Temperature (°C)	19.90
Volume Leachant (Litres)	0.895

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210701-147	**Client Reference:**	784-B026948	**Report Number:**	604883
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24552000	24552090	24552005	24552074
Customer Sample Ref.	BH08	BH08	BH10	BH42
AGS Ref.	ES9	ES2	ES3	ES11
Depth	8.60 - 8.70	0.60 - 0.60	0.10 - 0.20	9.80 - 9.90
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	05-Jul-2021	05-Jul-2021	05-Jul-2021	05-Jul-2021
Ammoniacal Nitrogen	08-Jul-2021	08-Jul-2021		06-Jul-2021
Ammonium Soil by Titration	07-Jul-2021	07-Jul-2021	07-Jul-2021	07-Jul-2021
Anions by Kone (soil)	07-Jul-2021	07-Jul-2021	07-Jul-2021	07-Jul-2021
Asbestos ID in Solid Samples	06-Jul-2021	06-Jul-2021	06-Jul-2021	06-Jul-2021
Boron Water Soluble	06-Jul-2021	06-Jul-2021	06-Jul-2021	06-Jul-2021
CEN 10:1 Leachate (1 Stage)	02-Jul-2021	02-Jul-2021		02-Jul-2021
CEN Readings	07-Jul-2021	07-Jul-2021		07-Jul-2021
Cyanide Comp/Free/Total/Thiocyanate	08-Jul-2021	08-Jul-2021	06-Jul-2021	07-Jul-2021
Dissolved Metals by ICP-MS	08-Jul-2021	08-Jul-2021		06-Jul-2021
EPH	06-Jul-2021	06-Jul-2021	06-Jul-2021	07-Jul-2021
EPH by GCxGC-FID	06-Jul-2021	05-Jul-2021	06-Jul-2021	06-Jul-2021
EPH CWG GC (S)	06-Jul-2021	06-Jul-2021	06-Jul-2021	06-Jul-2021
GRO by GC-FID (S)	06-Jul-2021	06-Jul-2021	06-Jul-2021	07-Jul-2021
Hexavalent Chromium (s)	05-Jul-2021	05-Jul-2021	05-Jul-2021	05-Jul-2021
Hexavalent Chromium (w)	08-Jul-2021	08-Jul-2021		07-Jul-2021
Mercury Dissolved	08-Jul-2021	08-Jul-2021		07-Jul-2021
Metals in solid samples by OES	08-Jul-2021	08-Jul-2021	06-Jul-2021	08-Jul-2021
Moisture at 105C	02-Jul-2021	02-Jul-2021		02-Jul-2021
PAH by GCMS	06-Jul-2021	05-Jul-2021	06-Jul-2021	07-Jul-2021
pH	02-Jul-2021	07-Jul-2021	02-Jul-2021	07-Jul-2021
pH Value of Filtered Water	08-Jul-2021	08-Jul-2021		08-Jul-2021
Phenols by HPLC (S)	06-Jul-2021	06-Jul-2021	06-Jul-2021	06-Jul-2021
Sample description	02-Jul-2021	02-Jul-2021	02-Jul-2021	02-Jul-2021
Semi Volatile Organic Compounds	06-Jul-2021	06-Jul-2021		06-Jul-2021
Sulphide	08-Jul-2021	08-Jul-2021		08-Jul-2021
Total Organic Carbon	08-Jul-2021	08-Jul-2021	08-Jul-2021	08-Jul-2021
TPH CWG GC (S)	06-Jul-2021	06-Jul-2021	06-Jul-2021	07-Jul-2021
VOC MS (S)	06-Jul-2021	06-Jul-2021	06-Jul-2021	06-Jul-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2421	QC 2440
Ammoniacal Nitrogen as N	TM099	**90.8** 88.02 : 104.70	**102.0** 93.14 : 108.60

Ammonium Soil by Titration

Component	Method Code	QC 2461
Exchangeable Ammonium as NH4	TM024	**83.08** 74.04 : 103.44

Boron Water Soluble

Component	Method Code	QC 2486
Water Soluble Boron	TM222	**91.5** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2488	QC 2468	QC 2403
Free Cyanide	TM153	**96.53** 78.00 : 114.00		
Free Cyanide (W)	TM227		**81.25** 90.67 : 122.67	**82.5** 90.67 : 122.67
Thiocyanate	TM153	**96.15** 94.53 : 113.33		
Thiocyanate (W)	TM227		**102.5** 92.25 : 117.75	**102.25** 92.25 : 117.75
Total Cyanide	TM153	**102.8** 77.13 : 111.53		
Total Cyanide (W)	TM227		**105.0** 88.75 : 111.25	**106.5** 88.75 : 111.25

Dissolved Metals by ICP-MS

Component	Method Code	QC 2456	QC 2473
Aluminium	TM152	**101.0** 94.21 : 111.52	**99.0** 94.21 : 111.52
Antimony	TM152	**102.17** 88.37 : 130.57	**102.33** 88.37 : 130.57
Arsenic	TM152	**98.83** 92.62 : 113.52	**100.17** 92.62 : 113.52
Barium	TM152	**105.17** 88.62 : 113.14	**101.83** 88.62 : 113.14

Dissolved Metals by ICP-MS

		QC 2456	QC 2473
Beryllium	TM152	**102.67** 87.08 : 111.38	**101.0** 87.08 : 111.38
Bismuth	TM152	**101.67** 92.62 : 115.02	**99.33** 92.62 : 115.02
Boron	TM152	**104.33** 86.31 : 120.88	**99.67** 86.31 : 120.88
Cadmium	TM152	**100.5** 93.85 : 111.65	**99.5** 93.85 : 111.65
Calcium	TM152	**102.67** 89.20 : 126.91	**102.0** 89.20 : 126.91
Chromium	TM152	**98.67** 92.50 : 113.03	**99.17** 92.50 : 113.03
Cobalt	TM152	**98.17** 85.01 : 114.87	**99.67** 85.01 : 114.87
Copper	TM152	**97.83** 89.87 : 119.73	**102.0** 89.87 : 119.73
Iron	TM152	**99.33** 93.02 : 113.86	**100.67** 93.02 : 113.86
Lead	TM152	**103.33** 91.11 : 116.98	**101.33** 91.11 : 116.98
Lithium	TM152	**103.0** 87.70 : 115.90	**101.17** 87.70 : 115.90
Magnesium	TM152	**100.67** 89.60 : 116.61	**100.0** 89.60 : 116.61
Manganese	TM152	**101.17** 93.97 : 112.46	**100.67** 93.97 : 112.46
Molybdenum	TM152	**97.5** 89.07 : 110.96	**100.17** 89.07 : 110.96
Nickel	TM152	**99.17** 93.70 : 112.15	**101.0** 93.70 : 112.15
Phosphorus	TM152	**102.5** 89.24 : 114.18	**99.17** 89.24 : 114.18
Potassium	TM152	**103.33** 93.20 : 115.55	**100.67** 93.20 : 115.55
Selenium	TM152	**100.83** 91.69 : 117.12	**101.5** 91.69 : 117.12
Silver	TM152	**98.67** 90.93 : 121.73	**100.5** 90.93 : 121.73
Sodium	TM152	**102.67** 92.42 : 113.24	**100.0** 92.42 : 113.24
Strontium	TM152	**102.0** 92.14 : 116.24	**101.0** 92.14 : 116.24
Tellurium	TM152	**99.33** 89.88 : 111.78	**97.67** 89.88 : 111.78
Thallium	TM152	**97.83** 82.43 : 113.83	**98.83** 82.43 : 113.83
Tin	TM152	**101.83** 94.62 : 107.79	**101.0** 94.62 : 107.79
Titanium	TM152	**100.67** 90.29 : 115.23	**100.67** 90.29 : 115.23
Tungsten	TM152	**100.83** 77.61 : 132.31	**99.0** 77.61 : 132.31
Uranium	TM152	**102.17** 86.97 : 115.76	**98.83** 86.97 : 115.76

CERTIFICATE OF ANALYSIS

SDG:	210701-147	**Client Reference:**	784-B026948	**Report Number:**	604883
Location:	A46 Newark Northern Bypas	**Order Number:**	7001649	**Superseded Report:**	

Dissolved Metals by ICP-MS

		QC 2456	QC 2473
Vanadium	TM152	**94.5** 89.61 : 115.48	**104.33** 89.61 : 115.48
Zinc	TM152	**100.0** 87.51 : 116.26	**101.67** 87.51 : 116.26

EPH by GCxGC-FID

Component	Method Code	QC 2444
EPH >C10-C40 Raw	TM415	**101.6** 63.71 : 122.01

GRO by GC-FID (S)

Component	Method Code	QC 2418	QC 2469
QC	TM089	**84.31** 72.28 : 114.54	**94.18** 68.78 : 110.61

Hexavalent Chromium (s)

Component	Method Code	QC 2401
Hexavalent Chromium	TM151	**100.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2400	QC 2407
Hexavalent Chromium	TM241	**100.4** 94.17 : 106.17	**98.4** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2439	QC 2421
Mercury Dissolved (CVAF)	TM183	**84.8** 0.00 : 0.00	**106.0** 0.00 : 0.00

Metals in solid samples by OES

Metals in solid samples by OES

Component	Method Code	QC 2431
Aluminium	TM181	**95.58** 73.56 : 108.85
Antimony	TM181	**97.97** 76.89 : 111.24
Arsenic	TM181	**96.22** 88.53 : 111.01
Barium	TM181	**97.25** 77.67 : 105.35
Beryllium	TM181	**97.01** 85.44 : 109.61
Boron	TM181	**92.55** 73.51 : 104.66
Cadmium	TM181	**90.12** 77.67 : 104.12
Chromium	TM181	**89.86** 79.64 : 105.83
Cobalt	TM181	**95.28** 88.24 : 109.65
Copper	TM181	**98.24** 88.74 : 106.27
Iron	TM181	**93.65** 82.95 : 110.58
Lead	TM181	**90.32** 78.24 : 104.05
Manganese	TM181	**103.89** 94.29 : 119.51
Mercury	TM181	**88.89** 79.02 : 103.11
Molybdenum	TM181	**98.77** 87.11 : 106.87
Nickel	TM181	**90.22** 80.26 : 102.28
Phosphorus	TM181	**102.42** 94.56 : 124.28
Selenium	TM181	**97.25** 82.28 : 110.48
Strontium	TM181	**96.21** 79.13 : 102.79
Thallium	TM181	**100.0** 82.94 : 111.86
Tin	TM181	**95.44** 86.72 : 110.03
Titanium	TM181	**87.79** 66.23 : 102.06
Vanadium	TM181	**100.73** 86.19 : 109.45
Zinc	TM181	**96.1** 84.68 : 113.99

PAH by GCMS

PAH by GCMS

Component	Method Code	QC 2434	QC 2441
Acenaphthene	TM218	**93.5** 76.79 : 103.90	**90.5** 78.59 : 112.16
Acenaphthylene	TM218	**90.0** 74.19 : 106.17	**90.0** 75.11 : 109.01
Anthracene	TM218	**86.0** 70.90 : 109.22	**83.5** 73.99 : 113.85
Benz(a)anthracene	TM218	**86.5** 73.77 : 119.26	**89.5** 69.31 : 119.18
Benzo(a)pyrene	TM218	**92.5** 73.20 : 114.18	**96.5** 66.97 : 114.92
Benzo(b)fluoranthene	TM218	**83.0** 75.36 : 117.58	**87.5** 67.41 : 114.46
Benzo(ghi)perylene	TM218	**81.5** 70.73 : 116.12	**93.5** 62.92 : 114.36
Benzo(k)fluoranthene	TM218	**84.0** 75.98 : 116.59	**92.5** 69.98 : 116.49
Chrysene	TM218	**84.5** 74.82 : 114.18	**87.0** 69.86 : 114.50
Dibenzo(ah)anthracene	TM218	**79.0** 69.17 : 115.30	**93.5** 64.54 : 115.22
Fluoranthene	TM218	**84.5** 66.06 : 114.63	**77.0** 72.56 : 111.70
Fluorene	TM218	**89.5** 76.66 : 107.56	**89.0** 79.13 : 111.49
Indeno(123cd)pyrene	TM218	**83.5** 70.26 : 117.95	**94.0** 61.22 : 113.25
Naphthalene	TM218	**88.5** 74.70 : 101.83	**89.5** 77.96 : 110.91
Phenanthrene	TM218	**89.0** 73.62 : 109.34	**84.0** 76.83 : 113.25
Pyrene	TM218	**83.5** 71.46 : 117.00	**77.5** 72.45 : 110.77

pH

Component	Method Code	QC 2489	QC 2443
pH	TM133	**99.12** 98.09 : 101.62	**100.73** 98.09 : 101.62

pH Value of Filtered Water

Component	Method Code	QC 2479	QC 2417	QC 2489
pH	TM256	**100.27** 99.33 : 102.54	**101.34** 99.33 : 102.54	
pH Value of Filtered Water	TM256			**101.08** 99.73 : 102.16

Phenols by HPLC (S)

Phenols by HPLC (S)

Component	Method Code	QC 2429
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**52.6** 70.71 : 116.42
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**44.44** 64.54 : 117.79
Cresols by HPLC (S)	TM062 (S)	**48.02** 74.40 : 108.98
Phenol by HPLC (S)	TM062 (S)	**50.33** 69.44 : 122.18
Xylenols by HPLC (S)	TM062 (S)	**49.48** 76.56 : 106.38

Semi Volatile Organic Compounds

Component	Method Code	QC 2497
4-Bromophenylphenylether (Soil)	TM157	**92.5** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**100.0** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**94.0** 68.25 : 126.75
Naphthalene (Soil)	TM157	**93.5** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**90.0** 66.50 : 123.50
Phenol (Soil)	TM157	**97.5** 69.92 : 114.02

Sulphide

Component	Method Code	QC 2429	QC 2420
Sulphide	TM101	**93.33** 88.90 : 112.50	**99.33** 88.90 : 112.50

Total Organic Carbon

Component	Method Code	QC 2404
Total Organic Carbon	TM132	**102.73** 84.82 : 117.61

VOC MS (S)

Component	Method Code	QC 2422
1,1,1,2-tetrachloroethane	TM116	**101.4** 84.84 : 116.25
1,1,1-Trichloroethane	TM116	**89.4** 73.73 : 118.05
1,1,2-Trichloroethane	TM116	**101.2** 77.12 : 116.04

VOC MS (S)

		QC 2422
1,1-Dichloroethane	TM116	**91.8** 74.46 : 129.15
1,2-Dichloroethane	TM116	**108.4** 92.38 : 131.65
1,4-Dichlorobenzene	TM116	**99.2** 83.64 : 126.18
2-Chlorotoluene	TM116	**90.0** 76.03 : 113.25
4-Chlorotoluene	TM116	**87.2** 66.90 : 112.46
Benzene	TM116	**93.2** 88.60 : 113.80
Carbon Disulphide	TM116	**83.0** 74.91 : 122.14
Carbontetrachloride	TM116	**98.8** 80.31 : 124.50
Chlorobenzene	TM116	**99.0** 83.81 : 114.18
Chloroform	TM116	**98.8** 87.40 : 122.49
Chloromethane	TM116	**76.4** 65.89 : 136.93
Cis-1,2-Dichloroethene	TM116	**93.4** 80.67 : 126.72
Dibromomethane	TM116	**103.4** 73.23 : 118.35
Dichloromethane	TM116	**99.8** 81.11 : 133.25
Ethylbenzene	TM116	**89.0** 75.92 : 110.41
Hexachlorobutadiene	TM116	**59.0** 12.82 : 152.73
Isopropylbenzene	TM116	**71.0** 54.30 : 105.91
Naphthalene	TM116	**106.0** 80.86 : 128.81
o-Xylene	TM116	**88.2** 69.99 : 108.74
p/m-Xylene	TM116	**85.3** 68.32 : 108.91
Sec-Butylbenzene	TM116	**65.4** 38.50 : 101.50
Tetrachloroethene	TM116	**95.4** 76.95 : 121.02
Toluene	TM116	**91.4** 74.24 : 107.42
Trichloroethene	TM116	**92.6** 85.28 : 109.36
Trichlorofluoromethane	TM116	**90.0** 81.46 : 120.52
Vinyl Chloride	TM116	**81.2** 68.02 : 143.37

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.

The figure detailed is the percentage recovery result for the AQC.

The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

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[redacted]

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Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	14 July 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210705-15
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	605575

We received 2 samples on Friday July 02, 2021 and 1 of these samples were scheduled for analysis which was completed on Wednesday July 14, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210705-15	**Client Reference:**	784-B026948	**Report Number:**	605575
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24570469	BH08	ES11	10.50 - 10.60	01/07/2021
24570465	BH08	ES10	9.50 - 9.60	01/07/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	210705-15	**Client Reference:**	784-B026948	**Report Number:**	605575
Location:	A46 Newark Northern Bypa	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24570469			
Customer Sample Reference			BH08			
AGS Reference			ES11			
Depth (m)			10.50 - 10.60			
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	
Anions by Kone (w)	All	NDPs: 0 Tests: 1	X			
CEN Readings	All	NDPs: 0 Tests: 1	X			
Coronene	All	NDPs: 0 Tests: 1		X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1	X			
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1	X			
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1		X		
Fluoride	All	NDPs: 0 Tests: 1	X			
Mercury Dissolved	All	NDPs: 0 Tests: 1	X			
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1		X		
PAH by GCMS	All	NDPs: 0 Tests: 1		X		
PCBs by GCMS	All	NDPs: 0 Tests: 1		X		
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1	X			
Sample description	All	NDPs: 0 Tests: 1		X		
Total Dissolved Solids	All	NDPs: 0 Tests: 1	X			
Total Organic Carbon	All	NDPs: 0 Tests: 1		X		

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Lab Sample No(s)			24570469		
Customer Sample Reference			BH08		
AGS Reference			ES11		
Depth (m)			10.50 - 10.60		
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
Sample Type			S	S	S
VOC MS (S)	All	NDPs: 0 Tests: 1			X

CERTIFICATE OF ANALYSIS

SDG:	210705-15	**Client Reference:**	784-B026948	**Report Number:**	605575
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24570469	BH08	10.50 - 10.60	Light Brown	Sand	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

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Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH08
Depth (m)	10.50 - 10.60
Sample Type	Soil/Solid (S)
Date Sampled	01/07/2021
Sampled Time	.
Date Received	02/07/2021
SDG Ref	210705-15
Lab Sample No.(s)	24570469
AGS Reference	ES11

Component	LOD/Units	Method	
Moisture Content Ratio (% of as received sample)	%	PM024	6.3
Organic Carbon, Total	<0.2 %	TM132	<0.2 M
PCB congener 28	<0.003 mg/kg	TM168	<0.003 M
PCB congener 52	<0.003 mg/kg	TM168	<0.003 M
PCB congener 101	<0.003 mg/kg	TM168	<0.003 M
PCB congener 118	<0.003 mg/kg	TM168	<0.003 M
PCB congener 138	<0.003 mg/kg	TM168	<0.003 M
PCB congener 153	<0.003 mg/kg	TM168	<0.003 M
PCB congener 180	<0.003 mg/kg	TM168	<0.003 M
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168	<0.021
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410	<10
Coronene	<0.2 mg/kg	TM410	<0.2
EPH Surrogate % recovery**	%	TM415	98.8
Mineral Oil >C10-C40	<5 mg/kg	TM415	<5

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VOC MS (S)

Results Legend	
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*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH08
			Depth (m)	10.50 - 10.60
			Sample Type	Soil/Solid (S)
			Date Sampled	01/07/2021
			Sampled Time	.
			Date Received	02/07/2021
			SDG Ref	210705-15
			Lab Sample No.(s)	24570469
			AGS Reference	ES11
Dibromofluoromethane**	%	TM116		113
Toluene-d8**	%	TM116		100
4-Bromofluorobenzene**	%	TM116		94.9
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 M
Benzene	<0.009 mg/kg	TM116		<0.18 M
Toluene	<0.007 mg/kg	TM116		<0.14 M
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 M
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #
o-Xylene	<0.01 mg/kg	TM116		<0.2 M

Validated

CERTIFICATE OF ANALYSIS

SDG:	210705-15	**Client Reference:**	784-B026948	**Report Number:**	605575
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.096	**Natural Moisture Content (%)**	6.48
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	93.9
Particle Size <4mm	>95%		

Case	
SDG	210705-15
Lab Sample Number(s)	24570469
Sampled Date	01-Jul-2021
Customer Sample Ref.	BH08 ES11
Depth (m)	10.50 - 10.60

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	<0.2	3	5	6
Loss on Ignition (%)	-	-	-	-
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	-	-	-	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	<0.0005	<0.0005	<0.005	<0.005	0.5	2	25
Barium	0.0357	<0.0002	0.357	<0.002	20	100	300
Cadmium	0.000314	<0.00008	0.00314	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	<0.0003	<0.0003	<0.003	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	0.539	<0.003	5.39	<0.03	0.5	10	30
Nickel	<0.0004	<0.0004	<0.004	<0.004	0.4	10	40
Lead	<0.0002	<0.0002	<0.002	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	0.00124	<0.001	0.0124	<0.01	0.1	0.5	7
Zinc	<0.001	<0.001	<0.01	<0.01	4	50	200
Chloride	7.3	<2	73	<20	800	15000	25000
Fluoride	<0.5	<0.5	<5	<5	10	150	500
Sulphate (soluble)	87.6	<2	876	<20	1000	20000	50000
Total Dissolved Solids	176	<5	1760	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	<3	<3	<30	<30	500	800	1000

Leach Test Information

Date Prepared	07-Jul-2021
pH (pH Units)	7.96
Conductivity (µS/cm)	225.00
Temperature (°C)	19.80
Volume Leachant (Litres)	0.894

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation

14/07/2021 08:50:57

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

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SDG:	210705-15	**Client Reference:**	784-B026948	**Report Number:**	605575
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24570469
Customer Sample Ref.	BH08
AGS Ref.	ES11
Depth	10.50 - 10.60
Type	Soil/Solid (S)
Anions by Kone (w)	12-Jul-2021
CEN 10:1 Leachate (1 Stage)	07-Jul-2021
CEN Readings	08-Jul-2021
Coronene	07-Jul-2021
Dissolved Metals by ICP-MS	09-Jul-2021
Dissolved Organic/Inorganic Carbon	14-Jul-2021
EPH by GCxGC-FID	08-Jul-2021
Fluoride	09-Jul-2021
Mercury Dissolved	09-Jul-2021
Moisture at 105C	07-Jul-2021
PAH 16 & 17 Calc	08-Jul-2021
PAH by GCMS	08-Jul-2021
PCBs by GCMS	08-Jul-2021
Phenols by HPLC (W)	09-Jul-2021
Sample description	06-Jul-2021
Total Dissolved Solids	09-Jul-2021
Total Organic Carbon	12-Jul-2021
VOC MS (S)	08-Jul-2021

ASSOCIATED AQC DATA

Anions by Kone (w)

Component	Method Code	QC 2414
Chloride	TM184	**105.0** 92.93 : 115.43
Sulphate (soluble)	TM184	**104.4** 90.53 : 113.03

Coronene

Component	Method Code	QC 2451
Coronene RAW	TM410	**94.0** 79.43 : 137.78

Dissolved Metals by ICP-MS

Component	Method Code	QC 2497
Aluminium	TM152	**106.33** 90.78 : 110.89
Antimony	TM152	**106.0** 77.22 : 119.42
Arsenic	TM152	**105.17** 86.77 : 107.67
Barium	TM152	**109.67** 87.86 : 110.23
Beryllium	TM152	**108.0** 86.19 : 112.98
Bismuth	TM152	**105.5** 84.06 : 106.46
Borate	TM152	**107.41** 88.00 : 112.00
Boron	TM152	**107.33** 83.92 : 114.90
Cadmium	TM152	**106.17** 88.89 : 106.69
Calcium	TM152	**105.33** 80.24 : 117.95
Chromium	TM152	**106.17** 83.22 : 110.16
Cobalt	TM152	**105.83** 82.49 : 112.36
Copper	TM152	**105.67** 83.14 : 113.00
Iron	TM152	**106.0** 88.40 : 109.24
Lead	TM152	**106.0** 83.71 : 109.58
Lithium	TM152	**107.83** 84.50 : 114.28
Magnesium	TM152	**103.33** 87.56 : 114.57

Dissolved Metals by ICP-MS

		QC 2497
Manganese	TM152	**106.83** 90.01 : 108.72
Molybdenum	TM152	**102.67** 85.53 : 107.42
Nickel	TM152	**105.0** 88.05 : 106.42
Phosphorus	TM152	**106.0** 82.76 : 107.72
Potassium	TM152	**104.0** 88.45 : 106.42
Selenium	TM152	**107.0** 85.61 : 111.03
Silver	TM152	**106.17** 88.48 : 110.48
Sodium	TM152	**103.33** 88.32 : 106.30
Strontium	TM152	**105.67** 83.77 : 107.87
Tellurium	TM152	**106.5** 82.83 : 104.73
Thallium	TM152	**93.83** 77.47 : 113.87
Tin	TM152	**102.5** 87.36 : 109.55
Titanium	TM152	**106.0** 87.29 : 108.31
Tungsten	TM152	**102.83** 68.27 : 122.97
Uranium	TM152	**104.5** 82.46 : 105.16
Vanadium	TM152	**101.33** 88.43 : 114.30
Zinc	TM152	**106.33** 85.57 : 114.31

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2420
Dissolved Inorganic Carbon	TM090	**106.5** 93.58 : 112.28
Dissolved Organic Carbon	TM090	**101.33** 96.13 : 109.53

Fluoride

Component	Method Code	QC 2476
Fluoride	TM104	**104.67** 96.67 : 108.67

Mercury Dissolved

Component	Method Code	QC 2465
Mercury Dissolved (CVAF)	TM183	**108.0** 0.00 : 0.00

PAH by GCMS

Component	Method Code	QC 2444
Acenaphthene	TM218	**91.5** 73.47 : 109.80
Acenaphthylene	TM218	**88.0** 70.00 : 130.00
Anthracene	TM218	**89.5** 68.68 : 111.89
Benz(a)anthracene	TM218	**90.0** 68.12 : 118.39
Benzo(a)pyrene	TM218	**93.0** 71.72 : 115.31
Benzo(b)fluoranthene	TM218	**90.0** 66.89 : 120.40
Benzo(ghi)perylene	TM218	**87.5** 67.82 : 118.49
Benzo(k)fluoranthene	TM218	**92.5** 73.10 : 117.03
Chrysene	TM218	**88.5** 69.58 : 115.47
Dibenzo(ah)anthracene	TM218	**87.0** 67.32 : 121.35
Fluoranthene	TM218	**94.0** 75.16 : 117.28
Fluorene	TM218	**87.5** 73.81 : 108.66
Indeno(123cd)pyrene	TM218	**87.5** 68.91 : 117.62
Naphthalene	TM218	**87.0** 72.12 : 106.18
Phenanthrene	TM218	**92.5** 69.01 : 113.72
Pyrene	TM218	**93.0** 64.28 : 115.75

PCBs by GCMS

Component	Method Code	QC 2478
PCB congener 101	TM168	**82.3** 65.66 : 110.06
PCB congener 105	TM168	**80.0** 58.10 : 106.34
PCB congener 114	TM168	**82.2** 59.38 : 106.48
PCB congener 118	TM168	**82.7** 60.02 : 106.23

PCBs by GCMS

		QC 2478
PCB congener 123	TM168	**87.0** 65.01 : 99.81
PCB congener 126	TM168	**81.3** 59.31 : 109.23
PCB congener 138	TM168	**86.5** 63.95 : 107.63
PCB congener 153	TM168	**88.7** 62.65 : 108.85
PCB congener 156	TM168	**81.7** 61.69 : 112.27
PCB congener 157	TM168	**80.0** 55.37 : 104.81
PCB congener 167	TM168	**80.0** 65.58 : 109.14
PCB congener 169	TM168	**82.5** 56.84 : 112.10
PCB congener 180	TM168	**85.8** 66.99 : 111.63
PCB congener 189	TM168	**79.8** 57.75 : 112.59
PCB congener 28	TM168	**84.8** 73.68 : 105.96
PCB congener 52	TM168	**82.4** 67.24 : 107.62
PCB congener 77	TM168	**85.7** 64.87 : 108.49
PCB congener 81	TM168	**83.9** 70.78 : 110.80

Total Dissolved Solids

Component	Method Code	QC 2425
Total Dissolved Solids	TM123	**98.5** 97.30 : 100.92

Total Organic Carbon

Component	Method Code	QC 2450
Total Organic Carbon	TM132	**92.19** 84.82 : 117.61

VOC MS (S)

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VOC MS (S)

Component	Method Code	QC 2429
1,1,1,2-tetrachloroethane	TM116	**116.8** 86.59 : 118.97
1,1,1-Trichloroethane	TM116	**116.6** 86.26 : 117.53
1,1,2-Trichloroethane	TM116	**100.8** 75.16 : 112.70
1,1-Dichloroethane	TM116	**111.2** 83.27 : 122.16
1,2-Dichloroethane	TM116	**125.2** 89.30 : 133.10
1,4-Dichlorobenzene	TM116	**120.0** 82.59 : 123.23
2-Chlorotoluene	TM116	**97.2** 66.81 : 118.43
4-Chlorotoluene	TM116	**93.2** 65.88 : 114.76
Benzene	TM116	**99.4** 93.16 : 123.63
Carbon Disulphide	TM116	**105.6** 75.11 : 124.81
Carbontetrachloride	TM116	**110.0** 82.35 : 126.46
Chlorobenzene	TM116	**112.2** 85.07 : 118.13
Chloroform	TM116	**121.0** 88.13 : 122.71
Chloromethane	TM116	**126.2** 61.62 : 145.66
Cis-1,2-Dichloroethene	TM116	**110.2** 88.41 : 121.33
Dibromomethane	TM116	**109.8** 77.47 : 121.29
Dichloromethane	TM116	**117.4** 87.89 : 134.72
Ethylbenzene	TM116	**93.0** 76.29 : 106.31
Hexachlorobutadiene	TM116	**79.2** 16.78 : 153.29
Isopropylbenzene	TM116	**79.4** 59.16 : 110.07
Naphthalene	TM116	**131.4** 79.29 : 125.59
o-Xylene	TM116	**90.2** 72.86 : 102.10
p/m-Xylene	TM116	**86.6** 68.99 : 102.40
Sec-Butylbenzene	TM116	**70.2** 44.71 : 117.87
Tetrachloroethene	TM116	**106.8** 77.82 : 125.00
Toluene	TM116	**96.2** 87.82 : 116.21
Trichloroethene	TM116	**99.8** 79.80 : 112.33

VOC MS (S)

		QC 2429
Trichlorofluoromethane	TM116	**126.6** 80.52 : 132.12
Vinyl Chloride	TM116	**108.0** 74.57 : 146.88

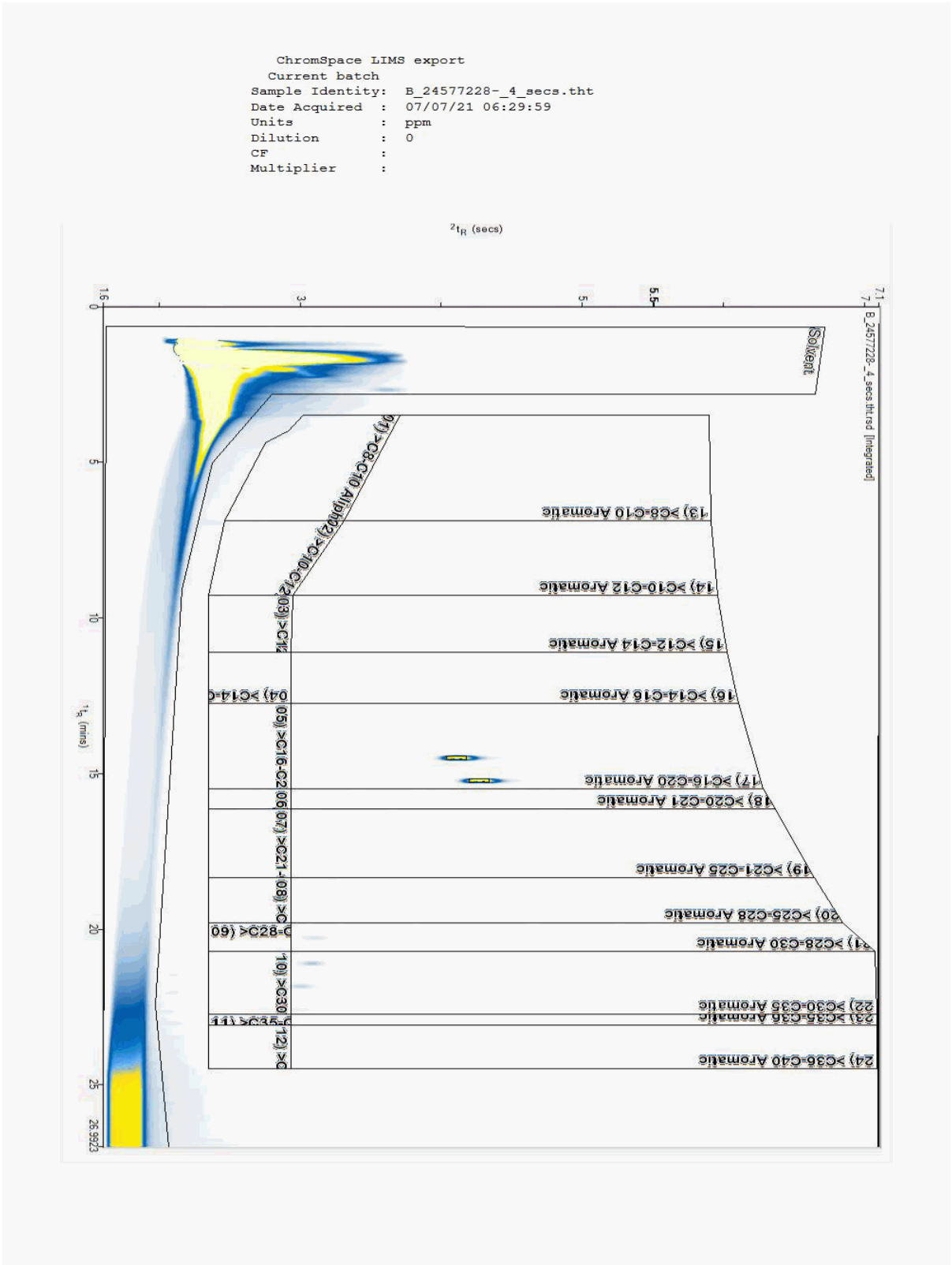
The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

SDG:	210705-15	**Client Reference:**	784-B026948	**Report Number:**	605575
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH by GCxGC-FID **Sample No :** 24577228 **Depth :** 10.50 - 10.60
Sample ID : BH08



Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	15 July 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210708-112
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	605917

We received 9 samples on Thursday July 08, 2021 and 2 of these samples were scheduled for analysis which was completed on Thursday July 15, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210708-112	**Client Reference:**	784-B026948	**Report Number:**	605917
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24593184	BH38	ES1	0.40 - 0.40	07/07/2021
24593195	BH38	ES2	0.60 - 0.60	07/07/2021
24593204	BH38	ES3	1.00 - 1.00	07/07/2021
24593220	BH38	ES4	1.50 - 1.60	07/07/2021
24593229	BH38	ES5	2.50 - 2.60	07/07/2021
24593235	BH38	ES6	3.50 - 3.60	07/07/2021
24593240	BH38	ES8	4.50 - 4.60	07/07/2021
24593247	BH38	ES10	5.70 - 5.80	07/07/2021
24593255	BH38	ES11	6.50 - 6.60	07/07/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	210708-112	**Client Reference:**	784-B026948	**Report Number:**	605917
Location:	A46 Newark Northern Bypa	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24593184				24593247				
Customer Sample Reference			BH38				BH38				
AGS Reference			ES1				ES10				
Depth (m)			0.40 - 0.40				5.70 - 5.80				
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)			
Sample Type			S	S	S	S	S	S			
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 2		X			X				
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 2	X			X					
Ammonium Soil by Titration	All	NDPs: 0 Tests: 2		X			X				
Anions by Kone (soil)	All	NDPs: 0 Tests: 2		X			X				
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2	X			X					
Boron Water Soluble	All	NDPs: 0 Tests: 2		X			X				
CEN Readings	All	NDPs: 0 Tests: 2	X			X					
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 4	X	X		X	X				
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 2	X			X					
EPH	All	NDPs: 0 Tests: 2		X			X				
EPH by GCxGC-FID	All	NDPs: 0 Tests: 2		X			X				
EPH CWG GC (S)	All	NDPs: 0 Tests: 2		X			X				
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2			X			X			
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2		X			X				
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 2	X			X					

CERTIFICATE OF ANALYSIS

SDG:	210708-112	**Client Reference:**	784-B026948	**Report Number:**	605917
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24593184				24593247				
Customer Sample Reference			BH38				BH38				
AGS Reference			ES1				ES10				
Depth (m)			0.40 - 0.40				5.70 - 5.80				
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)		1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)		
Sample Type			S	S	S		S	S	S		
Mercury Dissolved	All	NDPs: 0 Tests: 2	X				X				
Metals in solid samples by OES	All	NDPs: 0 Tests: 2		X				X			
PAH by GCMS	All	NDPs: 0 Tests: 2		X				X			
pH	All	NDPs: 0 Tests: 2		X				X			
pH Value of Filtered Water	All	NDPs: 0 Tests: 2	X				X				
Phenols by HPLC (S)	All	NDPs: 0 Tests: 2		X				X			
Sample description	All	NDPs: 0 Tests: 2		X				X			
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 2		X				X			
Sulphide	All	NDPs: 0 Tests: 2	X				X				
Total Organic Carbon	All	NDPs: 0 Tests: 2		X				X			
TPH CWG GC (S)	All	NDPs: 0 Tests: 2		X				X			
VOC MS (S)	All	NDPs: 0 Tests: 2			X				X		

CERTIFICATE OF ANALYSIS

SDG:	210708-112	**Client Reference:**	784-B026948	**Report Number:**	605917
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24593184	BH38	0.40 - 0.40	Cream	Loamy Sand	Stones	None
24593247	BH38	5.70 - 5.80	Dark Brown	Sandy Clay	None	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210708-112	**Client Reference:**	784-B026948	**Report Number:**	605917
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.		BH38		BH38					
			Depth (m)		0.40 - 0.40		5.70 - 5.80					
			Sample Type		Soil/Solid (S)		Soil/Solid (S)					
			Date Sampled		07/07/2021		07/07/2021					
			Sampled Time		.		.					
			Date Received		08/07/2021		08/07/2021					
			SDG Ref		210708-112		210708-112					
			Lab Sample No.(s)		24593184		24593247					
			AGS Reference		ES1		ES10					
Moisture Content Ratio (% of as received sample)	%	PM024	4.9		18							
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12	M	42.1	M						
Phenol	<0.01 mg/kg	TM062 (S)	<0.01	M	0.0122	M						
Cresols	<0.01 mg/kg	TM062 (S)	<0.01	M	0.0244	M						
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015	M	<0.015	M						
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035	M	<0.035	M						
Soil Organic Matter (SOM)	<0.35 %	TM132	0.95	#	2.26	#						
pH	1 pH Units	TM133	9.74	M	7.21	M						
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6	#	<0.6	#						
Cyanide, Total	<1 mg/kg	TM153	<1	M	<1	M						
Arsenic	<0.6 mg/kg	TM181	0.865	M	15	M						
Cadmium	<0.02 mg/kg	TM181	0.374	M	1.65	M						
Chromium	<0.9 mg/kg	TM181	1.2	M	35.4	M						
Copper	<1.4 mg/kg	TM181	6.33	M	29.8	M						
Iron	<1000 mg/kg	TM181	2710	#	44900	#						
Lead	<0.7 mg/kg	TM181	3.63	M	143	M						
Mercury	<0.1 mg/kg	TM181	<0.1	M	<0.1	M						
Nickel	<0.2 mg/kg	TM181	1.61	M	43.4	M						
Selenium	<1 mg/kg	TM181	<1	#	<1	#						
Vanadium	<0.2 mg/kg	TM181	2.62	#	61.2	#						
Zinc	<1.9 mg/kg	TM181	55.6	M	270	M						
Boron, water soluble	<1 mg/kg	TM222	<1	M	1.72	M						
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.018	M	<0.004	M						
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248	6.07		8.82							
EPH (C5-C40)	<35 mg/kg	TM415	<35		<35							
EPH Surrogate % recovery**	%	TM415	104		103							
EPH >C10-C40	<35 mg/kg	TM415	<35	M	<35	M						

CERTIFICATE OF ANALYSIS

SDG:	210708-112	**Client Reference:**	784-B026948	**Report Number:**	605917
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH38	BH38				
			Depth (m)	0.40 - 0.40	5.70 - 5.80				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	07/07/2021	07/07/2021				
			Sampled Time	.	.				
			Date Received	08/07/2021	08/07/2021				
			SDG Ref	210708-112	210708-112				
			Lab Sample No.(s)	24593184	24593247				
			AGS Reference	ES1	ES10				
Naphthalene-d8 % recovery**	%	TM218		84.7	83				
Acenaphthene-d10 % recovery**	%	TM218		87.6	86				
Phenanthrene-d10 % recovery**	%	TM218		89.4	88				
Chrysene-d12 % recovery**	%	TM218		88.6	86.4				
Perylene-d12 % recovery**	%	TM218		84.1	79.2				
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	<0.009 M				
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 M	<0.012 M				
Acenaphthene	<0.008 mg/kg	TM218		<0.008 M	<0.008 M				
Fluorene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M				
Phenanthrene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M				
Anthracene	<0.016 mg/kg	TM218		<0.016 M	<0.016 M				
Fluoranthene	<0.017 mg/kg	TM218		<0.017 M	<0.017 M				
Pyrene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M				
Benz(a)anthracene	<0.014 mg/kg	TM218		<0.014 M	<0.014 M				
Chrysene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M				
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M				
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		<0.014 M	<0.014 M				
Benzo(a)pyrene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M				
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		<0.018 M	<0.018 M				
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	<0.023 M				
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		<0.024 M	<0.024 M				
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		<0.118	<0.118				

CERTIFICATE OF ANALYSIS

SDG:	210708-112	**Client Reference:**	784-B026948	**Report Number:**	605917
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH38	BH38
Depth (m)	0.40 - 0.40	5.70 - 5.80
Sample Type	Soil/Solid (S)	Soil/Solid (S)
Date Sampled	07/07/2021	07/07/2021
Sampled Time	.	.
Date Received	08/07/2021	08/07/2021
SDG Ref	210708-112	210708-112
Lab Sample No.(s)	24593184	24593247
AGS Reference	ES1	ES10

Component	LOD/Units	Method						
Phenol	<0.1 mg/kg	TM157	<0.1	<0.1				
Pentachlorophenol	<0.1 mg/kg	TM157	<0.1	<0.1				
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157	<0.1	<0.1				
Nitrobenzene	<0.1 mg/kg	TM157	<0.1	<0.1				
Isophorone	<0.1 mg/kg	TM157	<0.1	<0.1				
Hexachloroethane	<0.1 mg/kg	TM157	<0.1	<0.1				
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157	<0.1	<0.1				
Hexachlorobutadiene	<0.1 mg/kg	TM157	<0.1	<0.1				
Hexachlorobenzene	<0.1 mg/kg	TM157	<0.1	<0.1				
n-Dioctyl phthalate	<0.1 mg/kg	TM157	<0.1	<0.1				
Dimethyl phthalate	<0.1 mg/kg	TM157	<0.1	<0.1				
Diethyl phthalate	<0.1 mg/kg	TM157	<0.1	<0.1				
n-Dibutyl phthalate	<0.1 mg/kg	TM157	<0.1	<0.1				
Dibenzofuran	<0.1 mg/kg	TM157	<0.1	<0.1				
Carbazole	<0.1 mg/kg	TM157	<0.1	<0.1				
Butylbenzyl phthalate	<0.1 mg/kg	TM157	<0.1	<0.1				
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157	<0.1	<0.1				
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157	<0.1	<0.1				
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157	<0.1	<0.1				
Azobenzene	<0.1 mg/kg	TM157	<0.1	<0.1				
4-Nitrophenol	<0.1 mg/kg	TM157	<0.1	<0.1				
4-Nitroaniline	<0.1 mg/kg	TM157	<0.1	<0.1				
4-Methylphenol	<0.1 mg/kg	TM157	<0.1	<0.1				
4-Chlorophenylphenylether	<0.1 mg/kg	TM157	<0.1	<0.1				
4-Chloroaniline	<0.1 mg/kg	TM157	<0.1	<0.1				
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157	<0.1	<0.1				
4-Bromophenylphenylether	<0.1 mg/kg	TM157	<0.1	<0.1				
3-Nitroaniline	<0.1 mg/kg	TM157	<0.1	<0.1				
2-Nitrophenol	<0.1 mg/kg	TM157	<0.1	<0.1				
2-Nitroaniline	<0.1 mg/kg	TM157	<0.1	<0.1				
2-Methylphenol	<0.1 mg/kg	TM157	<0.1	<0.1				
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157	<0.1	<0.1				

CERTIFICATE OF ANALYSIS

SDG:	210708-112	**Client Reference:**	784-B026948	**Report Number:**	605917
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH38	BH38				
			Depth (m)	0.40 - 0.40	5.70 - 5.80				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	07/07/2021	07/07/2021				
			Sampled Time	.	.				
			Date Received	08/07/2021	08/07/2021				
			SDG Ref	210708-112	210708-112				
			Lab Sample No.(s)	24593184	24593247				
			AGS Reference	ES1	ES10				
2-Chlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
2,6-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1				
2,4-Dinitrotoluene	<0.1 mg/kg	TM157		<0.1	<0.1				
2,4-Dimethylphenol	<0.1 mg/kg	TM157		<0.1	<0.1				
2,4-Dichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157		<0.1	<0.1				
1,4-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
1,3-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
1,2-Dichlorobenzene	<0.1 mg/kg	TM157		<0.1	<0.1				
2-Chloronaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1				
2-Methylnaphthalene	<0.1 mg/kg	TM157		<0.1	<0.1				
Acenaphthylene	<0.1 mg/kg	TM157		<0.1	<0.1				
Acenaphthene	<0.1 mg/kg	TM157		<0.1	<0.1				
Anthracene	<0.1 mg/kg	TM157		<0.1	<0.1				
Benzo(a)anthracene	<0.1 mg/kg	TM157		<0.1	<0.1				
Benzo(b)fluoranthene	<0.1 mg/kg	TM157		<0.1	<0.1				
Benzo(k)fluoranthene	<0.1 mg/kg	TM157		<0.1	<0.1				
Benzo(a)pyrene	<0.1 mg/kg	TM157		<0.1	<0.1				
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157		<0.1	<0.1				
Chrysene	<0.1 mg/kg	TM157		<0.1	<0.1				
Fluoranthene	<0.1 mg/kg	TM157		<0.1	<0.1				
Fluorene	<0.1 mg/kg	TM157		<0.1	<0.1				
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157		<0.1	<0.1				
Phenanthrene	<0.1 mg/kg	TM157		<0.1	<0.1				
Pyrene	<0.1 mg/kg	TM157		<0.1	<0.1				
Naphthalene	<0.1 mg/kg	TM157		<0.1	<0.1				
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157		<0.1	<0.1				
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157		<0.1	<0.1				

CERTIFICATE OF ANALYSIS

SDG:	210708-112	**Client Reference:**	784-B026948	**Report Number:**	605917
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.					
			BH38	BH38				
Depth (m)			0.40 - 0.40	5.70 - 5.80				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			07/07/2021	07/07/2021				
Sampled Time			.	.				
Date Received			08/07/2021	08/07/2021				
SDG Ref			210708-112	210708-112				
Lab Sample No.(s)			24593184	24593247				
AGS Reference			ES1	ES10				
GRO Surrogate % recovery**	%	TM089	112	109				
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01	<0.01				
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01	<0.01				
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01	<0.01				
Aliphatics >C10-C12	<1 mg/kg	TM414	<1 #	<1 #				
Aliphatics >C12-C16	<1 mg/kg	TM414	<1 #	<1 #				
Aliphatics >C16-C21	<1 mg/kg	TM414	<1 #	<1 #				
Aliphatics >C21-C35	<1 mg/kg	TM414	2.09 #	4.29 #				
Aliphatics >C35-C44	<1 mg/kg	TM414	<1	<1				
Total Aliphatics >C10-C44	<5 mg/kg	TM414	<5	<5				
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414	<10	<10				
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01	<0.01				
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01	<0.01				
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	<0.01	<0.01				
Aromatics > EC10-EC12	<1 mg/kg	TM414	<1 #	<1 #				
Aromatics > EC12-EC16	<1 mg/kg	TM414	<1 #	<1 #				
Aromatics > EC16-EC21	<1 mg/kg	TM414	<1 #	<1 #				
Aromatics > EC21-EC35	<1 mg/kg	TM414	5.86 #	<1 #				
Aromatics >EC35-EC44	<1 mg/kg	TM414	<1	1.08				
Aromatics > EC40-EC44	<1 mg/kg	TM414	<1	<1				
Total Aromatics > EC10-EC44	<5 mg/kg	TM414	6.86	<5				
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414	<10	<10				
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089	<0.05	<0.05				
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089	<0.05	<0.05				
GRO >C5-C10	<0.02 mg/kg	TM089	<0.02	<0.02				

CERTIFICATE OF ANALYSIS

SDG:	210708-112	**Client Reference:**	784-B026948	**Report Number:**	605917
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH38	BH38
			Depth (m)	0.40 - 0.40	5.70 - 5.80
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	07/07/2021	07/07/2021
			Sampled Time	.	.
			Date Received	08/07/2021	08/07/2021
			SDG Ref	210708-112	210708-112
			Lab Sample No.(s)	24593184	24593247
			AGS Reference	ES1	ES10
Dibromofluoromethane**	%	TM116		112	109
Toluene-d8**	%	TM116		99.5	100
4-Bromofluorobenzene**	%	TM116		97.3	98.5
Dichlorodifluoromethane	<0.006 mg/kg	TM116		<0.12 M	<0.12 M
Chloromethane	<0.007 mg/kg	TM116		<0.14 #	<0.14 #
Vinyl Chloride	<0.006 mg/kg	TM116		<0.12 M	<0.12 M
Bromomethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
Chloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
Trichlorofluorormethane	<0.006 mg/kg	TM116		<0.12 M	<0.12 M
1,1-Dichloroethene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #
Carbon Disulphide	<0.007 mg/kg	TM116		<0.14 M	<0.14 M
Dichloromethane	<0.01 mg/kg	TM116		<0.2 #	<0.2 #
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
1,1-Dichloroethane	<0.008 mg/kg	TM116		<0.16 M	<0.16 M
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116		<0.12 M	<0.12 M
2,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2	<0.2
Bromochloromethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
Chloroform	<0.008 mg/kg	TM116		<0.16 M	<0.16 M
1,1,1-Trichloroethane	<0.007 mg/kg	TM116		<0.14 M	<0.14 M
1,1-Dichloropropene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
Carbontetrachloride	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
1,2-Dichloroethane	<0.005 mg/kg	TM116		<0.1 M	<0.1 M
Benzene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M
Trichloroethene	<0.009 mg/kg	TM116		<0.18 #	<0.18 #
1,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
Dibromomethane	<0.009 mg/kg	TM116		<0.18 M	<0.18 M
Bromodichloromethane	<0.007 mg/kg	TM116		<0.14 M	<0.14 M
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
Toluene	<0.007 mg/kg	TM116		<0.14 M	<0.14 M
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2	<0.2
1,1,2-Trichloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M

CERTIFICATE OF ANALYSIS

SDG:	210708-112	**Client Reference:**	784-B026948	**Report Number:**	605917
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH38	BH38				
			Depth (m)	0.40 - 0.40	5.70 - 5.80				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	07/07/2021	07/07/2021				
			Sampled Time	.	.				
			Date Received	08/07/2021	08/07/2021				
			SDG Ref	210708-112	210708-112				
			Lab Sample No.(s)	24593184	24593247				
			AGS Reference	ES1	ES10				
1,3-Dichloropropane	<0.007 mg/kg	TM116		<0.14 M	<0.14 M				
Tetrachloroethene	<0.005 mg/kg	TM116		<0.1 M	<0.1 M				
Dibromochloromethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
1,2-Dibromoethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Chlorobenzene	<0.005 mg/kg	TM116		<0.1 M	<0.1 M				
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 M	<0.08 M				
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #				
o-Xylene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Styrene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #				
Bromoform	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Isopropylbenzene	<0.005 mg/kg	TM116		<0.1 #	<0.1 #				
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 #	<0.2 #				
1,2,3-Trichloropropane	<0.016 mg/kg	TM116		<0.32 M	<0.32 M				
Bromobenzene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Propylbenzene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
2-Chlorotoluene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M				
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116		<0.16 M	<0.16 M				
4-Chlorotoluene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
tert-Butylbenzene	<0.014 mg/kg	TM116		<0.28 M	<0.28 M				
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116		<0.18 #	<0.18 #				
sec-Butylbenzene	<0.01 mg/kg	TM116		<0.2	<0.2				
4-Isopropyltoluene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
1,3-Dichlorobenzene	<0.008 mg/kg	TM116		<0.16 M	<0.16 M				
1,4-Dichlorobenzene	<0.005 mg/kg	TM116		<0.1 M	<0.1 M				
n-Butylbenzene	<0.011 mg/kg	TM116		<0.22	<0.22				
1,2-Dichlorobenzene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116		<0.28 M	<0.28 M				
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.2 #	<0.2 #				
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4	<0.4				
Hexachlorobutadiene	<0.02 mg/kg	TM116		<0.4	<0.4				
Naphthalene	<0.013 mg/kg	TM116		<0.26 M	<0.26 M				

CERTIFICATE OF ANALYSIS

SDG:	210708-112	**Client Reference:**	784-B026948	**Report Number:**	605917
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH38	BH38
			Depth (m)	0.40 - 0.40	5.70 - 5.80
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	07/07/2021	07/07/2021
			Sampled Time	.	.
			Date Received	08/07/2021	08/07/2021
			SDG Ref	210708-112	210708-112
			Lab Sample No.(s)	24593184	24593247
			AGS Reference	ES1	ES10
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4 #	<0.4 #
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4	<0.4
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4	<0.4
Sum of BTEX	<0.04 mg/kg	TM116		<0.8	<0.8

CERTIFICATE OF ANALYSIS

SDG:	210708-112	**Client Reference:**	784-B026948	**Report Number:**	605917
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH38ES1 0.40 - 0.40 SOLID 07/07/2021 00:00:00 08/07/2021 05:00:00 210708-112 24593184 TM048	14.07.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH38ES10 5.70 - 5.80 SOLID 07/07/2021 00:00:00 08/07/2021 05:00:00 210708-112 24593247 TM048	14/07/2021	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	210708-112	**Client Reference:**	784-B026948	**Report Number:**	605917
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.096	**Natural Moisture Content (%)**	6.69
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	93.7
Particle Size <4mm	>95%		

Case	
SDG	210708-112
Lab Sample Number(s)	24593184
Sampled Date	07-Jul-2021
Customer Sample Ref.	BH38 ES1
Depth (m)	0.40 - 0.40

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Boron	<0.01	<0.01	<0.1	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.000996	<0.0003	0.00996	<0.003	-	-	-
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.19	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	0.000482	<0.0004	0.00482	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	<0.001	<0.001	<0.01	<0.01	-	-	-
Sulphide	0.0202	<0.01	0.202	<0.1	-	-	-

Leach Test Information

Date Prepared	09-Jul-2021
pH (pH Units)	9.67
Conductivity (µS/cm)	194.00
Temperature (°C)	20.40
Volume Leachant (Litres)	0.894

15/07/2021 15:41:53

CERTIFICATE OF ANALYSIS

SDG:	210708-112	**Client Reference:**	784-B026948	**Report Number:**	605917
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.115	**Natural Moisture Content (%)**	29
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	77.5
Particle Size <4mm	>95%		

Case	
SDG	210708-112
Lab Sample Number(s)	24593247
Sampled Date	07-Jul-2021
Customer Sample Ref.	BH38 ES10
Depth (m)	5.70 - 5.80

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	0.805	<0.2	8.05	<2	-	-	-
Total Ammonium as NH4	1.04	<0.3	10.4	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.00547	<0.0005	0.0547	<0.005	-	-	-
Boron	0.0579	<0.01	0.579	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.00153	<0.001	0.0153	<0.01	-	-	-
Copper	0.00157	<0.0003	0.0157	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.677	<0.019	6.77	<0.19	-	-	-
Lead	0.00104	<0.0002	0.0104	<0.002	-	-	-
Nickel	0.00502	<0.0004	0.0502	<0.004	-	-	-
Selenium	0.00312	<0.001	0.0312	<0.01	-	-	-
Vanadium	0.00228	<0.001	0.0228	<0.01	-	-	-
Zinc	0.00453	<0.001	0.0453	<0.01	-	-	-
Sulphide	0.0677	<0.01	0.677	<0.1	-	-	-

Leach Test Information

Date Prepared	11-Jul-2021
pH (pH Units)	7.87
Conductivity (µS/cm)	348.00
Temperature (°C)	20.50
Volume Leachant (Litres)	0.875

15/07/2021 15:41:53

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210708-112	**Client Reference:**	784-B026948	**Report Number:**	605917
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24593184	24593247
Customer Sample Ref.	BH38	BH38
AGS Ref.	ES1	ES10
Depth	0.40 - 0.40	5.70 - 5.80
Type	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	12-Jul-2021	12-Jul-2021
Ammoniacal Nitrogen	15-Jul-2021	14-Jul-2021
Ammonium Soil by Titration	13-Jul-2021	13-Jul-2021
Anions by Kone (soil)	15-Jul-2021	13-Jul-2021
Asbestos ID in Solid Samples	14-Jul-2021	14-Jul-2021
Boron Water Soluble	14-Jul-2021	13-Jul-2021
CEN 10:1 Leachate (1 Stage)	11-Jul-2021	11-Jul-2021
CEN Readings	14-Jul-2021	14-Jul-2021
Cyanide Comp/Free/Total/Thiocyanate	14-Jul-2021	14-Jul-2021
Dissolved Metals by ICP-MS	15-Jul-2021	15-Jul-2021
EPH	12-Jul-2021	13-Jul-2021
EPH by GCxGC-FID	12-Jul-2021	13-Jul-2021
EPH CWG GC (S)	13-Jul-2021	13-Jul-2021
GRO by GC-FID (S)	12-Jul-2021	13-Jul-2021
Hexavalent Chromium (s)	13-Jul-2021	13-Jul-2021
Hexavalent Chromium (w)	14-Jul-2021	14-Jul-2021
Mercury Dissolved	15-Jul-2021	15-Jul-2021
Metals in solid samples by OES	14-Jul-2021	14-Jul-2021
Moisture at 105C	09-Jul-2021	11-Jul-2021
PAH by GCMS	12-Jul-2021	13-Jul-2021
pH	14-Jul-2021	15-Jul-2021
pH Value of Filtered Water	14-Jul-2021	14-Jul-2021
Phenols by HPLC (S)	13-Jul-2021	13-Jul-2021
Sample description	09-Jul-2021	09-Jul-2021
Semi Volatile Organic Compounds	15-Jul-2021	14-Jul-2021
Sulphide	14-Jul-2021	14-Jul-2021
Total Organic Carbon	15-Jul-2021	15-Jul-2021
TPH CWG GC (S)	13-Jul-2021	13-Jul-2021
VOC MS (S)	13-Jul-2021	13-Jul-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2496	QC 2411
Ammoniacal Nitrogen as N	TM099	**97.2** 88.02 : 104.70	**96.4** 88.02 : 104.70

Ammonium Soil by Titration

Component	Method Code	QC 2475
Exchangeable Ammonium as NH4	TM024	**91.04** 74.04 : 103.44

Boron Water Soluble

Component	Method Code	QC 2482	QC 2406
Water Soluble Boron	TM222	**103.5** 84.00 : 111.00	**100.5** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2443	QC 2488	QC 2431
Free Cyanide	TM153	**98.02** 78.00 : 114.00	**96.73** 78.00 : 114.00	
Free Cyanide (W)	TM227			**84.5** 90.67 : 122.67
Thiocyanate	TM153	**91.67** 93.33 : 110.53	**92.31** 93.33 : 110.53	
Thiocyanate (W)	TM227			**97.75** 92.25 : 117.75
Total Cyanide	TM153	**99.3** 77.13 : 111.53	**99.3** 77.13 : 111.53	
Total Cyanide (W)	TM227			**105.25** 88.75 : 111.25

Dissolved Metals by ICP-MS

Component	Method Code	QC 2416
Aluminium	TM152	**104.67** 94.21 : 111.52
Antimony	TM152	**103.5** 88.37 : 130.57
Arsenic	TM152	**104.0** 92.62 : 113.52
Barium	TM152	**104.0** 88.62 : 113.14

Dissolved Metals by ICP-MS

		QC 2416
Beryllium	TM152	**106.0** 87.08 : 111.38
Bismuth	TM152	**105.0** 92.62 : 115.02
Boron	TM152	**105.0** 86.31 : 120.88
Cadmium	TM152	**104.83** 93.85 : 111.65
Calcium	TM152	**102.67** 89.20 : 126.91
Chromium	TM152	**103.67** 92.50 : 113.03
Cobalt	TM152	**102.67** 85.01 : 114.87
Copper	TM152	**103.83** 89.87 : 119.73
Iron	TM152	**104.0** 93.02 : 113.86
Lead	TM152	**101.0** 91.11 : 116.98
Lithium	TM152	**104.5** 87.70 : 115.90
Magnesium	TM152	**101.33** 89.60 : 116.61
Manganese	TM152	**104.33** 93.97 : 112.46
Molybdenum	TM152	**100.17** 89.07 : 110.96
Nickel	TM152	**103.5** 93.70 : 112.15
Phosphorus	TM152	**103.17** 89.24 : 114.18
Potassium	TM152	**102.67** 93.20 : 115.55
Selenium	TM152	**102.33** 91.69 : 117.12
Silver	TM152	**101.17** 90.93 : 121.73
Sodium	TM152	**100.0** 92.42 : 113.24
Strontium	TM152	**104.33** 92.14 : 116.24
Tellurium	TM152	**101.17** 89.88 : 111.78
Thallium	TM152	**96.67** 82.43 : 113.83
Tin	TM152	**102.17** 94.62 : 107.79
Titanium	TM152	**102.33** 90.29 : 115.23
Tungsten	TM152	**96.5** 77.61 : 132.31
Uranium	TM152	**100.83** 86.97 : 115.76

Dissolved Metals by ICP-MS

		QC 2416
Vanadium	TM152	**97.5** 89.61 : 115.48
Zinc	TM152	**104.67** 87.51 : 116.26

GRO by GC-FID (S)

Component	Method Code	QC 2497
QC	TM089	**81.77** 68.78 : 110.61

Hexavalent Chromium (s)

Component	Method Code	QC 2410	QC 2442
Hexavalent Chromium	TM151	**100.0** 91.40 : 115.40	**106.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2447
Hexavalent Chromium	TM241	**98.8** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2451
Mercury Dissolved (CVAF)	TM183	**104.0** 0.00 : 0.00

Metals in solid samples by OES

Component	Method Code	QC 2453
Aluminium	TM181	**92.98** 87.31 : 119.03
Antimony	TM181	**109.06** 91.44 : 127.13
Arsenic	TM181	**105.41** 88.32 : 120.05
Barium	TM181	**111.79** 94.57 : 124.93
Beryllium	TM181	**105.54** 85.72 : 122.69

Metals in solid samples by OES

		QC 2453
Boron	TM181	**110.61** 85.66 : 120.25
Cadmium	TM181	**105.9** 87.31 : 121.62
Chromium	TM181	**102.2** 85.06 : 113.81
Cobalt	TM181	**99.45** 92.91 : 111.38
Copper	TM181	**97.97** 81.22 : 113.40
Iron	TM181	**108.26** 86.44 : 122.27
Lead	TM181	**107.67** 86.83 : 123.12
Manganese	TM181	**104.21** 89.22 : 121.75
Mercury	TM181	**103.91** 84.95 : 119.42
Molybdenum	TM181	**106.73** 85.98 : 123.80
Nickel	TM181	**105.34** 88.05 : 119.19
Phosphorus	TM181	**104.44** 90.13 : 121.54
Selenium	TM181	**103.3** 88.10 : 117.92
Strontium	TM181	**97.09** 79.10 : 111.59
Thallium	TM181	**105.7** 84.67 : 122.64
Tin	TM181	**106.53** 86.96 : 122.18
Titanium	TM181	**105.45** 84.66 : 112.24
Vanadium	TM181	**102.88** 84.00 : 115.50
Zinc	TM181	**106.32** 85.62 : 122.35

PAH by GCMS

Component	Method Code	QC 2435	QC 2459
Acenaphthene	TM218	**85.5** 78.59 : 112.16	**90.5** 78.59 : 112.16
Acenaphthylene	TM218	**83.0** 75.11 : 109.01	**90.5** 75.11 : 109.01
Anthracene	TM218	**83.5** 73.99 : 113.85	**90.5** 73.99 : 113.85
Benz(a)anthracene	TM218	**87.5** 69.31 : 119.18	**93.5** 69.31 : 119.18
Benzo(a)pyrene	TM218	**83.5** 66.97 : 114.92	**91.0** 66.97 : 114.92
Benzo(b)fluoranthene	TM218	**87.5** 67.41 : 114.46	**91.5** 67.41 : 114.46

PAH by GCMS

		QC 2435	QC 2459
Benzo(ghi)perylene	TM218	**76.0** 62.92 : 114.36	**84.0** 62.92 : 114.36
Benzo(k)fluoranthene	TM218	**90.0** 69.98 : 116.49	**97.0** 69.98 : 116.49
Chrysene	TM218	**90.5** 69.86 : 114.50	**97.0** 69.86 : 114.50
Dibenzo(ah)anthracene	TM218	**81.0** 64.54 : 115.22	**83.5** 64.54 : 115.22
Fluoranthene	TM218	**88.5** 72.56 : 111.70	**91.5** 72.56 : 111.70
Fluorene	TM218	**86.0** 79.13 : 111.49	**93.5** 79.13 : 111.49
Indeno(123cd)pyrene	TM218	**75.5** 61.22 : 113.25	**86.5** 61.22 : 113.25
Naphthalene	TM218	**83.5** 77.96 : 110.91	**85.5** 77.96 : 110.91
Phenanthrene	TM218	**87.5** 76.83 : 113.25	**93.0** 76.83 : 113.25
Pyrene	TM218	**87.0** 72.45 : 110.77	**91.0** 72.45 : 110.77

pH

Component	Method Code	QC 2490	QC 2439
pH	TM133	**100.73** 98.09 : 101.62	**99.56** 98.09 : 101.62

pH Value of Filtered Water

Component	Method Code	QC 2467
pH	TM256	**100.53** 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2409
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**50.0** 70.71 : 116.42
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**42.69** 64.54 : 117.79
Cresols by HPLC (S)	TM062 (S)	**45.09** 74.40 : 108.98
Phenol by HPLC (S)	TM062 (S)	**47.68** 69.44 : 122.18
Xylenols by HPLC (S)	TM062 (S)	**47.92** 76.56 : 106.38

Semi Volatile Organic Compounds

Semi Volatile Organic Compounds

Component	Method Code	QC 2486
4-Bromophenylphenylether (Soil)	TM157	**95.0** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**89.0** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**96.5** 68.25 : 126.75
Naphthalene (Soil)	TM157	**96.0** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**84.5** 66.50 : 123.50
Phenol (Soil)	TM157	**99.5** 69.92 : 114.02

Sulphide

Component	Method Code	QC 2487
Sulphide	TM101	**102.67** 88.90 : 112.50

Total Organic Carbon

Component	Method Code	QC 2422
Total Organic Carbon	TM132	**98.83** 84.82 : 117.61

VOC MS (S)

Component	Method Code	QC 2446
1,1,1,2-tetrachloroethane	TM116	**101.2** 84.84 : 116.25
1,1,1-Trichloroethane	TM116	**100.6** 73.73 : 118.05
1,1,2-Trichloroethane	TM116	**94.0** 77.12 : 116.04
1,1-Dichloroethane	TM116	**108.0** 74.46 : 129.15
1,2-Dichloroethane	TM116	**109.0** 92.38 : 131.65
1,4-Dichlorobenzene	TM116	**100.0** 83.64 : 126.18
2-Chlorotoluene	TM116	**89.6** 76.03 : 113.25
4-Chlorotoluene	TM116	**88.0** 66.90 : 112.46
Benzene	TM116	**103.4** 88.60 : 113.80
Carbon Disulphide	TM116	**99.6** 74.91 : 122.14

VOC MS (S)

		QC 2446
Carbontetrachloride	TM116	**101.0** 80.31 : 124.50
Chlorobenzene	TM116	**100.6** 83.81 : 114.18
Chloroform	TM116	**108.4** 87.40 : 122.49
Chloromethane	TM116	**113.4** 63.11 : 124.36
Cis-1,2-Dichloroethene	TM116	**105.8** 80.67 : 126.72
Dibromomethane	TM116	**92.8** 73.23 : 118.35
Dichloromethane	TM116	**117.0** 81.11 : 133.25
Ethylbenzene	TM116	**86.8** 75.92 : 110.41
Hexachlorobutadiene	TM116	**108.6** 12.82 : 152.73
Isopropylbenzene	TM116	**75.2** 54.30 : 105.91
Naphthalene	TM116	**96.6** 80.86 : 128.81
o-Xylene	TM116	**80.6** 69.99 : 108.74
p/m-Xylene	TM116	**81.6** 68.32 : 108.91
Sec-Butylbenzene	TM116	**75.6** 38.50 : 101.50
Tetrachloroethene	TM116	**98.0** 76.95 : 121.02
Toluene	TM116	**88.8** 74.24 : 107.42
Trichloroethene	TM116	**96.8** 85.28 : 109.36
Trichlorofluoromethane	TM116	**108.6** 81.46 : 120.52
Vinyl Chloride	TM116	**116.0** 68.02 : 143.37

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

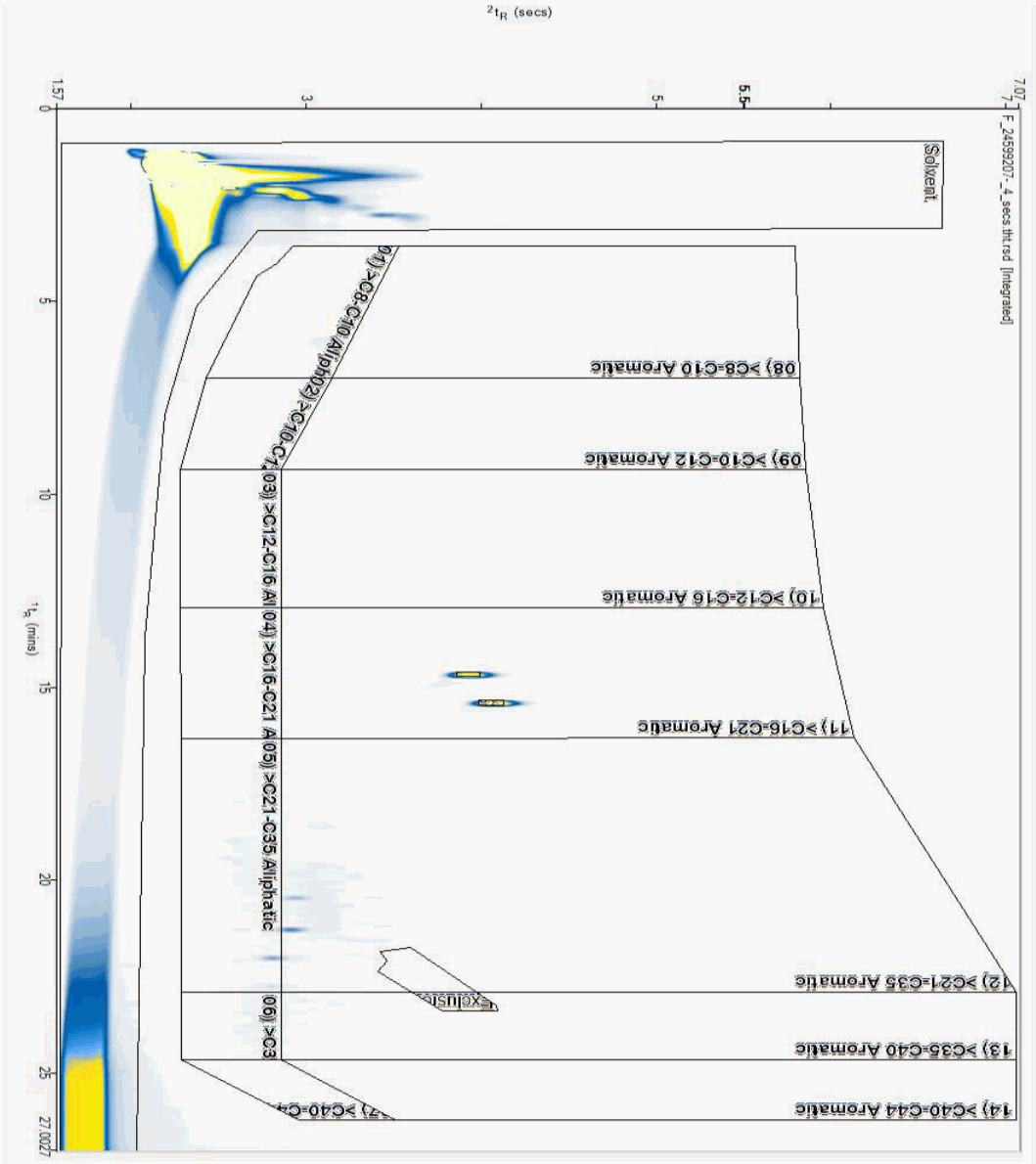
CERTIFICATE OF ANALYSIS

SDG:	210708-112	**Client Reference:**	784-B026948	**Report Number:**	605917
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 24599207 **Depth :** 0.40 - 0.40
Sample ID : BH38

```
  ChromSpace LIMS export
 Current batch
Sample Identity:  F_24599207-_4_secs.tht
Date Acquired   :  12/07/21 08:54:24
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
```



CERTIFICATE OF ANALYSIS

SDG:	210708-112	**Client Reference:**	784-B026948	**Report Number:**	605917
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 24603264 **Depth :** 5.70 - 5.80
Sample ID : BH38

```
  ChromSpace LIMS export
 Current batch
Sample Identity:  F_24603264-_4_secs.tht
Date Acquired   :  12/07/21 04:49:16
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
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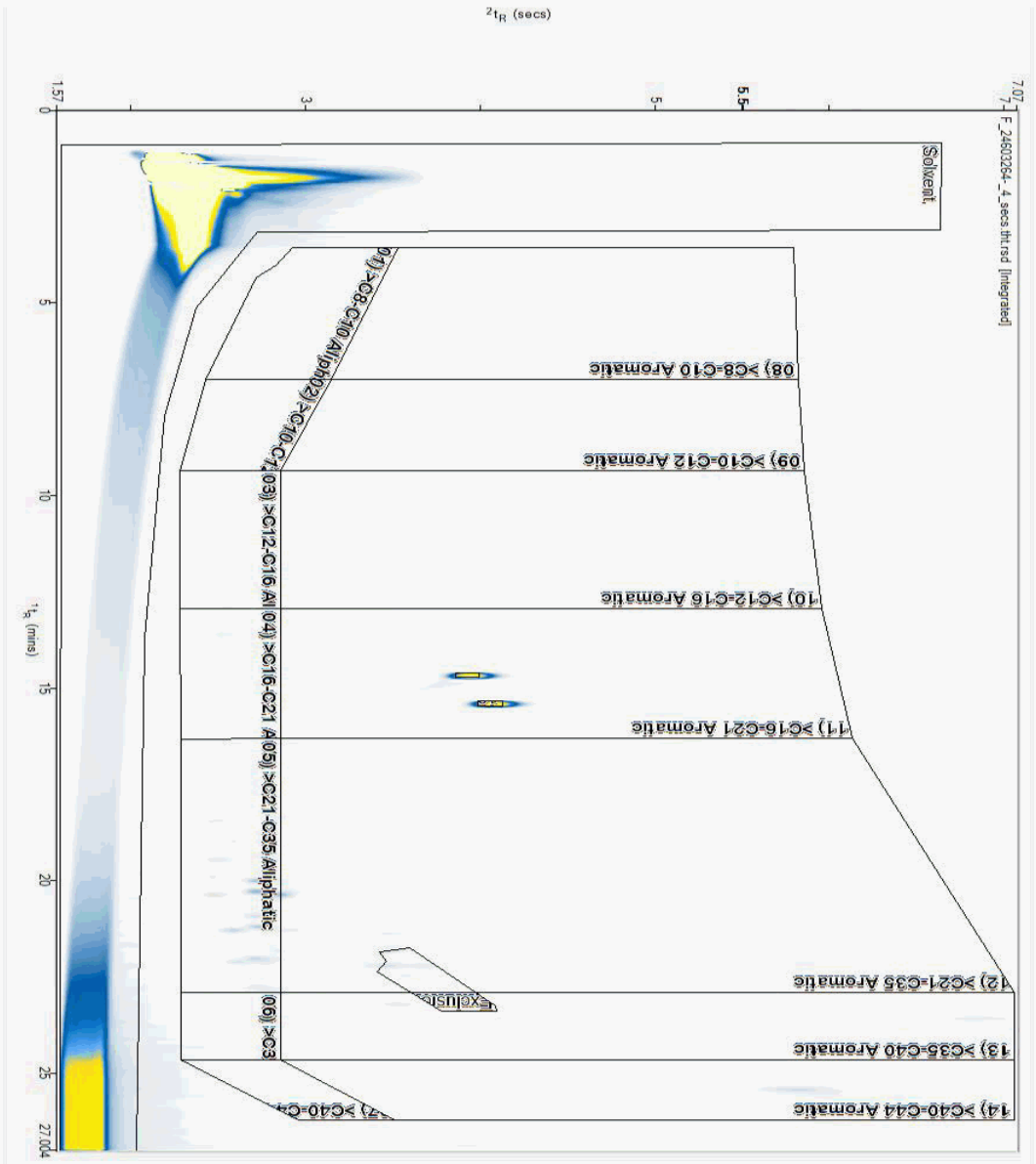


CERTIFICATE OF ANALYSIS

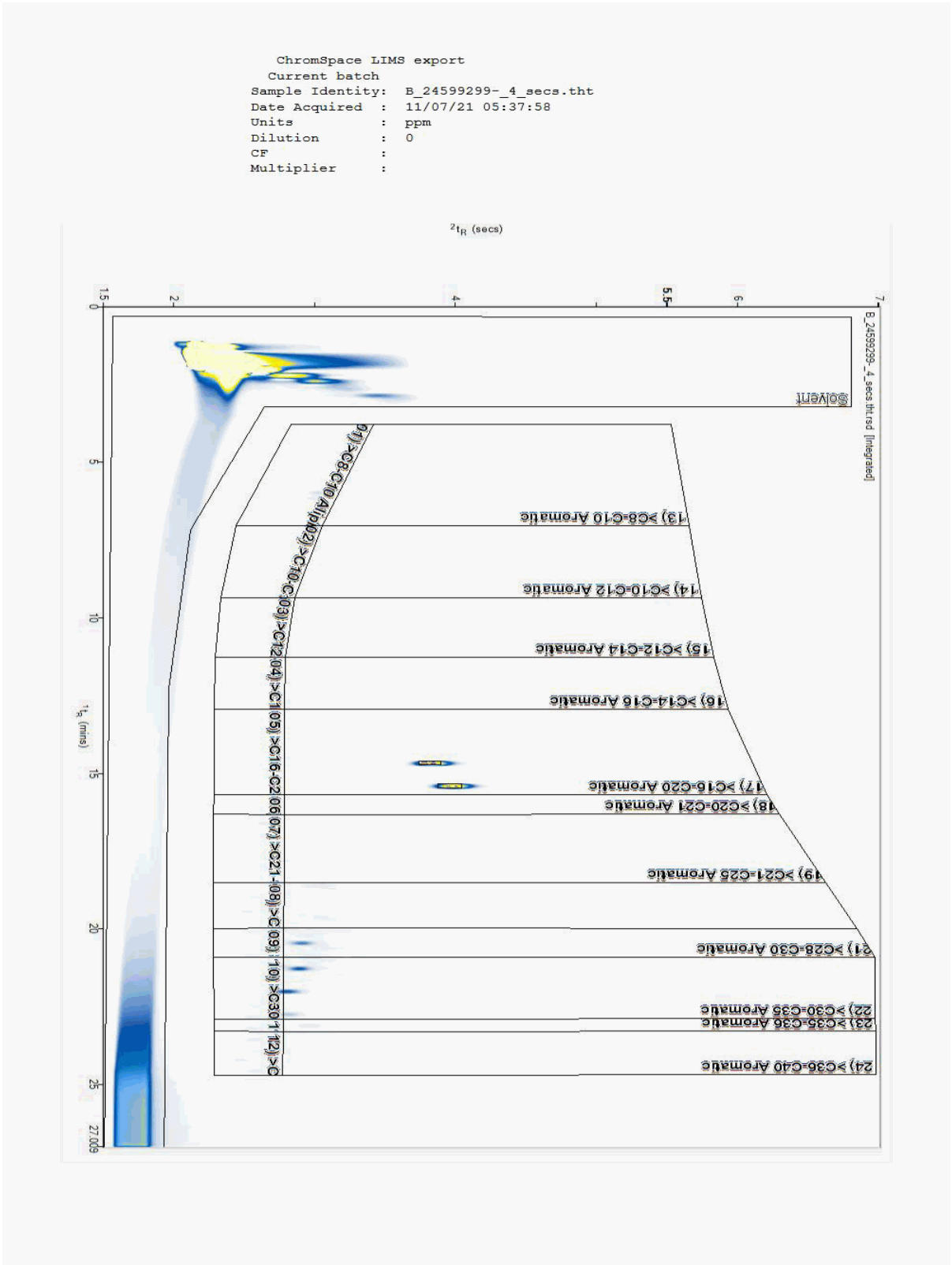
SDG:	210708-112	**Client Reference:**	784-B026948	**Report Number:**	605917
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 24599299
Sample ID : BH38

Depth : 0.40 - 0.40

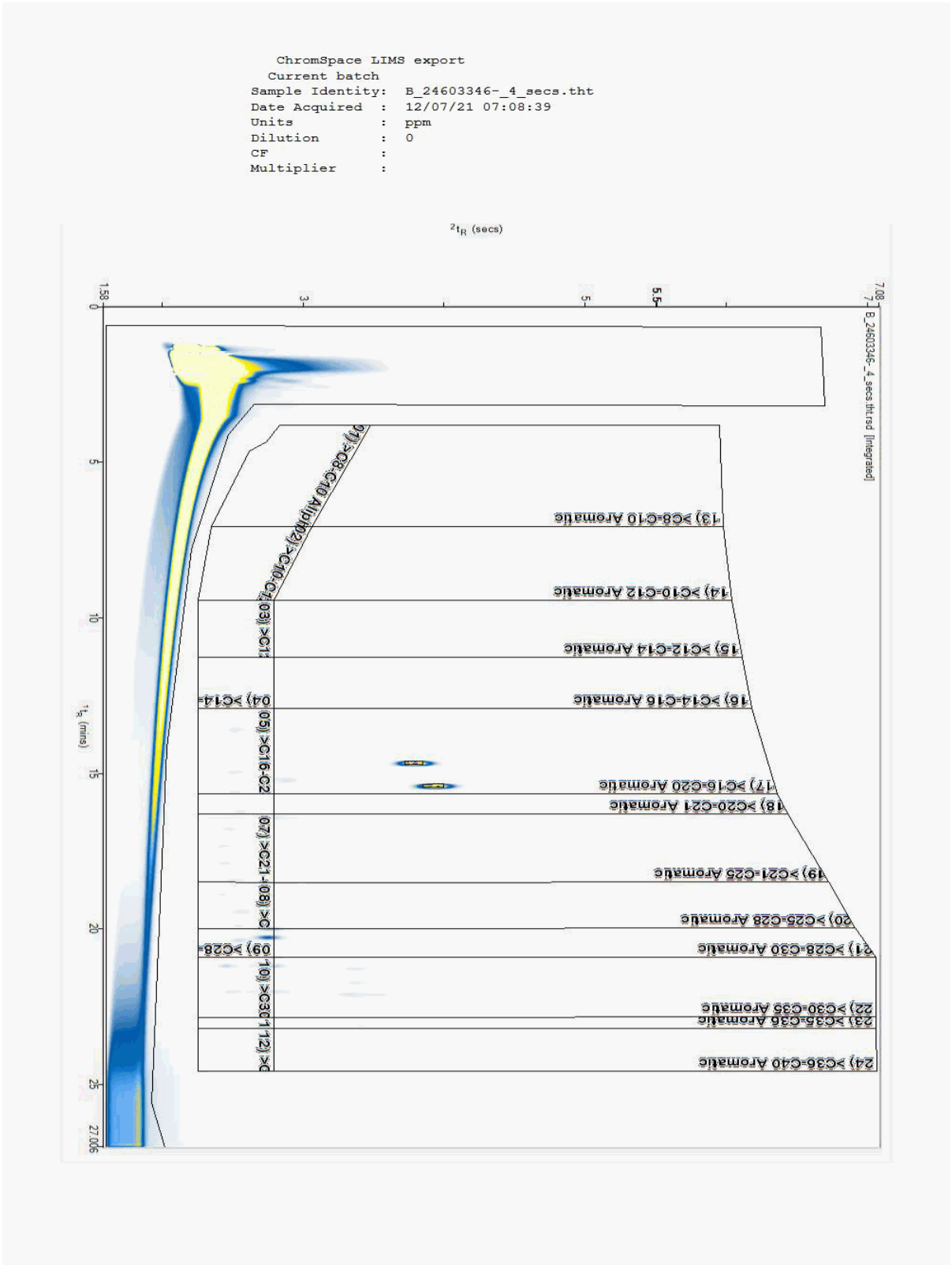


CERTIFICATE OF ANALYSIS

SDG:	210708-112	**Client Reference:**	784-B026948	**Report Number:**	605917
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH by GCxGC-FID **Sample No :** 24603346 **Depth :** 5.70 - 5.80
Sample ID : BH38

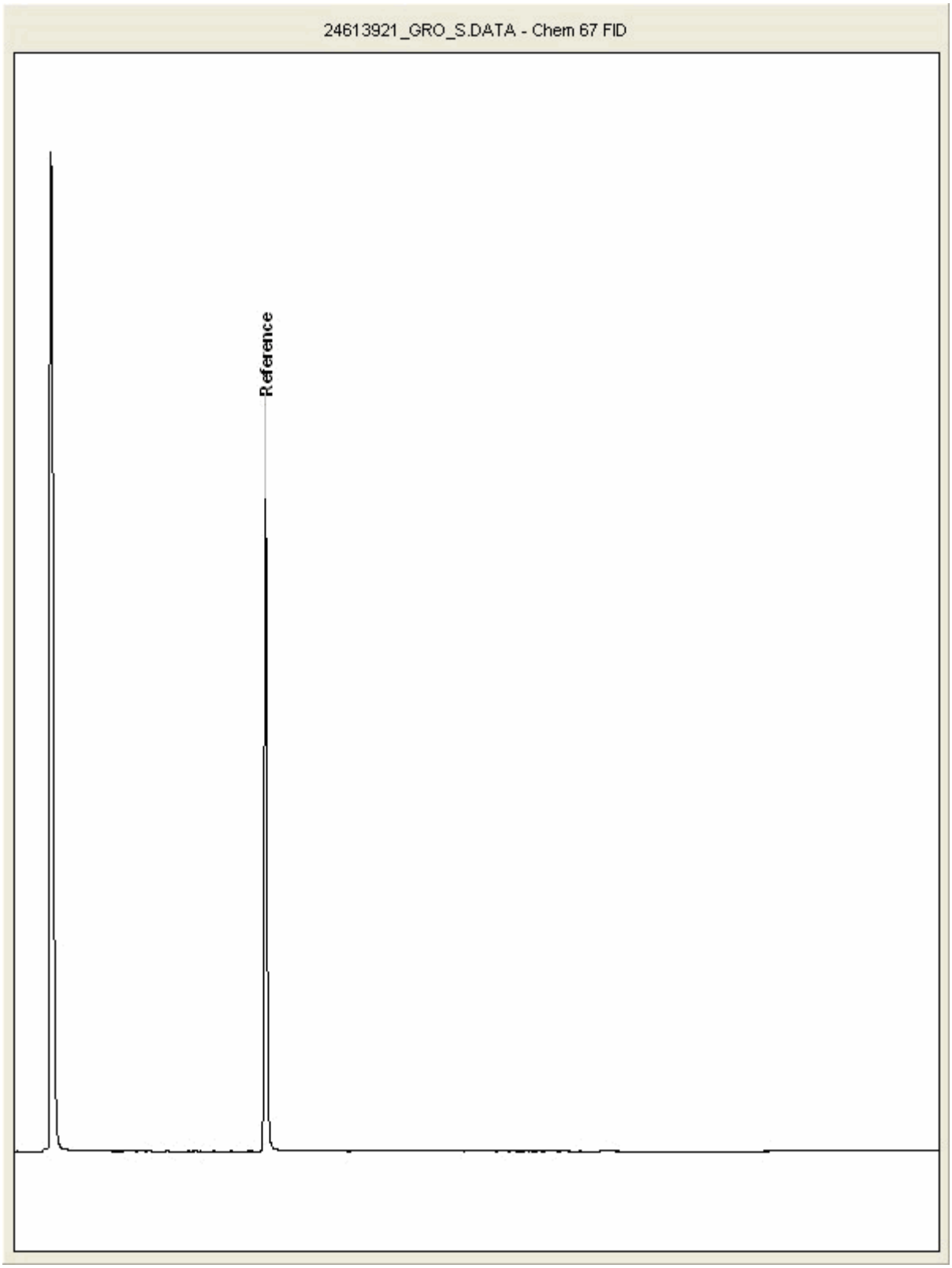


CERTIFICATE OF ANALYSIS

SDG:	210708-112	**Client Reference:**	784-B026948	**Report Number:**	605917
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S) **Sample No :** 24613921 **Depth :** 0.40 - 0.40
Sample ID : BH38



CERTIFICATE OF ANALYSIS

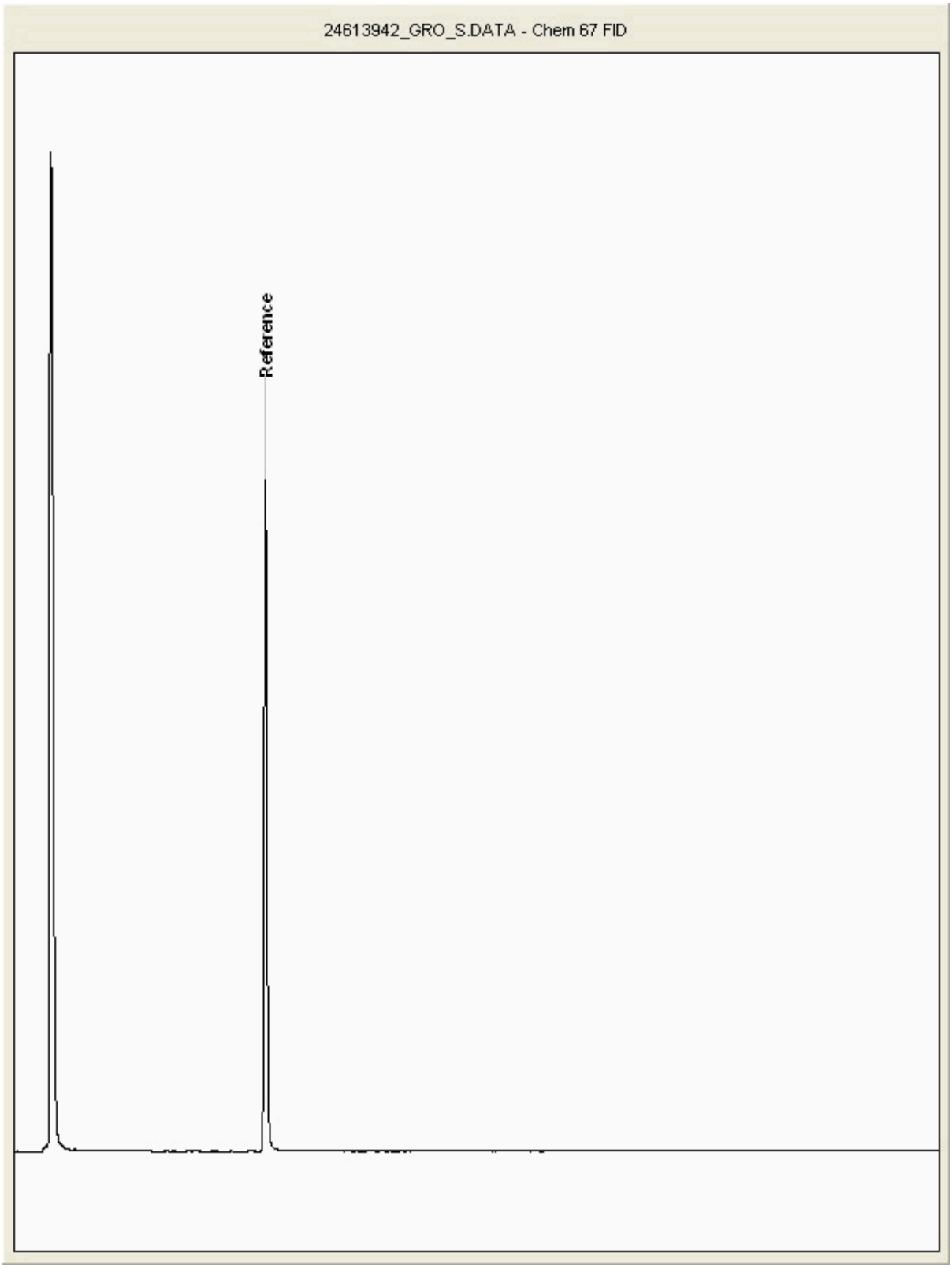
SDG:	210708-112	**Client Reference:**	784-B026948	**Report Number:**	605917
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 24613942
Sample ID : BH38

Depth : 5.70 - 5.80



Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	21 July 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210715-32
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	606585

We received 4 samples on Saturday July 10, 2021 and 1 of these samples were scheduled for analysis which was completed on Wednesday July 21, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.

Approved [redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210715-32	**Client Reference:**	784-B026948	**Report Number:**	606585
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24632542	BH05	ES1	0.10 - 0.20	09/07/2021
24632549	BH05	ES7	0.30 - 0.40	09/07/2021
24632556	BH05	ES4	0.50 - 0.60	09/07/2021
24632563	BH05	ES6	1.10 - 1.20	09/07/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	210715-32	**Client Reference:**	784-B026948	**Report Number:**	606585
Location:	A46 Newark Northern Bypa	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)		
			24632549		
			Customer Sample Reference		
			BH05		
			AGS Reference		
			ES7		
			Depth (m)		
			0.30 - 0.40		
			Container	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
			Sample Type	S	S	S
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 1			X	
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1		X		
Ammonium Soil by Titration	All	NDPs: 0 Tests: 1			X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 1			X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1		X		
Boron Water Soluble	All	NDPs: 0 Tests: 1			X	
CEN Readings	All	NDPs: 0 Tests: 1		X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2		X	X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1		X		
EPH	All	NDPs: 0 Tests: 1			X	
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 1			X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1				X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1			X	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1		X		

CERTIFICATE OF ANALYSIS

SDG:	210715-32	**Client Reference:**	784-B026948	**Report Number:**	606585
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24632549			
Customer Sample Reference			BH05			
AGS Reference			ES7			
Depth (m)			0.30 - 0.40			
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	
Mercury Dissolved	All	NDPs: 0 Tests: 1	X			
Metals in solid samples by OES	All	NDPs: 0 Tests: 1		X		
PAH by GCMS	All	NDPs: 0 Tests: 1		X		
pH	All	NDPs: 0 Tests: 1		X		
pH Value of Filtered Water	All	NDPs: 0 Tests: 1	X			
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1		X		
Sample description	All	NDPs: 0 Tests: 1		X		
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1		X		
Sulphide	All	NDPs: 0 Tests: 1	X			
Total Organic Carbon	All	NDPs: 0 Tests: 1		X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 1		X		
VOC MS (S)	All	NDPs: 0 Tests: 1			X	

CERTIFICATE OF ANALYSIS

SDG:	210715-32	**Client Reference:**	784-B026948	**Report Number:**	606585
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24632549	BH05	0.30 - 0.40	Dark Brown	N/A	Stones	Vegetation

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210715-32	**Client Reference:**	784-B026948	**Report Number:**	606585
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH05
Depth (m)	0.30 - 0.40
Sample Type	Soil/Solid (S)
Date Sampled	09/07/2021
Sampled Time	.
Date Received	10/07/2021
SDG Ref	210715-32
Lab Sample No.(s)	24632549
AGS Reference	ES7

Component	LOD/Units	Method	
Moisture Content Ratio (% of as received sample)	%	PM024	2.5
Exchangeable Ammonia as N	<12 mg/kg	TM024	30.8
Phenol	<0.01 mg/kg	TM062 (S)	<0.01
Cresols	<0.01 mg/kg	TM062 (S)	<0.01
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035
Soil Organic Matter (SOM)	<0.35 %	TM132	4.34
pH	1 pH Units	TM133	11.4
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6
Cyanide, Total	<1 mg/kg	TM153	<1
Arsenic	<0.6 mg/kg	TM181	0.84
Cadmium	<0.02 mg/kg	TM181	0.422
Chromium	<0.9 mg/kg	TM181	232
Copper	<1.4 mg/kg	TM181	14.3
Iron	<1000 mg/kg	TM181	21500
Lead	<0.7 mg/kg	TM181	83.5
Mercury	<0.1 mg/kg	TM181	<0.1
Nickel	<0.2 mg/kg	TM181	12.1
Selenium	<1 mg/kg	TM181	1.45
Vanadium	<0.2 mg/kg	TM181	177
Zinc	<1.9 mg/kg	TM181	70
Boron, water soluble	<1 mg/kg	TM222	<1
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0771
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248	4.27
EPH (C5-C40)	<35 mg/kg	TM415	676
EPH Surrogate % recovery**	%	TM415	127
EPH >C10-C40	<35 mg/kg	TM415	676

CERTIFICATE OF ANALYSIS

SDG:	210715-32	**Client Reference:**	784-B026948	**Report Number:**	606585
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH05
			Depth (m)	0.30 - 0.40
			Sample Type	Soil/Solid (S)
			Date Sampled	09/07/2021
			Sampled Time	.
			Date Received	10/07/2021
			SDG Ref	210715-32
			Lab Sample No.(s)	24632549
			AGS Reference	ES7
Naphthalene-d8 % recovery**	%	TM218		84
Acenaphthene-d10 % recovery**	%	TM218		87.6
Phenanthrene-d10 % recovery**	%	TM218		90.8
Chrysene-d12 % recovery**	%	TM218		83
Perylene-d12 % recovery**	%	TM218		84.3
Naphthalene	<0.009 mg/kg	TM218		<0.045
Acenaphthylene	<0.012 mg/kg	TM218		<0.06
Acenaphthene	<0.008 mg/kg	TM218		0.222
Fluorene	<0.01 mg/kg	TM218		0.186
Phenanthrene	<0.015 mg/kg	TM218		2.09
Anthracene	<0.016 mg/kg	TM218		0.717
Fluoranthene	<0.017 mg/kg	TM218		4.28
Pyrene	<0.015 mg/kg	TM218		3.79
Benz(a)anthracene	<0.014 mg/kg	TM218		1.7
Chrysene	<0.01 mg/kg	TM218		1.74
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		2.18
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		0.891
Benzo(a)pyrene	<0.015 mg/kg	TM218		2.41
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		1.84
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		0.316
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		1.79
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		24.2

CERTIFICATE OF ANALYSIS

SDG:	210715-32	**Client Reference:**	784-B026948	**Report Number:**	606585
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH05
Depth (m)	0.30 - 0.40
Sample Type	Soil/Solid (S)
Date Sampled	09/07/2021
Sampled Time	.
Date Received	10/07/2021
SDG Ref	210715-32
Lab Sample No.(s)	24632549
AGS Reference	ES7

Component	LOD/Units	Method	
Phenol	<0.1 mg/kg	TM157	<2
Pentachlorophenol	<0.1 mg/kg	TM157	<2
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157	<2
Nitrobenzene	<0.1 mg/kg	TM157	<2
Isophorone	<0.1 mg/kg	TM157	<2
Hexachloroethane	<0.1 mg/kg	TM157	<2
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157	<2
Hexachlorobutadiene	<0.1 mg/kg	TM157	<2
Hexachlorobenzene	<0.1 mg/kg	TM157	<2
n-Dioctyl phthalate	<0.1 mg/kg	TM157	<2
Dimethyl phthalate	<0.1 mg/kg	TM157	<2
Diethyl phthalate	<0.1 mg/kg	TM157	<2
n-Dibutyl phthalate	<0.1 mg/kg	TM157	<2
Dibenzofuran	<0.1 mg/kg	TM157	<2
Carbazole	<0.1 mg/kg	TM157	<2
Butylbenzyl phthalate	<0.1 mg/kg	TM157	<2
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157	<2
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157	<2
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157	<2
Azobenzene	<0.1 mg/kg	TM157	<2
4-Nitrophenol	<0.1 mg/kg	TM157	<2
4-Nitroaniline	<0.1 mg/kg	TM157	<2
4-Methylphenol	<0.1 mg/kg	TM157	<2
4-Chlorophenylphenylether	<0.1 mg/kg	TM157	<2
4-Chloroaniline	<0.1 mg/kg	TM157	<2
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157	<2
4-Bromophenylphenylether	<0.1 mg/kg	TM157	<2
3-Nitroaniline	<0.1 mg/kg	TM157	<2
2-Nitrophenol	<0.1 mg/kg	TM157	<2
2-Nitroaniline	<0.1 mg/kg	TM157	<2
2-Methylphenol	<0.1 mg/kg	TM157	<2
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157	<2

CERTIFICATE OF ANALYSIS

SDG:	210715-32	**Client Reference:**	784-B026948	**Report Number:**	606585
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	**LOD/Units**	**Method**	**Customer Sample Ref.** BH05 **Depth (m)** 0.30 - 0.40 **Sample Type** Soil/Solid (S) **Date Sampled** 09/07/2021 **Sampled Time** . **Date Received** 10/07/2021 **SDG Ref** 210715-32 **Lab Sample No.(s)** 24632549 **AGS Reference** ES7
2-Chlorophenol	<0.1 mg/kg	TM157	<2
2,6-Dinitrotoluene	<0.1 mg/kg	TM157	<2
2,4-Dinitrotoluene	<0.1 mg/kg	TM157	<2
2,4-Dimethylphenol	<0.1 mg/kg	TM157	<2
2,4-Dichlorophenol	<0.1 mg/kg	TM157	<2
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157	<2
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157	<2
1,4-Dichlorobenzene	<0.1 mg/kg	TM157	<2
1,3-Dichlorobenzene	<0.1 mg/kg	TM157	<2
1,2-Dichlorobenzene	<0.1 mg/kg	TM157	<2
2-Chloronaphthalene	<0.1 mg/kg	TM157	<2
2-Methylnaphthalene	<0.1 mg/kg	TM157	<2
Acenaphthylene	<0.1 mg/kg	TM157	<2
Acenaphthene	<0.1 mg/kg	TM157	<2
Anthracene	<0.1 mg/kg	TM157	<2
Benzo(a)anthracene	<0.1 mg/kg	TM157	2.58
Benzo(b)fluoranthene	<0.1 mg/kg	TM157	2.33
Benzo(k)fluoranthene	<0.1 mg/kg	TM157	3.02
Benzo(a)pyrene	<0.1 mg/kg	TM157	3.2
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157	3.03
Chrysene	<0.1 mg/kg	TM157	3.52
Fluoranthene	<0.1 mg/kg	TM157	5.28
Fluorene	<0.1 mg/kg	TM157	<2
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157	2.09
Phenanthrene	<0.1 mg/kg	TM157	<2
Pyrene	<0.1 mg/kg	TM157	5.37
Naphthalene	<0.1 mg/kg	TM157	<2
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157	<2
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157	<2

CERTIFICATE OF ANALYSIS

SDG:	210715-32	**Client Reference:**	784-B026948	**Report Number:**	606585
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref. BH05				
			Depth (m) 0.30 - 0.40				
			Sample Type Soil/Solid (S)				
			Date Sampled 09/07/2021				
			Sampled Time .				
			Date Received 10/07/2021				
			SDG Ref 210715-32				
			Lab Sample No.(s) 24632549				
			AGS Reference ES7				
GRO Surrogate % recovery**	%	TM089	69 4				
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01 4				
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01 4				
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01 4				
Aliphatics >C10-C12	<1 mg/kg	TM414	<1				
Aliphatics >C12-C16	<1 mg/kg	TM414	6.38				
Aliphatics >C16-C21	<1 mg/kg	TM414	17.5				
Aliphatics >C21-C35	<1 mg/kg	TM414	17.6				
Aliphatics >C35-C44	<1 mg/kg	TM414	8.07				
Total Aliphatics >C10-C44	<5 mg/kg	TM414	49.7				
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414	1310				
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01 4				
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01 4				
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	<0.01 4				
Aromatics > EC10-EC12	<1 mg/kg	TM414	<1				
Aromatics > EC12-EC16	<1 mg/kg	TM414	5.39				
Aromatics > EC16-EC21	<1 mg/kg	TM414	48.8				
Aromatics > EC21-EC35	<1 mg/kg	TM414	825				
Aromatics >EC35-EC44	<1 mg/kg	TM414	377				
Aromatics > EC40-EC44	<1 mg/kg	TM414	83.9				
Total Aromatics > EC10-EC44	<5 mg/kg	TM414	1260				
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414	1310				
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089	<0.05 4				
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089	<0.05 4				
GRO >C5-C10	<0.02 mg/kg	TM089	<0.02 4				

CERTIFICATE OF ANALYSIS

SDG:	210715-32	**Client Reference:**	784-B026948	**Report Number:**	606585
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref. BH05	Depth (m) 0.30 - 0.40	Sample Type Soil/Solid (S)	Date Sampled 09/07/2021	Sampled Time .	Date Received 10/07/2021	SDG Ref 210715-32	Lab Sample No.(s) 24632549	AGS Reference ES7
Dibromofluoromethane**	%	TM116	113								
Toluene-d8**	%	TM116	93.6								
4-Bromofluorobenzene**	%	TM116	87.8								
Dichlorodifluoromethane	<0.006 mg/kg	TM116	<0.12 #								
Chloromethane	<0.007 mg/kg	TM116	<0.14 #								
Vinyl Chloride	<0.006 mg/kg	TM116	<0.12 #								
Bromomethane	<0.01 mg/kg	TM116	<0.2 #								
Chloroethane	<0.01 mg/kg	TM116	<0.2 #								
Trichlorofluorormethane	<0.006 mg/kg	TM116	<0.12 #								
1,1-Dichloroethene	<0.01 mg/kg	TM116	<0.2 #								
Carbon Disulphide	<0.007 mg/kg	TM116	<0.14 #								
Dichloromethane	<0.01 mg/kg	TM116	<0.2 #								
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.2 #								
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116	<0.2 #								
1,1-Dichloroethane	<0.008 mg/kg	TM116	<0.16 #								
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116	<0.12 #								
2,2-Dichloropropane	<0.01 mg/kg	TM116	<0.2								
Bromochloromethane	<0.01 mg/kg	TM116	<0.2 #								
Chloroform	<0.008 mg/kg	TM116	<0.16 #								
1,1,1-Trichloroethane	<0.007 mg/kg	TM116	<0.14 #								
1,1-Dichloropropene	<0.01 mg/kg	TM116	<0.2 #								
Carbontetrachloride	<0.01 mg/kg	TM116	<0.2 #								
1,2-Dichloroethane	<0.005 mg/kg	TM116	<0.1 #								
Benzene	<0.009 mg/kg	TM116	<0.18 #								
Trichloroethene	<0.009 mg/kg	TM116	<0.18 #								
1,2-Dichloropropane	<0.01 mg/kg	TM116	<0.2 #								
Dibromomethane	<0.009 mg/kg	TM116	<0.18 #								
Bromodichloromethane	<0.007 mg/kg	TM116	<0.14 #								
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.2 #								
Toluene	<0.007 mg/kg	TM116	<0.14 #								
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.2								
1,1,2-Trichloroethane	<0.01 mg/kg	TM116	<0.2 #								

CERTIFICATE OF ANALYSIS

SDG:	210715-32	**Client Reference:**	784-B026948	**Report Number:**	606585
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH05
Depth (m)	0.30 - 0.40
Sample Type	Soil/Solid (S)
Date Sampled	09/07/2021
Sampled Time	.
Date Received	10/07/2021
SDG Ref	210715-32
Lab Sample No.(s)	24632549
AGS Reference	ES7

Component	LOD/Units	Method	
1,3-Dichloropropane	<0.007 mg/kg	TM116	<0.14 #
Tetrachloroethene	<0.005 mg/kg	TM116	<0.1 #
Dibromochloromethane	<0.01 mg/kg	TM116	<0.2 #
1,2-Dibromoethane	<0.01 mg/kg	TM116	<0.2 #
Chlorobenzene	<0.005 mg/kg	TM116	<0.1 #
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.2 #
Ethylbenzene	<0.004 mg/kg	TM116	<0.08 #
p/m-Xylene	<0.01 mg/kg	TM116	<0.2 #
o-Xylene	<0.01 mg/kg	TM116	<0.2 #
Styrene	<0.01 mg/kg	TM116	<0.2 #
Bromoform	<0.01 mg/kg	TM116	<0.2 #
Isopropylbenzene	<0.005 mg/kg	TM116	<0.1 #
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.2 #
1,2,3-Trichloropropane	<0.016 mg/kg	TM116	<0.32 #
Bromobenzene	<0.01 mg/kg	TM116	<0.2 #
Propylbenzene	<0.01 mg/kg	TM116	<0.2 #
2-Chlorotoluene	<0.009 mg/kg	TM116	<0.18 #
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116	<0.16 #
4-Chlorotoluene	<0.01 mg/kg	TM116	<0.2 #
tert-Butylbenzene	<0.014 mg/kg	TM116	<0.28 #
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116	<0.18 #
sec-Butylbenzene	<0.01 mg/kg	TM116	<0.2
4-Isopropyltoluene	<0.01 mg/kg	TM116	<0.2 #
1,3-Dichlorobenzene	<0.008 mg/kg	TM116	<0.16 #
1,4-Dichlorobenzene	<0.005 mg/kg	TM116	<0.1 #
n-Butylbenzene	<0.011 mg/kg	TM116	<0.22
1,2-Dichlorobenzene	<0.01 mg/kg	TM116	<0.2 #
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116	<0.28 #
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.2 #
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116	<0.4
Hexachlorobutadiene	<0.02 mg/kg	TM116	<0.4
Naphthalene	<0.013 mg/kg	TM116	<0.26 #

CERTIFICATE OF ANALYSIS

SDG:	210715-32	**Client Reference:**	784-B026948	**Report Number:**	606585
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref. BH05					
			Depth (m) 0.30 - 0.40					
			Sample Type Soil/Solid (S)					
			Date Sampled 09/07/2021					
			Sampled Time .					
			Date Received 10/07/2021					
			SDG Ref 210715-32					
			Lab Sample No.(s) 24632549					
			AGS Reference ES7					
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116	<0.4 #					
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116	<0.4					
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4					
Sum of BTEX	<0.04 mg/kg	TM116	<0.8					

CERTIFICATE OF ANALYSIS

SDG:	210715-32	**Client Reference:**	784-B026948	**Report Number:**	606585
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref.	BH05ES7 0.30 - 0.40	20.07.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	SOLID										
Sample Type	09/07/2021 00:00:00										
Date Sampled	10/07/2021 05:00:00										
Date Receieved	210715-32										
SDG	24632549										
Original Sample	TM048										
Method Number											

CERTIFICATE OF ANALYSIS

SDG:	210715-32	**Client Reference:**	784-B026948	**Report Number:**	606585
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.094	**Natural Moisture Content (%)**	4.23
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	95.9
Particle Size <4mm	>95%		

Case	
SDG	210715-32
Lab Sample Number(s)	24632549
Sampled Date	09-Jul-2021
Customer Sample Ref.	BH05 ES7
Depth (m)	0.30 - 0.40

Eluate Analysis	**C_2** Conc^n in 10:1 eluate (mg/l)		**A_2** 10:1 conc^n leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.00181	<0.0005	0.0181	<0.005	-	-	-
Boron	0.0627	<0.01	0.627	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.0031	<0.001	0.031	<0.01	-	-	-
Copper	0.00469	<0.0003	0.0469	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.13	<0.019	1.3	<0.19	-	-	-
Lead	0.00065	<0.0002	0.0065	<0.002	-	-	-
Nickel	0.000559	<0.0004	0.00559	<0.004	-	-	-
Selenium	0.00119	<0.001	0.0119	<0.01	-	-	-
Vanadium	0.00414	<0.001	0.0414	<0.01	-	-	-
Zinc	0.00699	<0.001	0.0699	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	15-Jul-2021
pH (pH Units)	8.05
Conductivity (µS/cm)	129.00
Temperature (°C)	22.10
Volume Leachant (Litres)	0.896

21/07/2021 17:29:32

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210715-32	**Client Reference:**	784-B026948	**Report Number:**	606585
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24632549
Customer Sample Ref.	BH05
AGS Ref.	ES7
Depth	0.30 - 0.40
Type	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	15-Jul-2021
Ammoniacal Nitrogen	21-Jul-2021
Ammonium Soil by Titration	19-Jul-2021
Anions by Kone (soil)	21-Jul-2021
Asbestos ID in Solid Samples	20-Jul-2021
Boron Water Soluble	19-Jul-2021
CEN 10:1 Leachate (1 Stage)	15-Jul-2021
CEN Readings	20-Jul-2021
Cyanide Comp/Free/Total/Thiocyanate	21-Jul-2021
Dissolved Metals by ICP-MS	20-Jul-2021
EPH	19-Jul-2021
EPH by GCxGC-FID	19-Jul-2021
EPH CWG GC (S)	20-Jul-2021
GRO by GC-FID (S)	16-Jul-2021
Hexavalent Chromium (s)	20-Jul-2021
Hexavalent Chromium (w)	20-Jul-2021
Mercury Dissolved	20-Jul-2021
Metals in solid samples by OES	19-Jul-2021
Moisture at 105C	15-Jul-2021
PAH by GCMS	16-Jul-2021
pH	19-Jul-2021
pH Value of Filtered Water	21-Jul-2021
Phenols by HPLC (S)	19-Jul-2021
Sample description	15-Jul-2021
Semi Volatile Organic Compounds	19-Jul-2021
Sulphide	21-Jul-2021
Total Organic Carbon	20-Jul-2021
TPH CWG GC (S)	20-Jul-2021
VOC MS (S)	18-Jul-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2456
Ammoniacal Nitrogen as N	TM099	**97.2** 88.02 : 104.70

Ammonium Soil by Titration

Component	Method Code	QC 2472
Exchangeable Ammonium as NH4	TM024	**88.56** 74.04 : 103.44

Boron Water Soluble

Component	Method Code	QC 2415
Water Soluble Boron	TM222	**105.5** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2447	QC 2466
Free Cyanide	TM153	**97.43** 78.00 : 114.00	
Free Cyanide (W)	TM227		**82.5** 90.67 : 122.67
Thiocyanate	TM153	**101.92** 93.33 : 110.53	
Thiocyanate (W)	TM227		**108.75** 92.25 : 117.75
Total Cyanide	TM153	**100.0** 77.13 : 111.53	
Total Cyanide (W)	TM227		**105.75** 88.75 : 111.25

Dissolved Metals by ICP-MS

Component	Method Code	QC 2494
Aluminium	TM152	**103.67** 94.21 : 111.52
Antimony	TM152	**104.67** 88.37 : 130.57
Arsenic	TM152	**102.83** 92.62 : 113.52
Barium	TM152	**103.5** 88.62 : 113.14

CERTIFICATE OF ANALYSIS

SDG:	210715-32	**Client Reference:**	784-B026948	**Report Number:**	606585
Location:	A46 Newark Northern Bypa	**Order Number:**	7001649	**Superseded Report:**	

Dissolved Metals by ICP-MS

		QC 2494
Beryllium	TM152	**105.33** 87.08 : 111.38
Bismuth	TM152	**102.83** 92.62 : 115.02
Boron	TM152	**103.67** 86.31 : 120.88
Cadmium	TM152	**102.0** 93.85 : 111.65
Calcium	TM152	**106.0** 89.20 : 126.91
Chromium	TM152	**100.0** 92.50 : 113.03
Cobalt	TM152	**100.17** 85.01 : 114.87
Copper	TM152	**99.83** 89.87 : 119.73
Iron	TM152	**102.0** 93.02 : 113.86
Lead	TM152	**102.33** 91.11 : 116.98
Lithium	TM152	**105.33** 87.70 : 115.90
Magnesium	TM152	**109.33** 89.60 : 116.61
Manganese	TM152	**102.5** 93.97 : 112.46
Molybdenum	TM152	**96.5** 89.07 : 110.96
Nickel	TM152	**100.67** 93.70 : 112.15
Phosphorus	TM152	**108.67** 89.24 : 114.18
Potassium	TM152	**107.33** 93.20 : 115.55
Selenium	TM152	**104.17** 91.69 : 117.12
Silver	TM152	**95.5** 90.93 : 121.73
Sodium	TM152	**108.67** 92.42 : 113.24
Strontium	TM152	**103.67** 92.14 : 116.24
Tellurium	TM152	**99.5** 89.88 : 111.78
Thallium	TM152	**103.83** 82.43 : 113.83
Tin	TM152	**102.83** 94.62 : 107.79
Titanium	TM152	**104.17** 90.29 : 115.23
Tungsten	TM152	**102.0** 77.61 : 132.31
Uranium	TM152	**98.83** 86.97 : 115.76

Dissolved Metals by ICP-MS

		QC 2494
Vanadium	TM152	**101.83** 89.61 : 115.48
Zinc	TM152	**102.67** 87.51 : 116.26

EPH CWG GC (S)

Component	Method Code	QC 2475
EPH >C8-C40 Raw	TM414	**92.8** 70.16 : 114.99
Total Aliphatics Raw	TM414	**98.25** 68.59 : 115.04
Total Aromatics Raw	TM414	**106.1** 69.80 : 126.50

GRO by GC-FID (S)

Component	Method Code	QC 2403
QC	TM089	**87.54** 72.28 : 114.54

Hexavalent Chromium (s)

Component	Method Code	QC 2411
Hexavalent Chromium	TM151	**100.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2454
Hexavalent Chromium	TM241	**100.0** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2414
Mercury Dissolved (CVAF)	TM183	**101.0** 0.00 : 0.00

Metals in solid samples by OES

CERTIFICATE OF ANALYSIS

SDG:	210715-32	**Client Reference:**	784-B026948	**Report Number:**	606585
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Metals in solid samples by OES

Component	Method Code	QC 2403
Aluminium	TM181	**115.79** 87.31 : 119.03
Antimony	TM181	**106.69** 91.44 : 127.13
Arsenic	TM181	**103.04** 88.32 : 120.05
Barium	TM181	**114.87** 94.57 : 124.93
Beryllium	TM181	**107.58** 85.72 : 122.69
Boron	TM181	**118.65** 85.66 : 120.25
Cadmium	TM181	**100.37** 87.31 : 121.62
Chromium	TM181	**100.0** 85.06 : 113.81
Cobalt	TM181	**100.73** 92.91 : 111.38
Copper	TM181	**95.94** 81.22 : 113.40
Iron	TM181	**111.01** 86.44 : 122.27
Lead	TM181	**104.7** 86.83 : 123.12
Manganese	TM181	**103.09** 89.22 : 121.75
Mercury	TM181	**98.7** 84.95 : 119.42
Molybdenum	TM181	**107.74** 85.98 : 123.80
Nickel	TM181	**102.67** 88.05 : 119.19
Phosphorus	TM181	**102.39** 90.13 : 121.54
Selenium	TM181	**99.63** 88.10 : 117.92
Strontium	TM181	**94.41** 79.10 : 111.59
Thallium	TM181	**102.68** 84.67 : 122.64
Tin	TM181	**104.45** 86.96 : 122.18
Titanium	TM181	**120.91** 84.66 : 112.24
Vanadium	TM181	**102.52** 84.00 : 115.50
Zinc	TM181	**105.87** 85.62 : 122.35

PAH by GCMS

PAH by GCMS

Component	Method Code	QC 2454
Acenaphthene	TM218	**100.0** 73.47 : 109.80
Acenaphthylene	TM218	**100.0** 70.00 : 130.00
Anthracene	TM218	**98.0** 68.68 : 111.89
Benz(a)anthracene	TM218	**88.5** 68.12 : 118.39
Benzo(a)pyrene	TM218	**97.0** 71.72 : 115.31
Benzo(b)fluoranthene	TM218	**92.0** 66.89 : 120.40
Benzo(ghi)perylene	TM218	**97.5** 67.82 : 118.49
Benzo(k)fluoranthene	TM218	**99.0** 73.10 : 117.03
Chrysene	TM218	**90.0** 69.58 : 115.47
Dibenzo(ah)anthracene	TM218	**95.5** 67.32 : 121.35
Fluoranthene	TM218	**87.0** 75.16 : 117.28
Fluorene	TM218	**100.0** 73.81 : 108.66
Indeno(123cd)pyrene	TM218	**88.0** 68.91 : 117.62
Naphthalene	TM218	**95.5** 72.12 : 106.18
Phenanthrene	TM218	**98.0** 69.01 : 113.72
Pyrene	TM218	**92.0** 64.28 : 115.75

pH

Component	Method Code	QC 2453
pH	TM133	**99.85** 98.09 : 101.62

pH Value of Filtered Water

Component	Method Code	QC 2421
pH	TM256	**100.8** 99.33 : 102.54

Phenols by HPLC (S)

Phenols by HPLC (S)

Component	Method Code	QC 2435
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**46.1** 70.71 : 116.42
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**39.18** 64.54 : 117.79
Cresols by HPLC (S)	TM062 (S)	**43.01** 74.40 : 108.98
Phenol by HPLC (S)	TM062 (S)	**44.37** 69.44 : 122.18
Xylenols by HPLC (S)	TM062 (S)	**43.54** 76.56 : 106.38

Semi Volatile Organic Compounds

Component	Method Code	QC 2454
4-Bromophenylphenylether (Soil)	TM157	**87.5** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**89.5** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**93.5** 68.25 : 126.75
Naphthalene (Soil)	TM157	**92.5** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**86.0** 66.50 : 123.50
Phenol (Soil)	TM157	**94.5** 69.92 : 114.02

Sulphide

Component	Method Code	QC 2479
Sulphide	TM101	**97.33** 88.90 : 112.50

Total Organic Carbon

Component	Method Code	QC 2457
Total Organic Carbon	TM132	**93.36** 84.82 : 117.61

VOC MS (S)

Component	Method Code	QC 2466
1,1,1,2-tetrachloroethane	TM116	**101.6** 84.84 : 116.25
1,1,1-Trichloroethane	TM116	**99.8** 73.73 : 118.05
1,1,2-Trichloroethane	TM116	**97.0** 77.12 : 116.04

VOC MS (S)

		QC 2466
1,1-Dichloroethane	TM116	**106.4** 74.46 : 129.15
1,2-Dichloroethane	TM116	**112.8** 92.38 : 131.65
1,4-Dichlorobenzene	TM116	**105.8** 83.64 : 126.18
2-Chlorotoluene	TM116	**98.4** 76.03 : 113.25
4-Chlorotoluene	TM116	**89.8** 66.90 : 112.46
Benzene	TM116	**100.0** 88.60 : 113.80
Carbon Disulphide	TM116	**98.6** 74.91 : 122.14
Carbontetrachloride	TM116	**107.0** 80.31 : 124.50
Chlorobenzene	TM116	**99.2** 83.81 : 114.18
Chloroform	TM116	**108.2** 87.40 : 122.49
Chloromethane	TM116	**117.8** 63.11 : 124.36
Cis-1,2-Dichloroethene	TM116	**99.4** 80.67 : 126.72
Dibromomethane	TM116	**96.4** 73.23 : 118.35
Dichloromethane	TM116	**111.8** 81.11 : 133.25
Ethylbenzene	TM116	**94.4** 75.92 : 110.41
Hexachlorobutadiene	TM116	**88.4** 12.82 : 152.73
Isopropylbenzene	TM116	**89.0** 54.30 : 105.91
Naphthalene	TM116	**109.4** 80.86 : 128.81
o-Xylene	TM116	**88.8** 69.99 : 108.74
p/m-Xylene	TM116	**90.3** 68.32 : 108.91
Sec-Butylbenzene	TM116	**94.8** 38.50 : 101.50
Tetrachloroethene	TM116	**105.0** 76.95 : 121.02
Toluene	TM116	**90.0** 74.24 : 107.42
Trichloroethene	TM116	**96.6** 85.28 : 109.36
Trichlorofluoromethane	TM116	**111.0** 81.46 : 120.52
Vinyl Chloride	TM116	**117.6** 68.02 : 143.37

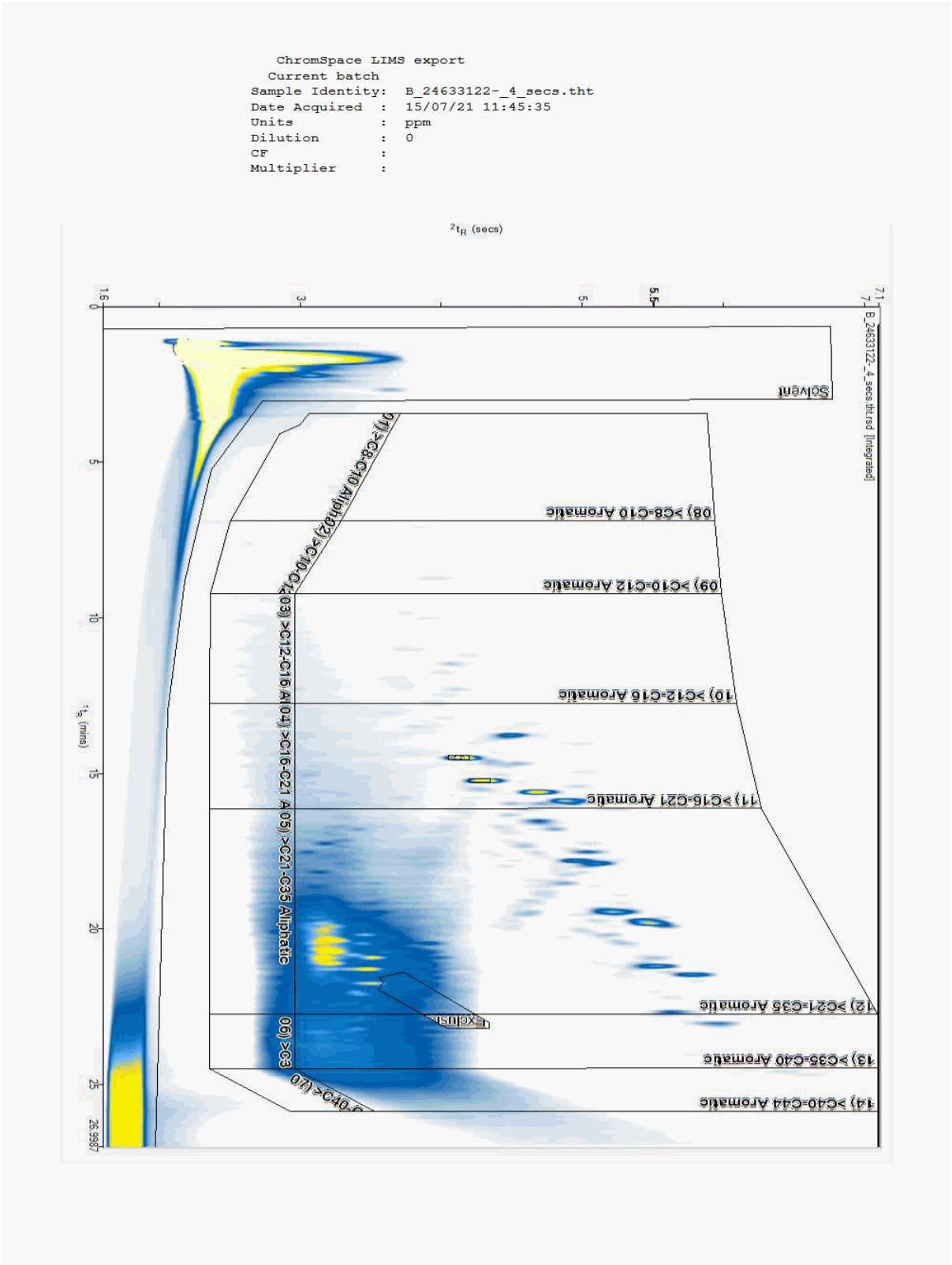
The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

SDG:	210715-32	**Client Reference:**	784-B026948	**Report Number:**	606585
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 24633122 **Depth :** 0.30 - 0.40
Sample ID : BH05



CERTIFICATE OF ANALYSIS

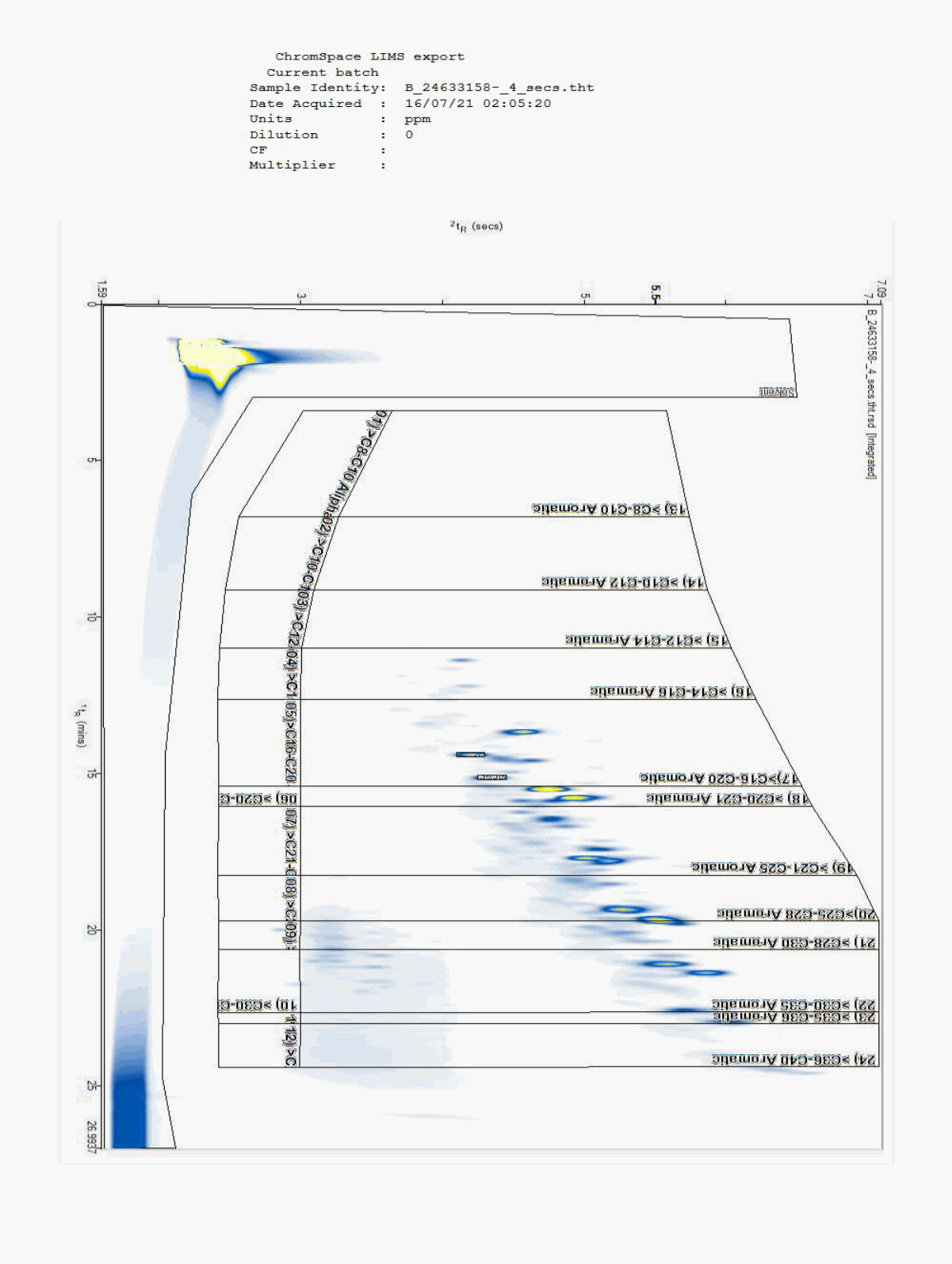
SDG:	210715-32	**Client Reference:**	784-B026948	**Report Number:**	606585
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 24633158
Sample ID : BH05

Depth : 0.30 - 0.40



CERTIFICATE OF ANALYSIS

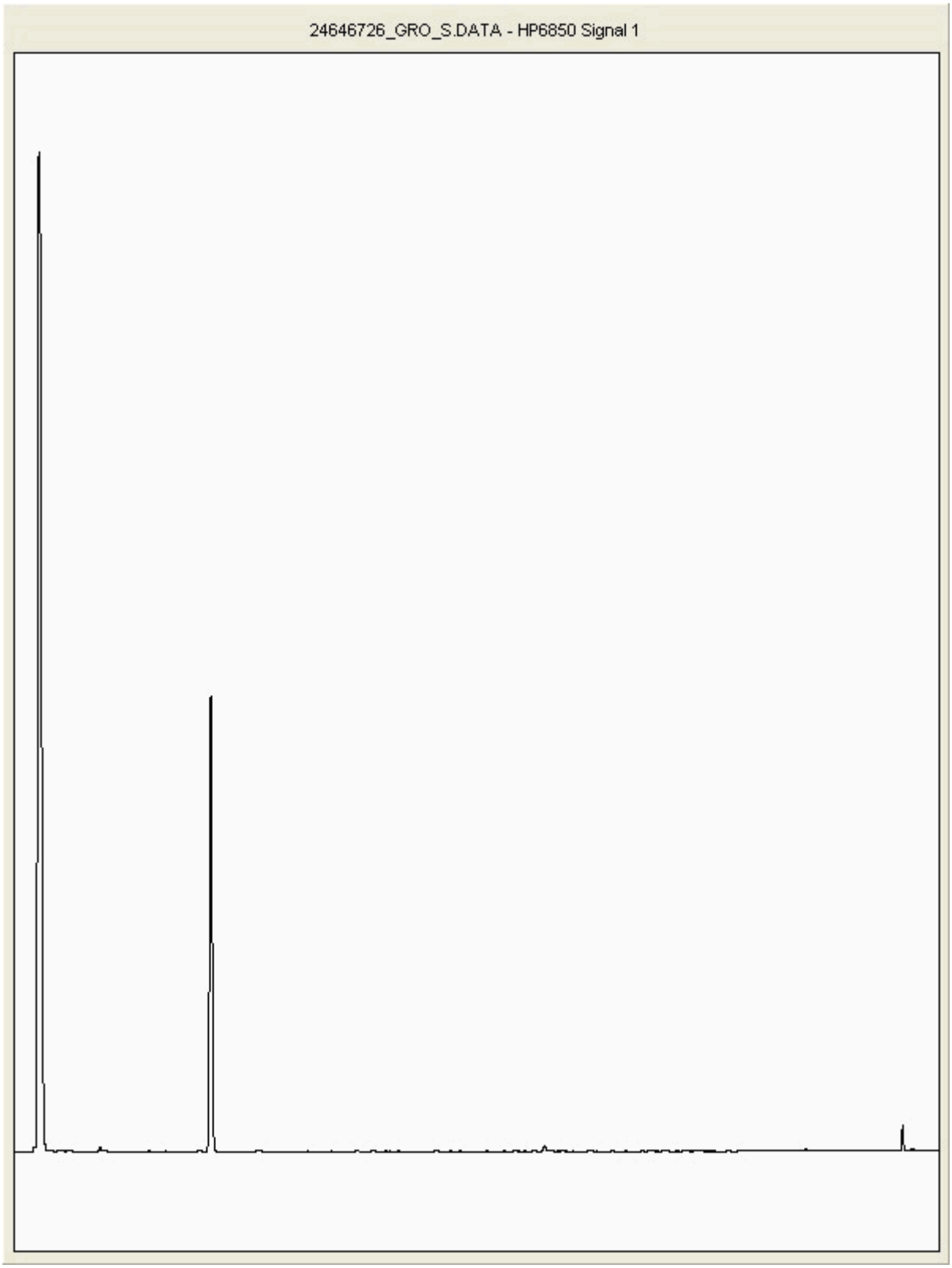
SDG:	210715-32	**Client Reference:**	784-B026948	**Report Number:**	606585
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 24646726
Sample ID : BH05

Depth : 0.30 - 0.40



Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	21 July 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210715-33
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	606565

We received 2 samples on Tuesday July 13, 2021 and 1 of these samples were scheduled for analysis which was completed on Wednesday July 21, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved B[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210715-33	**Client Reference:**	784-B026948	**Report Number:**	606565
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24632571	BH05	ES14	2.00 - 2.10	12/07/2021
24632578	BH05	ES17	3.00 - 3.10	12/07/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	210715-33	**Client Reference:**	784-B026948	**Report Number:**	606565
Location:	A46 Newark Northern Bypa	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	24632578		
			Customer Sample Reference	BH05		
			AGS Reference	ES17		
			Depth (m)	3.00 - 3.10		
			Container	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
			Sample Type	S	S	S
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 1			X	
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1		X		
Ammonium Soil by Titration	All	NDPs: 0 Tests: 1			X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 1			X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1		X		
Boron Water Soluble	All	NDPs: 0 Tests: 1			X	
CEN Readings	All	NDPs: 0 Tests: 1		X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2		X	X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1		X		
EPH	All	NDPs: 0 Tests: 1			X	
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1			X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 1			X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1				X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1			X	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1		X		

Validated

CERTIFICATE OF ANALYSIS

SDG:	210715-33	**Client Reference:**	784-B026948	**Report Number:**	606565
Location:	A46 Newark Northern Bypa	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	24632578		
			Customer Sample Reference	BH05		
			AGS Reference	ES17		
			Depth (m)	3.00 - 3.10		
			Container	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)
			Sample Type	S	S	S
Mercury Dissolved	All	NDPs: 0 Tests: 1		X		
Metals in solid samples by OES	All	NDPs: 0 Tests: 1			X	
PAH by GCMS	All	NDPs: 0 Tests: 1			X	
pH	All	NDPs: 0 Tests: 1			X	
pH Value of Filtered Water	All	NDPs: 0 Tests: 1		X		
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1			X	
Sample description	All	NDPs: 0 Tests: 1			X	
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1			X	
Sulphide	All	NDPs: 0 Tests: 1		X		
Total Organic Carbon	All	NDPs: 0 Tests: 1			X	
TPH CWG GC (S)	All	NDPs: 0 Tests: 1			X	
VOC MS (S)	All	NDPs: 0 Tests: 1				X

CERTIFICATE OF ANALYSIS

SDG:	210715-33	**Client Reference:**	784-B026948	**Report Number:**	606565
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24632578	BH05	3.00 - 3.10	Dark Brown	Loamy Sand	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210715-33	**Client Reference:**	784-B026948	**Report Number:**	606565
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref. BH05					
			Depth (m) 3.00 - 3.10					
			Sample Type Soil/Solid (S)					
			Date Sampled 12/07/2021					
			Sampled Time .					
			Date Received 13/07/2021					
			SDG Ref 210715-33					
			Lab Sample No.(s) 24632578					
			AGS Reference ES17					
Moisture Content Ratio (% of as received sample)	%	PM024	15					
Exchangeable Ammonia as N	<12 mg/kg	TM024	14.4 M					
Phenol	<0.01 mg/kg	TM062 (S)	<0.01 M					
Cresols	<0.01 mg/kg	TM062 (S)	<0.01 M					
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015 M					
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035 M					
Soil Organic Matter (SOM)	<0.35 %	TM132	0.698 #					
pH	1 pH Units	TM133	7.26 M					
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #					
Cyanide, Total	<1 mg/kg	TM153	<1 M					
Arsenic	<0.6 mg/kg	TM181	11.4 M					
Cadmium	<0.02 mg/kg	TM181	1.5 M					
Chromium	<0.9 mg/kg	TM181	14.2 M					
Copper	<1.4 mg/kg	TM181	16.2 M					
Iron	<1000 mg/kg	TM181	31900 #					
Lead	<0.7 mg/kg	TM181	56.8 M					
Mercury	<0.1 mg/kg	TM181	0.116 M					
Nickel	<0.2 mg/kg	TM181	31.5 M					
Selenium	<1 mg/kg	TM181	<1 #					
Vanadium	<0.2 mg/kg	TM181	36.9 #					
Zinc	<1.9 mg/kg	TM181	195 M					
Boron, water soluble	<1 mg/kg	TM222	<1 M					
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	0.0331 M					
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248	4.28					
EPH (C5-C40)	<35 mg/kg	TM415	<35					
EPH Surrogate % recovery**	%	TM415	102					
EPH >C10-C40	<35 mg/kg	TM415	<35 M					

CERTIFICATE OF ANALYSIS

SDG:	210715-33	**Client Reference:**	784-B026948	**Report Number:**	606565
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH05
Depth (m)	3.00 - 3.10
Sample Type	Soil/Solid (S)
Date Sampled	12/07/2021
Sampled Time	.
Date Received	13/07/2021
SDG Ref	210715-33
Lab Sample No.(s)	24632578
AGS Reference	ES17

Component	LOD/Units	Method						
Naphthalene-d8 % recovery**	%	TM218	88.4					
Acenaphthene-d10 % recovery**	%	TM218	87.8					
Phenanthrene-d10 % recovery**	%	TM218	87.8					
Chrysene-d12 % recovery**	%	TM218	83.4					
Perylene-d12 % recovery**	%	TM218	83.8					
Naphthalene	<0.009 mg/kg	TM218	<0.009 M					
Acenaphthylene	<0.012 mg/kg	TM218	<0.012 M					
Acenaphthene	<0.008 mg/kg	TM218	0.0114 M					
Fluorene	<0.01 mg/kg	TM218	<0.01 M					
Phenanthrene	<0.015 mg/kg	TM218	0.0487 M					
Anthracene	<0.016 mg/kg	TM218	<0.016 M					
Fluoranthene	<0.017 mg/kg	TM218	0.0898 M					
Pyrene	<0.015 mg/kg	TM218	0.0813 M					
Benz(a)anthracene	<0.014 mg/kg	TM218	0.0383 M					
Chrysene	<0.01 mg/kg	TM218	0.0409 M					
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	0.0263 M					
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	<0.014 M					
Benzo(a)pyrene	<0.015 mg/kg	TM218	0.0325 M					
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	0.0266 M					
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	<0.023 M					
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	<0.024 M					
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	0.396					

CERTIFICATE OF ANALYSIS

SDG:	210715-33	**Client Reference:**	784-B026948	**Report Number:**	606565
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH05
Depth (m)	3.00 - 3.10
Sample Type	Soil/Solid (S)
Date Sampled	12/07/2021
Sampled Time	.
Date Received	13/07/2021
SDG Ref	210715-33
Lab Sample No.(s)	24632578
AGS Reference	ES17

Component	LOD/Units	Method	
Phenol	<0.1 mg/kg	TM157	<0.1
Pentachlorophenol	<0.1 mg/kg	TM157	<0.1
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157	<0.1
Nitrobenzene	<0.1 mg/kg	TM157	<0.1
Isophorone	<0.1 mg/kg	TM157	<0.1
Hexachloroethane	<0.1 mg/kg	TM157	<0.1
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157	<0.1
Hexachlorobutadiene	<0.1 mg/kg	TM157	<0.1
Hexachlorobenzene	<0.1 mg/kg	TM157	<0.1
n-Dioctyl phthalate	<0.1 mg/kg	TM157	<0.1
Dimethyl phthalate	<0.1 mg/kg	TM157	<0.1
Diethyl phthalate	<0.1 mg/kg	TM157	<0.1
n-Dibutyl phthalate	<0.1 mg/kg	TM157	<0.1
Dibenzofuran	<0.1 mg/kg	TM157	<0.1
Carbazole	<0.1 mg/kg	TM157	<0.1
Butylbenzyl phthalate	<0.1 mg/kg	TM157	<0.1
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157	<0.1
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157	<0.1
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157	<0.1
Azobenzene	<0.1 mg/kg	TM157	<0.1
4-Nitrophenol	<0.1 mg/kg	TM157	<0.1
4-Nitroaniline	<0.1 mg/kg	TM157	<0.1
4-Methylphenol	<0.1 mg/kg	TM157	<0.1
4-Chlorophenylphenylether	<0.1 mg/kg	TM157	<0.1
4-Chloroaniline	<0.1 mg/kg	TM157	<0.1
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157	<0.1
4-Bromophenylphenylether	<0.1 mg/kg	TM157	<0.1
3-Nitroaniline	<0.1 mg/kg	TM157	<0.1
2-Nitrophenol	<0.1 mg/kg	TM157	<0.1
2-Nitroaniline	<0.1 mg/kg	TM157	<0.1
2-Methylphenol	<0.1 mg/kg	TM157	<0.1
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157	<0.1

CERTIFICATE OF ANALYSIS

SDG:	210715-33	**Client Reference:**	784-B026948	**Report Number:**	606565
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.			BH05					
Depth (m)			3.00 - 3.10					
Sample Type			Soil/Solid (S)					
Date Sampled			12/07/2021					
Sampled Time			.					
Date Received			13/07/2021					
SDG Ref			210715-33					
Lab Sample No.(s)			24632578					
AGS Reference			ES17					
Component	**LOD/Units**	**Method**						
2-Chlorophenol	<0.1 mg/kg	TM157	<0.1					
2,6-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1					
2,4-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1					
2,4-Dimethylphenol	<0.1 mg/kg	TM157	<0.1					
2,4-Dichlorophenol	<0.1 mg/kg	TM157	<0.1					
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157	<0.1					
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157	<0.1					
1,4-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1					
1,3-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1					
1,2-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1					
2-Chloronaphthalene	<0.1 mg/kg	TM157	<0.1					
2-Methylnaphthalene	<0.1 mg/kg	TM157	<0.1					
Acenaphthylene	<0.1 mg/kg	TM157	<0.1					
Acenaphthene	<0.1 mg/kg	TM157	<0.1					
Anthracene	<0.1 mg/kg	TM157	<0.1					
Benzo(a)anthracene	<0.1 mg/kg	TM157	<0.1					
Benzo(b)fluoranthene	<0.1 mg/kg	TM157	<0.1					
Benzo(k)fluoranthene	<0.1 mg/kg	TM157	<0.1					
Benzo(a)pyrene	<0.1 mg/kg	TM157	<0.1					
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157	<0.1					
Chrysene	<0.1 mg/kg	TM157	<0.1					
Fluoranthene	<0.1 mg/kg	TM157	<0.1					
Fluorene	<0.1 mg/kg	TM157	<0.1					
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157	<0.1					
Phenanthrene	<0.1 mg/kg	TM157	<0.1					
Pyrene	<0.1 mg/kg	TM157	<0.1					
Naphthalene	<0.1 mg/kg	TM157	<0.1					
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157	<0.1					
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157	<0.1					

CERTIFICATE OF ANALYSIS

SDG:	210715-33	**Client Reference:**	784-B026948	**Report Number:**	606565
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref. BH05				
			Depth (m) 3.00 - 3.10				
			Sample Type Soil/Solid (S)				
			Date Sampled 12/07/2021				
			Sampled Time .				
			Date Received 13/07/2021				
			SDG Ref 210715-33				
			Lab Sample No.(s) 24632578				
			AGS Reference ES17				
GRO Surrogate % recovery**	%	TM089	122				
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01				
Aliphatics >C6-C8	<0.01 mg/kg	TM089	0.0248				
Aliphatics >C8-C10	<0.01 mg/kg	TM089	0.0295				
Aliphatics >C10-C12	<1 mg/kg	TM414	<1 #				
Aliphatics >C12-C16	<1 mg/kg	TM414	<1 #				
Aliphatics >C16-C21	<1 mg/kg	TM414	<1 #				
Aliphatics >C21-C35	<1 mg/kg	TM414	2.34 #				
Aliphatics >C35-C44	<1 mg/kg	TM414	<1				
Total Aliphatics >C10-C44	<5 mg/kg	TM414	<5				
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414	<10				
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01				
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01				
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	0.0201				
Aromatics > EC10-EC12	<1 mg/kg	TM414	<1 #				
Aromatics > EC12-EC16	<1 mg/kg	TM414	<1 #				
Aromatics > EC16-EC21	<1 mg/kg	TM414	<1 #				
Aromatics > EC21-EC35	<1 mg/kg	TM414	<1 #				
Aromatics >EC35-EC44	<1 mg/kg	TM414	<1				
Aromatics > EC40-EC44	<1 mg/kg	TM414	<1				
Total Aromatics > EC10-EC44	<5 mg/kg	TM414	<5				
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414	<10				
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089	0.0543				
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089	<0.05				
GRO >C5-C10	<0.02 mg/kg	TM089	0.0543				

CERTIFICATE OF ANALYSIS

SDG:	210715-33	**Client Reference:**	784-B026948	**Report Number:**	606565
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH05
Depth (m)	3.00 - 3.10
Sample Type	Soil/Solid (S)
Date Sampled	12/07/2021
Sampled Time	.
Date Received	13/07/2021
SDG Ref	210715-33
Lab Sample No.(s)	24632578
AGS Reference	ES17

Component	LOD/Units	Method	
Dibromofluoromethane**	%	TM116	108
Toluene-d8**	%	TM116	99.9
4-Bromofluorobenzene**	%	TM116	101
Dichlorodifluoromethane	<0.006 mg/kg	TM116	<0.12 M
Chloromethane	<0.007 mg/kg	TM116	<0.14 #
Vinyl Chloride	<0.006 mg/kg	TM116	<0.12 M
Bromomethane	<0.01 mg/kg	TM116	<0.2 M
Chloroethane	<0.01 mg/kg	TM116	<0.2 M
Trichlorofluorormethane	<0.006 mg/kg	TM116	<0.12 M
1,1-Dichloroethene	<0.01 mg/kg	TM116	<0.2 #
Carbon Disulphide	<0.007 mg/kg	TM116	<0.14 M
Dichloromethane	<0.01 mg/kg	TM116	<0.2 #
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.2 M
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116	<0.2 M
1,1-Dichloroethane	<0.008 mg/kg	TM116	<0.16 M
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116	<0.12 M
2,2-Dichloropropane	<0.01 mg/kg	TM116	<0.2
Bromochloromethane	<0.01 mg/kg	TM116	<0.2 M
Chloroform	<0.008 mg/kg	TM116	<0.16 M
1,1,1-Trichloroethane	<0.007 mg/kg	TM116	<0.14 M
1,1-Dichloropropene	<0.01 mg/kg	TM116	<0.2 M
Carbontetrachloride	<0.01 mg/kg	TM116	<0.2 M
1,2-Dichloroethane	<0.005 mg/kg	TM116	<0.1 M
Benzene	<0.009 mg/kg	TM116	<0.18 M
Trichloroethene	<0.009 mg/kg	TM116	<0.18 #
1,2-Dichloropropane	<0.01 mg/kg	TM116	<0.2 M
Dibromomethane	<0.009 mg/kg	TM116	<0.18 M
Bromodichloromethane	<0.007 mg/kg	TM116	<0.14 M
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.2 M
Toluene	<0.007 mg/kg	TM116	<0.14 M
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.2
1,1,2-Trichloroethane	<0.01 mg/kg	TM116	<0.2 M

CERTIFICATE OF ANALYSIS

SDG:	210715-33	**Client Reference:**	784-B026948	**Report Number:**	606565
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref. BH05 Depth (m) 3.00 - 3.10 Sample Type Soil/Solid (S) Date Sampled 12/07/2021 Sampled Time . Date Received 13/07/2021 SDG Ref 210715-33 Lab Sample No.(s) 24632578 AGS Reference ES17				
1,3-Dichloropropane	<0.007 mg/kg	TM116	<0.14 M				
Tetrachloroethene	<0.005 mg/kg	TM116	<0.1 M				
Dibromochloromethane	<0.01 mg/kg	TM116	<0.2 M				
1,2-Dibromoethane	<0.01 mg/kg	TM116	<0.2 M				
Chlorobenzene	<0.005 mg/kg	TM116	<0.1 M				
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.2 M				
Ethylbenzene	<0.004 mg/kg	TM116	<0.08 M				
p/m-Xylene	<0.01 mg/kg	TM116	<0.2 #				
o-Xylene	<0.01 mg/kg	TM116	<0.2 M				
Styrene	<0.01 mg/kg	TM116	<0.2 #				
Bromoform	<0.01 mg/kg	TM116	<0.2 M				
Isopropylbenzene	<0.005 mg/kg	TM116	<0.1 #				
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.2 #				
1,2,3-Trichloropropane	<0.016 mg/kg	TM116	<0.32 M				
Bromobenzene	<0.01 mg/kg	TM116	<0.2 M				
Propylbenzene	<0.01 mg/kg	TM116	<0.2 M				
2-Chlorotoluene	<0.009 mg/kg	TM116	<0.18 M				
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116	<0.16 M				
4-Chlorotoluene	<0.01 mg/kg	TM116	<0.2 M				
tert-Butylbenzene	<0.014 mg/kg	TM116	<0.28 M				
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116	<0.18 #				
sec-Butylbenzene	<0.01 mg/kg	TM116	<0.2				
4-Isopropyltoluene	<0.01 mg/kg	TM116	<0.2 M				
1,3-Dichlorobenzene	<0.008 mg/kg	TM116	<0.16 M				
1,4-Dichlorobenzene	<0.005 mg/kg	TM116	<0.1 M				
n-Butylbenzene	<0.011 mg/kg	TM116	<0.22				
1,2-Dichlorobenzene	<0.01 mg/kg	TM116	<0.2 M				
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116	<0.28 M				
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.2 #				
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116	<0.4				
Hexachlorobutadiene	<0.02 mg/kg	TM116	<0.4				
Naphthalene	<0.013 mg/kg	TM116	<0.26 M				

CERTIFICATE OF ANALYSIS

SDG:	210715-33	**Client Reference:**	784-B026948	**Report Number:**	606565
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref. BH05				
			Depth (m) 3.00 - 3.10				
			Sample Type Soil/Solid (S)				
			Date Sampled 12/07/2021				
			Sampled Time .				
			Date Received 13/07/2021				
			SDG Ref 210715-33				
			Lab Sample No.(s) 24632578				
			AGS Reference ES17				
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116	<0.4 #				
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116	<0.4				
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4				
Sum of BTEX	<0.04 mg/kg	TM116	<0.8				

CERTIFICATE OF ANALYSIS

SDG:	210715-33	**Client Reference:**	784-B026948	**Report Number:**	606565
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref.	BH05ES17 3.00 - 3.10	20.07.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	SOLID										
Sample Type	12/07/2021 00:00:00										
Date Sampled	13/07/2021 05:00:00										
Date Receieved	210715-33										
SDG	24632578										
Original Sample	TM048										
Method Number											

CERTIFICATE OF ANALYSIS

SDG:	210715-33	**Client Reference:**	784-B026948	**Report Number:**	606565
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.106	**Natural Moisture Content (%)**	17.1
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	85.4
Particle Size <4mm	>95%		

Case	
SDG	210715-33
Lab Sample Number(s)	24632578
Sampled Date	12-Jul-2021
Customer Sample Ref.	BH05 ES17
Depth (m)	3.00 - 3.10

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	0.274	<0.2	2.74	<2	-	-	-
Total Ammonium as NH4	0.352	<0.3	3.52	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.00419	<0.0005	0.0419	<0.005	-	-	-
Boron	0.146	<0.01	1.46	<0.1	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.000635	<0.0003	0.00635	<0.003	-	-	-
Iron (Dis.Filt) mg/l	0.422	<0.019	4.22	<0.19	-	-	-
Lead	0.000893	<0.0002	0.00893	<0.002	-	-	-
Nickel	0.0029	<0.0004	0.029	<0.004	-	-	-
Selenium	0.0013	<0.001	0.013	<0.01	-	-	-
Vanadium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0528	<0.001	0.528	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	15-Jul-2021
pH (pH Units)	9.17
Conductivity (µS/cm)	115.00
Temperature (°C)	21.80
Volume Leachant (Litres)	0.884

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Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210715-33	**Client Reference:**	784-B026948	**Report Number:**	606565
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24632578
Customer Sample Ref.	BH05
AGS Ref.	ES17
Depth	3.00 - 3.10
Type	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	15-Jul-2021
Ammoniacal Nitrogen	21-Jul-2021
Ammonium Soil by Titration	19-Jul-2021
Anions by Kone (soil)	20-Jul-2021
Asbestos ID in Solid Samples	20-Jul-2021
Boron Water Soluble	20-Jul-2021
CEN 10:1 Leachate (1 Stage)	15-Jul-2021
CEN Readings	20-Jul-2021
Cyanide Comp/Free/Total/Thiocyanate	21-Jul-2021
Dissolved Metals by ICP-MS	20-Jul-2021
EPH	19-Jul-2021
EPH by GCxGC-FID	19-Jul-2021
EPH CWG GC (S)	20-Jul-2021
GRO by GC-FID (S)	16-Jul-2021
Hexavalent Chromium (s)	20-Jul-2021
Hexavalent Chromium (w)	20-Jul-2021
Mercury Dissolved	20-Jul-2021
Metals in solid samples by OES	20-Jul-2021
Moisture at 105C	15-Jul-2021
PAH by GCMS	16-Jul-2021
pH	19-Jul-2021
pH Value of Filtered Water	21-Jul-2021
Phenols by HPLC (S)	19-Jul-2021
Sample description	15-Jul-2021
Semi Volatile Organic Compounds	19-Jul-2021
Sulphide	21-Jul-2021
Total Organic Carbon	20-Jul-2021
TPH CWG GC (S)	20-Jul-2021
VOC MS (S)	18-Jul-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2456
Ammoniacal Nitrogen as N	TM099	**97.2** 88.02 : 104.70

Ammonium Soil by Titration

Component	Method Code	QC 2472
Exchangeable Ammonium as NH4	TM024	**88.56** 74.04 : 103.44

Anions by Kone (soil)

Component	Method Code	QC 2434
Chloride (soluble)	TM243	**144.04** 80.93 : 111.66
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**156.07** 70.00 : 130.00

Boron Water Soluble

Component	Method Code	QC 2423
Water Soluble Boron	TM222	**105.0** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2447	QC 2466
Free Cyanide	TM153	**97.43** 78.00 : 114.00	
Free Cyanide (W)	TM227		**82.5** 90.67 : 122.67
Thiocyanate	TM153	**101.92** 93.33 : 110.53	
Thiocyanate (W)	TM227		**108.75** 92.25 : 117.75
Total Cyanide	TM153	**100.0** 77.13 : 111.53	
Total Cyanide (W)	TM227		**105.75** 88.75 : 111.25

Dissolved Metals by ICP-MS

CERTIFICATE OF ANALYSIS

SDG:	210715-33	**Client Reference:**	784-B026948	**Report Number:**	606565
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Dissolved Metals by ICP-MS

Component	Method Code	QC 2494
Aluminium	TM152	**103.67** 94.21 : 111.52
Antimony	TM152	**104.67** 88.37 : 130.57
Arsenic	TM152	**102.83** 92.62 : 113.52
Barium	TM152	**103.5** 88.62 : 113.14
Beryllium	TM152	**105.33** 87.08 : 111.38
Bismuth	TM152	**102.83** 92.62 : 115.02
Boron	TM152	**103.67** 86.31 : 120.88
Cadmium	TM152	**102.0** 93.85 : 111.65
Calcium	TM152	**106.0** 89.20 : 126.91
Chromium	TM152	**100.0** 92.50 : 113.03
Cobalt	TM152	**100.17** 85.01 : 114.87
Copper	TM152	**99.83** 89.87 : 119.73
Iron	TM152	**102.0** 93.02 : 113.86
Lead	TM152	**102.33** 91.11 : 116.98
Lithium	TM152	**105.33** 87.70 : 115.90
Magnesium	TM152	**109.33** 89.60 : 116.61
Manganese	TM152	**102.5** 93.97 : 112.46
Molybdenum	TM152	**96.5** 89.07 : 110.96
Nickel	TM152	**100.67** 93.70 : 112.15
Phosphorus	TM152	**108.67** 89.24 : 114.18
Potassium	TM152	**107.33** 93.20 : 115.55
Selenium	TM152	**104.17** 91.69 : 117.12
Silver	TM152	**95.5** 90.93 : 121.73
Sodium	TM152	**108.67** 92.42 : 113.24
Strontium	TM152	**103.67** 92.14 : 116.24
Tellurium	TM152	**99.5** 89.88 : 111.78
Thallium	TM152	**103.83** 82.43 : 113.83

Dissolved Metals by ICP-MS

		QC 2494
Tin	TM152	**102.83** 94.62 : 107.79
Titanium	TM152	**104.17** 90.29 : 115.23
Tungsten	TM152	**102.0** 77.61 : 132.31
Uranium	TM152	**98.83** 86.97 : 115.76
Vanadium	TM152	**101.83** 89.61 : 115.48
Zinc	TM152	**102.67** 87.51 : 116.26

EPH CWG GC (S)

Component	Method Code	QC 2475
EPH >C8-C40 Raw	TM414	**92.8** 70.16 : 114.99
Total Aliphatics Raw	TM414	**98.25** 68.59 : 115.04
Total Aromatics Raw	TM414	**106.1** 69.80 : 126.50

GRO by GC-FID (S)

Component	Method Code	QC 2464
QC	TM089	**99.63** 70.34 : 111.95

Hexavalent Chromium (s)

Component	Method Code	QC 2411
Hexavalent Chromium	TM151	**100.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2454
Hexavalent Chromium	TM241	**100.0** 94.17 : 106.17

Mercury Dissolved

Mercury Dissolved

Component	Method Code	QC 2414
Mercury Dissolved (CVAF)	TM183	**101.0** 0.00 : 0.00

Metals in solid samples by OES

Component	Method Code	QC 2442
Aluminium	TM181	**100.0** 87.31 : 119.03
Antimony	TM181	**106.69** 91.44 : 127.13
Arsenic	TM181	**99.66** 88.32 : 120.05
Barium	TM181	**109.74** 94.57 : 124.93
Beryllium	TM181	**103.79** 85.72 : 122.69
Boron	TM181	**104.5** 85.66 : 120.25
Cadmium	TM181	**98.52** 87.31 : 121.62
Chromium	TM181	**95.37** 85.06 : 113.81
Cobalt	TM181	**99.09** 92.91 : 111.38
Copper	TM181	**94.25** 81.22 : 113.40
Iron	TM181	**101.83** 86.44 : 122.27
Lead	TM181	**106.44** 86.83 : 123.12
Manganese	TM181	**103.37** 89.22 : 121.75
Mercury	TM181	**96.42** 84.95 : 119.42
Molybdenum	TM181	**105.72** 85.98 : 123.80
Nickel	TM181	**99.41** 88.05 : 119.19
Phosphorus	TM181	**103.08** 90.13 : 121.54
Selenium	TM181	**97.8** 88.10 : 117.92
Strontium	TM181	**88.37** 79.10 : 111.59
Thallium	TM181	**101.34** 84.67 : 122.64
Tin	TM181	**101.78** 86.96 : 122.18
Titanium	TM181	**98.18** 84.66 : 112.24

Metals in solid samples by OES

		QC 2442
Vanadium	TM181	**97.48** 84.00 : 115.50
Zinc	TM181	**101.81** 85.62 : 122.35

PAH by GCMS

Component	Method Code	QC 2439
Acenaphthene	TM218	**92.0** 76.79 : 103.90
Acenaphthylene	TM218	**90.5** 74.19 : 106.17
Anthracene	TM218	**88.5** 70.90 : 109.22
Benz(a)anthracene	TM218	**88.0** 73.77 : 119.26
Benzo(a)pyrene	TM218	**90.0** 73.20 : 114.18
Benzo(b)fluoranthene	TM218	**90.0** 75.36 : 117.58
Benzo(ghi)perylene	TM218	**85.5** 70.73 : 116.12
Benzo(k)fluoranthene	TM218	**88.5** 75.98 : 116.59
Chrysene	TM218	**87.0** 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	**82.5** 69.17 : 115.30
Fluoranthene	TM218	**90.0** 66.06 : 114.63
Fluorene	TM218	**92.5** 76.66 : 107.56
Indeno(123cd)pyrene	TM218	**79.5** 70.26 : 117.95
Naphthalene	TM218	**90.5** 74.70 : 101.83
Phenanthrene	TM218	**92.5** 73.62 : 109.34
Pyrene	TM218	**88.5** 71.46 : 117.00

pH

Component	Method Code	QC 2453
pH	TM133	**99.85** 98.09 : 101.62

pH Value of Filtered Water

pH Value of Filtered Water

Component	Method Code	QC 2421
pH	TM256	**100.8** 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2435
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**46.1** 70.71 : 116.42
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**39.18** 64.54 : 117.79
Cresols by HPLC (S)	TM062 (S)	**43.01** 74.40 : 108.98
Phenol by HPLC (S)	TM062 (S)	**44.37** 69.44 : 122.18
Xylenols by HPLC (S)	TM062 (S)	**43.54** 76.56 : 106.38

Semi Volatile Organic Compounds

Component	Method Code	QC 2454
4-Bromophenylphenylether (Soil)	TM157	**87.5** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**89.5** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**93.5** 68.25 : 126.75
Naphthalene (Soil)	TM157	**92.5** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**86.0** 66.50 : 123.50
Phenol (Soil)	TM157	**94.5** 69.92 : 114.02

Sulphide

Component	Method Code	QC 2409
Sulphide	TM101	**102.0** 88.90 : 112.50

Total Organic Carbon

Component	Method Code	QC 2457
Total Organic Carbon	TM132	**93.36** 84.82 : 117.61

VOC MS (S)

Component	Method Code	QC 2466
1,1,1,2-tetrachloroethane	TM116	**101.6** 84.84 : 116.25
1,1,1-Trichloroethane	TM116	**99.8** 73.73 : 118.05
1,1,2-Trichloroethane	TM116	**97.0** 77.12 : 116.04
1,1-Dichloroethane	TM116	**106.4** 74.46 : 129.15
1,2-Dichloroethane	TM116	**112.8** 92.38 : 131.65
1,4-Dichlorobenzene	TM116	**105.8** 83.64 : 126.18
2-Chlorotoluene	TM116	**98.4** 76.03 : 113.25
4-Chlorotoluene	TM116	**89.8** 66.90 : 112.46
Benzene	TM116	**100.0** 88.60 : 113.80
Carbon Disulphide	TM116	**98.6** 74.91 : 122.14
Carbontetrachloride	TM116	**107.0** 80.31 : 124.50
Chlorobenzene	TM116	**99.2** 83.81 : 114.18
Chloroform	TM116	**108.2** 87.40 : 122.49
Chloromethane	TM116	**117.8** 63.11 : 124.36
Cis-1,2-Dichloroethene	TM116	**99.4** 80.67 : 126.72
Dibromomethane	TM116	**96.4** 73.23 : 118.35
Dichloromethane	TM116	**111.8** 81.11 : 133.25
Ethylbenzene	TM116	**94.4** 75.92 : 110.41
Hexachlorobutadiene	TM116	**88.4** 12.82 : 152.73
Isopropylbenzene	TM116	**89.0** 54.30 : 105.91
Naphthalene	TM116	**109.4** 80.86 : 128.81
o-Xylene	TM116	**88.8** 69.99 : 108.74
p/m-Xylene	TM116	**90.3** 68.32 : 108.91
Sec-Butylbenzene	TM116	**94.8** 38.50 : 101.50
Tetrachloroethene	TM116	**105.0** 76.95 : 121.02
Toluene	TM116	**90.0** 74.24 : 107.42
Trichloroethene	TM116	**96.6** 85.28 : 109.36

VOC MS (S)

		QC 2466
Trichlorofluoromethane	TM116	**111.0** 81.46 : 120.52
Vinyl Chloride	TM116	**117.6** 68.02 : 143.37

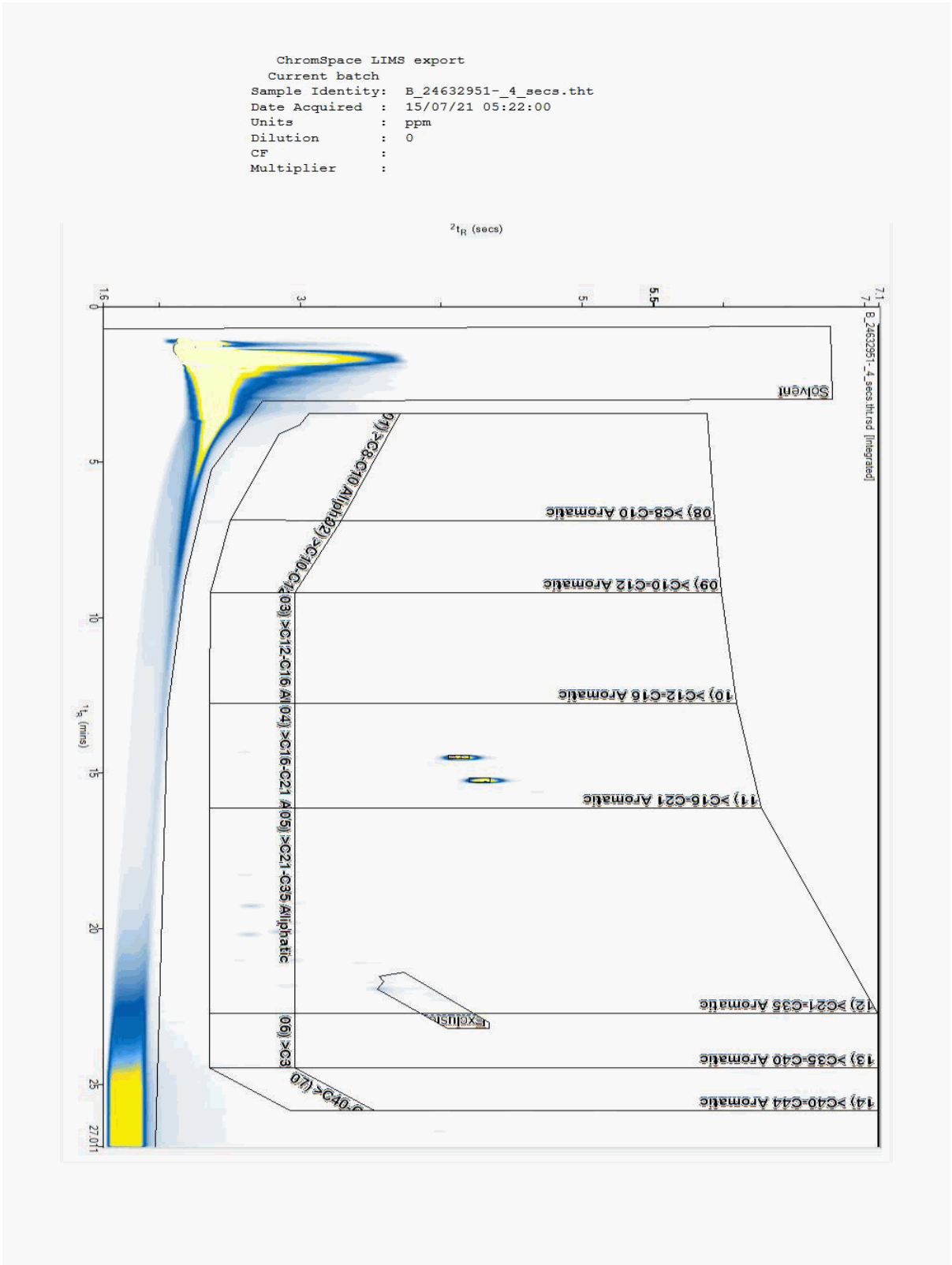
The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

SDG:	210715-33	**Client Reference:**	784-B026948	**Report Number:**	606565
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 24632951 **Depth :** 3.00 - 3.10
Sample ID : BH05



CERTIFICATE OF ANALYSIS

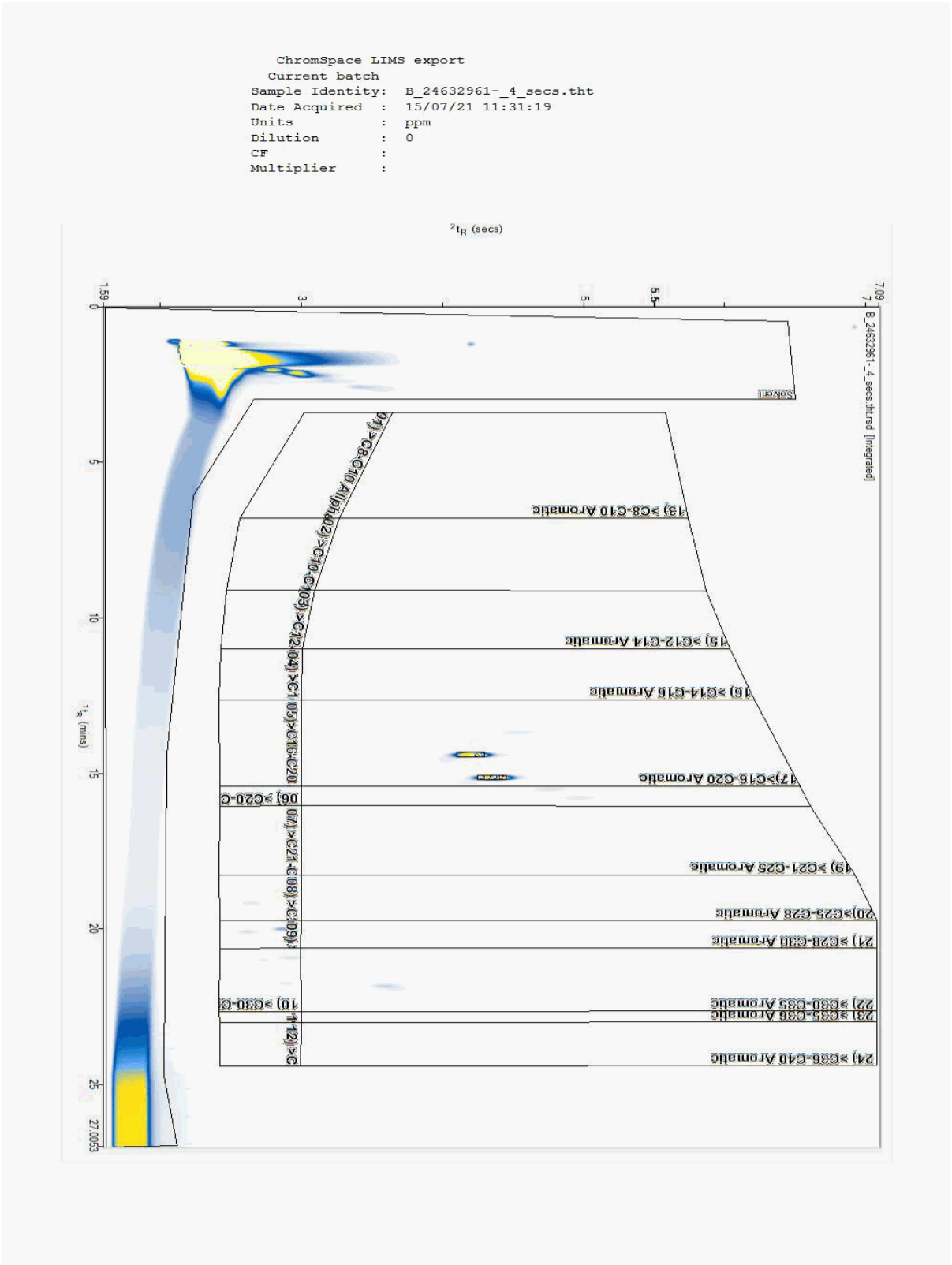
SDG:	210715-33	**Client Reference:**	784-B026948	**Report Number:**	606565
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 24632961
Sample ID : BH05

Depth : 3.00 - 3.10



CERTIFICATE OF ANALYSIS

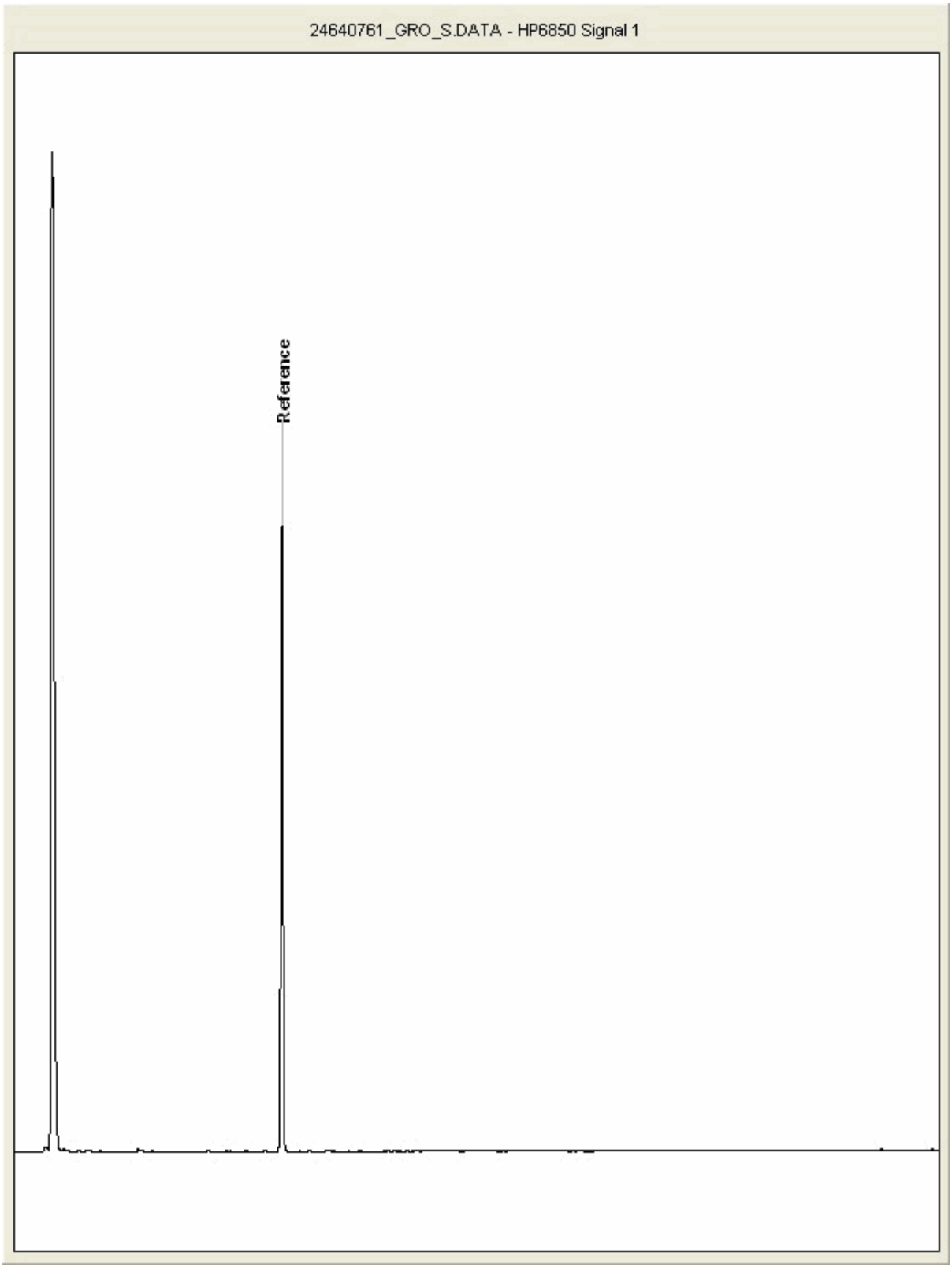
SDG:	210715-33	**Client Reference:**	784-B026948	**Report Number:**	606565
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 24640761
Sample ID : BH05

Depth : 3.00 - 3.10



Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

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Tel: (01244) 528700
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[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	28 July 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210715-47
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	607384

This report has been revised and directly supersedes 606937 in its entirety.

We received 11 samples on Thursday July 15, 2021 and 2 of these samples were scheduled for analysis which was completed on Wednesday July 28, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved [redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210715-47	**Client Reference:**	784-B026948	**Report Number:**	607384
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	606937

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24633431	BH55	ES1	0.10 - 0.20	14/07/2021
24633435	BH55	ES2	0.50 - 0.60	14/07/2021
24633439	BH55	ES3	1.00 - 1.10	14/07/2021
24633411	BH55	ES4	2.00 - 2.10	14/07/2021
24633396	BH45A	ES1	0.45 - 0.45	14/07/2021
24633416	BH45A	ES2	0.65 - 0.65	14/07/2021
24633424	BH45A	ES3	1.00 - 1.00	14/07/2021
24633446	TP08	ES1	0.10 - 0.20	14/07/2021
24633450	TP08	ES3	0.50 - 0.60	14/07/2021
24633454	TP08	ES7	1.00 - 1.10	14/07/2021
24633406	TP08	ES12	1.40 - 1.50	14/07/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	210715-47	**Client Reference:**	784-B026948	**Report Number:**	607384
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	606937

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24633431					24633450				
Customer Sample Reference			BH55					TP08				
AGS Reference			ES1					ES3				
Depth (m)			0.10 - 0.20					0.50 - 0.60				
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)				
Sample Type			S	S	S	S	S	S				
Acid herbicides*	All	NDPs: 0 Tests: 1		X								
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 1		X								
Ammonium Soil by Titration	All	NDPs: 0 Tests: 1		X								
Anions by Kone (soil)	All	NDPs: 0 Tests: 1		X								
Anions by Kone (w)	All	NDPs: 0 Tests: 1				X						
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1	X									
Boron Water Soluble	All	NDPs: 0 Tests: 1		X								
CEN Readings	All	NDPs: 0 Tests: 1				X						
Coronene	All	NDPs: 0 Tests: 1					X					
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 1		X								
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1				X						
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1				X						
EPH	All	NDPs: 0 Tests: 1		X								
EPH by GCxGC-FID	All	NDPs: 0 Tests: 2		X			X					
EPH CWG GC (S)	All	NDPs: 0 Tests: 1		X								

CERTIFICATE OF ANALYSIS

SDG:	210715-47	**Client Reference:**	784-B026948	**Report Number:**	607384
Location:	A46 Newark Northern Bypa	**Order Number:**	7001649	**Superseded Report:**	606937

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
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DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)					24633431						24633450	
Customer Sample Reference					BH55						TP08	
AGS Reference					ES1						ES3	
Depth (m)					0.10 - 0.20						0.50 - 0.60	
Container					1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)		
Sample Type					S	S	S	S	S	S		
Fluoride	All	NDPs: 0 Tests: 1						X				
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1					X					
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1				X						
Mercury Dissolved	All	NDPs: 0 Tests: 1						X				
Metals in solid samples by OES	All	NDPs: 0 Tests: 1				X						
OC OP Pesticides and Triazine Herb	All	NDPs: 0 Tests: 1				X						
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 1							X			
PAH by GCMS	All	NDPs: 0 Tests: 2				X			X			
PCBs by GCMS	All	NDPs: 0 Tests: 1							X			
pH	All	NDPs: 0 Tests: 1				X						
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1				X						
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1						X				
Sample description	All	NDPs: 0 Tests: 2				X			X			
Total Dissolved Solids	All	NDPs: 0 Tests: 1						X				
Total Organic Carbon	All	NDPs: 0 Tests: 2				X			X			

CERTIFICATE OF ANALYSIS

SDG:	210715-47	**Client Reference:**	784-B026948	**Report Number:**	607384
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	606937

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
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RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24633431				24633450				
Customer Sample Reference			BH55				TP08				
AGS Reference			ES1				ES3				
Depth (m)			0.10 - 0.20				0.50 - 0.60				
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)			
Sample Type			S	S	S	S	S	S			
TPH CWG GC (S)	All	NDPs: 0 Tests: 1		X							
VOC MS (S)	All	NDPs: 0 Tests: 2			X			X			

CERTIFICATE OF ANALYSIS

SDG:	210715-47	**Client Reference:**	784-B026948	**Report Number:**	607384
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	606937

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24633431	BH55	0.10 - 0.20	Dark Brown	Silt Loam	Vegetation	Stones
24633450	TP08	0.50 - 0.60	Dark Brown	Silty Clay	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210715-47	**Client Reference:**	784-B026948	**Report Number:**	607384
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	606937

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH55	TP08				
			Depth (m)	0.10 - 0.20	0.50 - 0.60				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	14/07/2021	14/07/2021				
			Sampled Time	.	.				
			Date Received	15/07/2021	15/07/2021				
			SDG Ref	210715-47	210715-47				
			Lab Sample No.(s)	24633431	24633450				
			AGS Reference	ES1	ES3				
Moisture Content Ratio (% of as received sample)	%	PM024		21	20				
2,4,5-T*	<0.01 mg/kg	SUB		<0.01					
2,4,5-TP (Fenoprop)*	<0.01 mg/kg	SUB		<0.01					
2,4-D*	<0.01 mg/kg	SUB		<0.01					
2,4-DB*	<0.01 mg/kg	SUB		<0.01					
2,4-Dichloroprop (2,4 DP)*	<0.01 mg/kg	SUB		<0.01					
4-Chlorophenoxyacetic acid (4-CPA)*	<0.01 mg/kg	SUB		<0.01					
Acifluorfen*	<0.01 mg/kg	SUB		<0.01					
Bentazone*	<0.01 mg/kg	SUB		<0.01					
Bromoxynil*	<0.01 mg/kg	SUB		<0.01					
Dicamba*	<0.01 mg/kg	SUB		<0.01					
Diclofop*	<0.01 mg/kg	SUB		<0.01					
Dinoseb*	<0.01 mg/kg	SUB		<0.01					
DNOC*	<0.01 mg/kg	SUB		<0.01					
Fluroxypyr*	<0.01 mg/kg	SUB		<0.01					
loxynil*	<0.01 mg/kg	SUB		<0.01					
2-methyl-4-Chlorophenoxyacetic acid (MCPA)*	<0.01 mg/kg	SUB		<0.01					
4-(4-Chloro-o-tolyloxy) butyric acid (MCPB)*	<0.01 mg/kg	SUB		<0.01					
Mecoprop (MCPP)*	<0.01 mg/kg	SUB		<0.01					
Propoxycarbazone-sodium*	<0.01 mg/kg	SUB		<0.01					
Triclopyr*	<0.01 mg/kg	SUB		<0.01					
Triclosan*	<0.01 mg/kg	SUB		<0.01					
Exchangeable Ammonia as N	<12 mg/kg	TM024		35 M					
Phenol	<0.01 mg/kg	TM062 (S)		<0.01 M					
Cresols	<0.01 mg/kg	TM062 (S)		<0.01 M					
Xylenols	<0.015 mg/kg	TM062 (S)		<0.015 M					
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)		<0.035 M					
Organic Carbon, Total	<0.2 %	TM132			1.03 M				
Soil Organic Matter (SOM)	<0.35 %	TM132		5.05 #					
pH	1 pH Units	TM133		6.06 M					
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #					
Cyanide, Total	<1 mg/kg	TM153		<1 M					

CERTIFICATE OF ANALYSIS

SDG:	210715-47	**Client Reference:**	784-B026948	**Report Number:**	607384
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	606937

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH55	TP08				
			Depth (m)	0.10 - 0.20	0.50 - 0.60				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	14/07/2021	14/07/2021				
			Sampled Time	.	.				
			Date Received	15/07/2021	15/07/2021				
			SDG Ref	210715-47	210715-47				
			Lab Sample No.(s)	24633431	24633450				
			AGS Reference	ES1	ES3				
PCB congener 28	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 52	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 101	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 118	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 138	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 153	<0.003 mg/kg	TM168			<0.003 M				
PCB congener 180	<0.003 mg/kg	TM168			<0.003 M				
Sum of detected PCB 7 Congeners	<0.021 mg/kg	TM168			<0.021				
Arsenic	<0.6 mg/kg	TM181		15.8 M					
Cadmium	<0.02 mg/kg	TM181		1.53 M					
Chromium	<0.9 mg/kg	TM181		32.5 M					
Copper	<1.4 mg/kg	TM181		38.4 M					
Iron	<1000 mg/kg	TM181		39500 #					
Lead	<0.7 mg/kg	TM181		173 M					
Mercury	<0.1 mg/kg	TM181		0.374 M					
Nickel	<0.2 mg/kg	TM181		38.3 M					
Selenium	<1 mg/kg	TM181		<1 #					
Vanadium	<0.2 mg/kg	TM181		60.1 #					
Zinc	<1.9 mg/kg	TM181		297 M					
Boron, water soluble	<1 mg/kg	TM222		1.34 M					
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.0461 M					
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248		11.6					
PAH Total 17 (inc Coronene) Moisture Corrected	<10 mg/kg	TM410			<10				
Coronene	<0.2 mg/kg	TM410			<0.2				
EPH (C5-C40)	<35 mg/kg	TM415		<35					
EPH Surrogate % recovery**	%	TM415		98.7	95.1				
EPH >C10-C40	<35 mg/kg	TM415		<35 M					
Mineral Oil >C10-C40	<5 mg/kg	TM415			<5				

CERTIFICATE OF ANALYSIS

SDG:	210715-47	**Client Reference:**	784-B026948	**Report Number:**	607384
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	606937

OC OP Pesticides and Triazine Herb

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH55
Depth (m)	0.10 - 0.20
Sample Type	Soil/Solid (S)
Date Sampled	14/07/2021
Sampled Time	.
Date Received	15/07/2021
SDG Ref	210715-47
Lab Sample No.(s)	24633431
AGS Reference	ES1

Component	LOD/Units	Method	
Dichlorvos	<0.05 mg/kg	TM073	<0.05
Mevinphos	<0.05 mg/kg	TM073	<0.05
Phorate	<0.05 mg/kg	TM073	<0.05
alpha-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073	<0.05
Diazinon	<0.05 mg/kg	TM073	<0.05
gamma-Hexachlorocyclohexane (HCH / Lindane)	<0.05 mg/kg	TM073	<0.05
Disulfoton	<0.05 mg/kg	TM073	<0.05
Heptachlor	<0.05 mg/kg	TM073	<0.05
Aldrin	<0.05 mg/kg	TM073	<0.05
beta-Hexachlorocyclohexane (HCH)	<0.05 mg/kg	TM073	<0.05
Methyl parathion	<0.05 mg/kg	TM073	<0.05
Malathion	<0.05 mg/kg	TM073	<0.05
Fenitrothion	<0.05 mg/kg	TM073	<0.05
Heptachlor epoxide	<0.05 mg/kg	TM073	<0.05
Parathion	<0.05 mg/kg	TM073	<0.05
Endosulphan I	<0.05 mg/kg	TM073	<0.05
p,p-DDE	<0.05 mg/kg	TM073	<0.05
Dieldrin	<0.05 mg/kg	TM073	<0.05
Endrin	<0.05 mg/kg	TM073	<0.05
p,p-TDE (DDD)	<0.05 mg/kg	TM073	<0.05
Ethion	<0.05 mg/kg	TM073	<0.05
Endosulphan II	<0.05 mg/kg	TM073	<0.05
p,p-DDT	<0.05 mg/kg	TM073	<0.05
p,p-Methoxychlor	<0.05 mg/kg	TM073	<0.05
Endosulphan sulphate	<0.05 mg/kg	TM073	<0.05
Azinphos-methyl	<0.05 mg/kg	TM073	<0.05

CERTIFICATE OF ANALYSIS

SDG:	210715-47	**Client Reference:**	784-B026948	**Report Number:**	607384
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	606937

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH55							
Depth (m)	0.10 - 0.20							
Sample Type	Soil/Solid (S)							
Date Sampled	14/07/2021							
Sampled Time	.							
Date Received	15/07/2021							
SDG Ref	210715-47							
Lab Sample No.(s)	24633431							
AGS Reference	ES1							
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	93.6					
Acenaphthene-d10 % recovery**	%	TM218	92.5					
Phenanthrene-d10 % recovery**	%	TM218	93.8					
Chrysene-d12 % recovery**	%	TM218	83.8					
Perylene-d12 % recovery**	%	TM218	83.1					
Naphthalene	<0.009 mg/kg	TM218	<0.009 M					
Acenaphthylene	<0.012 mg/kg	TM218	<0.012 M					
Acenaphthene	<0.008 mg/kg	TM218	<0.008 M					
Fluorene	<0.01 mg/kg	TM218	<0.01 M					
Phenanthrene	<0.015 mg/kg	TM218	0.0461 M					
Anthracene	<0.016 mg/kg	TM218	<0.016 M					
Fluoranthene	<0.017 mg/kg	TM218	0.126 M					
Pyrene	<0.015 mg/kg	TM218	0.113 M					
Benz(a)anthracene	<0.014 mg/kg	TM218	0.057 M					
Chrysene	<0.01 mg/kg	TM218	0.064 M					
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	0.0454 M					
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	0.0294 M					
Benzo(a)pyrene	<0.015 mg/kg	TM218	0.0572 M					
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	0.0434 M					
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	<0.023 M					
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	0.0419 M					
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	0.624					

CERTIFICATE OF ANALYSIS

SDG:	210715-47	**Client Reference:**	784-B026948	**Report Number:**	607384
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	606937

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref. BH55					
			Depth (m) 0.10 - 0.20					
			Sample Type Soil/Solid (S)					
			Date Sampled 14/07/2021					
			Sampled Time .					
			Date Received 15/07/2021					
			SDG Ref 210715-47					
			Lab Sample No.(s) 24633431					
			AGS Reference ES1					
GRO Surrogate % recovery**	%	TM089	96					
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01					
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01					
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01					
Aliphatics >C10-C12	<1 mg/kg	TM414	<1 #					
Aliphatics >C12-C16	<1 mg/kg	TM414	<1 #					
Aliphatics >C16-C21	<1 mg/kg	TM414	<1 #					
Aliphatics >C21-C35	<1 mg/kg	TM414	14.6 #					
Aliphatics >C35-C44	<1 mg/kg	TM414	<1					
Total Aliphatics >C10-C44	<5 mg/kg	TM414	15.7					
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414	19.9					
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01					
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01					
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	<0.01					
Aromatics > EC10-EC12	<1 mg/kg	TM414	<1 #					
Aromatics > EC12-EC16	<1 mg/kg	TM414	<1 #					
Aromatics > EC16-EC21	<1 mg/kg	TM414	<1 #					
Aromatics > EC21-EC35	<1 mg/kg	TM414	2.45 #					
Aromatics >EC35-EC44	<1 mg/kg	TM414	<1					
Aromatics > EC40-EC44	<1 mg/kg	TM414	<1					
Total Aromatics > EC10-EC44	<5 mg/kg	TM414	<5					
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414	15.7					
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089	<0.05					
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089	<0.05					
GRO >C5-C10	<0.02 mg/kg	TM089	<0.02					

CERTIFICATE OF ANALYSIS

SDG:	210715-47	**Client Reference:**	784-B026948	**Report Number:**	607384
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	606937

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH55	TP08				
			Depth (m)	0.10 - 0.20	0.50 - 0.60				
			Sample Type	Soil/Solid (S)	Soil/Solid (S)				
			Date Sampled	14/07/2021	14/07/2021				
			Sampled Time	.	.				
			Date Received	15/07/2021	15/07/2021				
			SDG Ref	210715-47	210715-47				
			Lab Sample No.(s)	24633431	24633450				
			AGS Reference	ES1	ES3				
Dibromofluoromethane**	%	TM116		112	110				
Toluene-d8**	%	TM116		100	100				
4-Bromofluorobenzene**	%	TM116		93.7	98.2				
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Benzene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M				
Toluene	<0.007 mg/kg	TM116		<0.14 M	<0.14 M				
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 M	<0.08 M				
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #				
o-Xylene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M				
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4					
Sum of BTEX	<0.04 mg/kg	TM116		<0.8					

CERTIFICATE OF ANALYSIS

SDG:	210715-47	**Client Reference:**	784-B026948	**Report Number:**	607384
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	606937

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref.	BH55ES1 0.10 - 0.20	20.07.21	Emily Anderton	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	SOLID										
Sample Type	14/07/2021 00:00:00										
Date Sampled	15/07/2021 05:00:00										
Date Receieved	210715-47										
SDG	24633431										
Original Sample	TM048										
Method Number											

CERTIFICATE OF ANALYSIS

SDG:	210715-47	**Client Reference:**	784-B026948	**Report Number:**	607384
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	606937

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.117	**Natural Moisture Content (%)**	30.2
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	76.8
Particle Size <4mm	>95%		

Case	
SDG	210715-47
Lab Sample Number(s)	24633450
Sampled Date	14-Jul-2021
Customer Sample Ref.	TP08 ES3
Depth (m)	0.50 - 0.60

Solid Waste Analysis	**Result**	**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon (%)	1.03	3	5	6
Loss on Ignition (%)	-	-	-	-
Sum of BTEX (mg/kg)	-	-	-	-
Sum of 7 PCBs (mg/kg)	<0.021	1	-	-
Mineral Oil (mg/kg)	<5	500	-	-
PAH Sum of 17 (mg/kg)	<10	100	-	-
pH (pH Units)	-	-	-	-
ANC to pH 6 (mol/kg)	-	-	-	-
ANC to pH 4 (mol/kg)	-	-	-	-

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)		**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Arsenic	0.000797	<0.0005	0.00797	<0.005	0.5	2	25
Barium	0.0681	<0.0002	0.681	<0.002	20	100	300
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	0.04	1	5
Chromium	<0.001	<0.001	<0.01	<0.01	0.5	10	70
Copper	0.00362	<0.0003	0.0362	<0.003	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	0.01	0.2	2
Molybdenum	<0.003	<0.003	<0.03	<0.03	0.5	10	30
Nickel	0.00156	<0.0004	0.0156	<0.004	0.4	10	40
Lead	0.0028	<0.0002	0.028	<0.002	0.5	10	50
Antimony	<0.001	<0.001	<0.01	<0.01	0.06	0.7	5
Selenium	<0.001	<0.001	<0.01	<0.01	0.1	0.5	7
Zinc	0.0157	<0.001	0.157	<0.01	4	50	200
Chloride	2.9	<2	29	<20	800	15000	25000
Fluoride	0.861	<0.5	8.61	<5	10	150	500
Sulphate (soluble)	14.7	<2	147	<20	1000	20000	50000
Total Dissolved Solids	73.8	<5	738	<50	4000	60000	100000
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	1	-	-
Dissolved Organic Carbon	7.46	<3	74.6	<30	500	800	1000

Leach Test Information

Date Prepared	16-Jul-2021
pH (pH Units)	7.98
Conductivity (µS/cm)	81.00
Temperature (°C)	2.10
Volume Leachant (Litres)	0.873

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ALS Environmental cannot be held responsible for any discrepancies with current legislation

28/07/2021 14:07:57

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
SUB		Subcontracted Test
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM073	MEWAM BOOK 60 1980,95 1985, HMSO / Modified: US EPA Method 8081A & 8141A	Determination of organochlorine and organophosphorous pesticides by GCMS
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210715-47	**Client Reference:**	784-B026948	**Report Number:**	607384
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	606937

Test Completion Dates

Lab Sample No(s)	24633431	24633450
Customer Sample Ref.	BH55	TP08
AGS Ref.	ES1	ES3
Depth	0.10 - 0.20	0.50 - 0.60
Type	Soil/Solid (S)	Soil/Solid (S)
Acid herbicides*	28-Jul-2021	
Ammoniacal N as NH4 in 2:1 extract	20-Jul-2021	
Ammonium Soil by Titration	19-Jul-2021	
Anions by Kone (soil)	21-Jul-2021	
Anions by Kone (w)		21-Jul-2021
Asbestos ID in Solid Samples	20-Jul-2021	
Boron Water Soluble	19-Jul-2021	
CEN 10:1 Leachate (1 Stage)		16-Jul-2021
CEN Readings		20-Jul-2021
Coronene		18-Jul-2021
Cyanide Comp/Free/Total/Thiocyanate	19-Jul-2021	
Dissolved Metals by ICP-MS		20-Jul-2021
Dissolved Organic/Inorganic Carbon		24-Jul-2021
EPH	20-Jul-2021	
EPH by GCxGC-FID	20-Jul-2021	20-Jul-2021
EPH CWG GC (S)	19-Jul-2021	
Fluoride		19-Jul-2021
GRO by GC-FID (S)	20-Jul-2021	
Hexavalent Chromium (s)	20-Jul-2021	
Mercury Dissolved		20-Jul-2021
Metals in solid samples by OES	21-Jul-2021	
Moisture at 105C		16-Jul-2021
OC OP Pesticides and Triazine Herb	22-Jul-2021	
PAH 16 & 17 Calc		19-Jul-2021
PAH by GCMS	16-Jul-2021	19-Jul-2021
PCBs by GCMS		19-Jul-2021
pH	19-Jul-2021	
Phenols by HPLC (S)	19-Jul-2021	
Phenols by HPLC (W)		20-Jul-2021
Sample description	15-Jul-2021	15-Jul-2021
Total Dissolved Solids		20-Jul-2021
Total Organic Carbon	20-Jul-2021	20-Jul-2021
TPH CWG GC (S)	20-Jul-2021	
VOC MS (S)	19-Jul-2021	19-Jul-2021

ASSOCIATED AQC DATA

Ammonium Soil by Titration

Component	Method Code	QC 2472
Exchangeable Ammonium as NH4	TM024	**88.56** 74.04 : 103.44

Anions by Kone (w)

Component	Method Code	QC 2451
Chloride	TM184	**103.0** 92.93 : 115.43
Sulphate (soluble)	TM184	**104.0** 90.53 : 113.03

Boron Water Soluble

Component	Method Code	QC 2425
Water Soluble Boron	TM222	**103.0** 84.00 : 111.00

Coronene

Component	Method Code	QC 2487
Coronene RAW	TM410	**106.0** 79.43 : 137.78

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2447
Free Cyanide	TM153	**97.43** 78.00 : 114.00
Thiocyanate	TM153	**101.92** 93.33 : 110.53
Total Cyanide	TM153	**100.0** 77.13 : 111.53

Dissolved Metals by ICP-MS

Component	Method Code	QC 2494
Aluminium	TM152	**103.67** 94.21 : 111.52
Antimony	TM152	**104.67** 88.37 : 130.57
Arsenic	TM152	**102.83** 92.62 : 113.52

CERTIFICATE OF ANALYSIS

SDG:	210715-47	**Client Reference:**	784-B026948	**Report Number:**	607384
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	606937

Dissolved Metals by ICP-MS

		QC 2494
Barium	TM152	**103.5** 88.62 : 113.14
Beryllium	TM152	**105.33** 87.08 : 111.38
Bismuth	TM152	**102.83** 92.62 : 115.02
Boron	TM152	**103.67** 86.31 : 120.88
Cadmium	TM152	**102.0** 93.85 : 111.65
Calcium	TM152	**106.0** 89.20 : 126.91
Chromium	TM152	**100.0** 92.50 : 113.03
Cobalt	TM152	**100.17** 85.01 : 114.87
Copper	TM152	**99.83** 89.87 : 119.73
Iron	TM152	**102.0** 93.02 : 113.86
Lead	TM152	**102.33** 91.11 : 116.98
Lithium	TM152	**105.33** 87.70 : 115.90
Magnesium	TM152	**109.33** 89.60 : 116.61
Manganese	TM152	**102.5** 93.97 : 112.46
Molybdenum	TM152	**96.5** 89.07 : 110.96
Nickel	TM152	**100.67** 93.70 : 112.15
Phosphorus	TM152	**108.67** 89.24 : 114.18
Potassium	TM152	**107.33** 93.20 : 115.55
Selenium	TM152	**104.17** 91.69 : 117.12
Silver	TM152	**95.5** 90.93 : 121.73
Sodium	TM152	**108.67** 92.42 : 113.24
Strontium	TM152	**103.67** 92.14 : 116.24
Tellurium	TM152	**99.5** 89.88 : 111.78
Thallium	TM152	**103.83** 82.43 : 113.83
Tin	TM152	**102.83** 94.62 : 107.79
Titanium	TM152	**104.17** 90.29 : 115.23
Tungsten	TM152	**102.0** 77.61 : 132.31

Dissolved Metals by ICP-MS

		QC 2494
Uranium	TM152	**98.83** 86.97 : 115.76
Vanadium	TM152	**101.83** 89.61 : 115.48
Zinc	TM152	**102.67** 87.51 : 116.26

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2479
Dissolved Inorganic Carbon	TM090	**100.0** 93.58 : 112.28
Dissolved Organic Carbon	TM090	**100.5** 96.13 : 109.53

Fluoride

Component	Method Code	QC 2417
Fluoride	TM104	**104.0** 96.67 : 108.67

GRO by GC-FID (S)

Component	Method Code	QC 2423
QC	TM089	**96.06** 72.28 : 114.54

Hexavalent Chromium (s)

Component	Method Code	QC 2462
Hexavalent Chromium	TM151	**102.0** 91.40 : 115.40

Mercury Dissolved

Component	Method Code	QC 2414
Mercury Dissolved (CVAF)	TM183	**101.0** 0.00 : 0.00

Metals in solid samples by OES

Metals in solid samples by OES

Component	Method Code	QC 2479
Aluminium	TM181	**100.88** 87.31 : 119.03
Antimony	TM181	**104.72** 91.44 : 127.13
Arsenic	TM181	**101.69** 88.32 : 120.05
Barium	TM181	**111.79** 94.57 : 124.93
Beryllium	TM181	**104.96** 85.72 : 122.69
Boron	TM181	**107.07** 85.66 : 120.25
Cadmium	TM181	**101.48** 87.31 : 121.62
Chromium	TM181	**104.63** 85.06 : 113.81
Cobalt	TM181	**102.73** 92.91 : 111.38
Copper	TM181	**93.57** 81.22 : 113.40
Iron	TM181	**109.17** 86.44 : 122.27
Lead	TM181	**103.71** 86.83 : 123.12
Manganese	TM181	**96.35** 89.22 : 121.75
Mercury	TM181	**98.37** 84.95 : 119.42
Molybdenum	TM181	**103.37** 85.98 : 123.80
Nickel	TM181	**100.89** 88.05 : 119.19
Phosphorus	TM181	**105.3** 90.13 : 121.54
Selenium	TM181	**100.37** 88.10 : 117.92
Strontium	TM181	**87.92** 79.10 : 111.59
Thallium	TM181	**102.68** 84.67 : 122.64
Tin	TM181	**102.97** 86.96 : 122.18
Titanium	TM181	**92.73** 84.66 : 112.24
Vanadium	TM181	**105.76** 84.00 : 115.50
Zinc	TM181	**103.61** 85.62 : 122.35

OC OP Pesticides and Triazine Herb

CERTIFICATE OF ANALYSIS

SDG:	210715-47	**Client Reference:**	784-B026948	**Report Number:**	607384
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	606937

OC OP Pesticides and Triazine Herb

Component	Method Code	QC 2462
Atrazine (Raw)	TM073	**81.54** 70.00 : 130.00
Azinphos methyl (Raw)	TM073	**96.73** 70.00 : 130.00
cis-Chlordane (Raw)	TM073	**83.08** 70.00 : 130.00
Diazinon (Raw)	TM073	**78.95** 70.00 : 130.00
Dichlorvos (Raw)	TM073	**83.53** 70.00 : 130.00
Dieldrin (Raw)	TM073	**85.52** 70.00 : 130.00
gamma-HCH (Lindane) (Raw)	TM073	**90.75** 70.00 : 130.00
Heptachlor (Raw)	TM073	**82.72** 70.00 : 130.00
Hexachlorobenzene (Raw)	TM073	**89.36** 70.00 : 130.00
Malathion (Raw)	TM073	**83.66** 70.00 : 130.00
p,p-DDT (Raw)	TM073	**89.19** 70.00 : 130.00
Parathion (Raw)	TM073	**86.85** 70.00 : 130.00

PAH by GCMS

Component	Method Code	QC 2454	QC 2481
Acenaphthene	TM218	**100.0** 73.47 : 109.80	**91.5** 78.59 : 112.16
Acenaphthylene	TM218	**100.0** 70.00 : 130.00	**91.0** 75.11 : 109.01
Anthracene	TM218	**98.0** 68.68 : 111.89	**89.0** 73.99 : 113.85
Benz(a)anthracene	TM218	**88.5** 68.12 : 118.39	**86.5** 69.31 : 119.18
Benzo(a)pyrene	TM218	**97.0** 71.72 : 115.31	**81.5** 66.97 : 114.92
Benzo(b)fluoranthene	TM218	**92.0** 66.89 : 120.40	**86.0** 67.41 : 114.46
Benzo(ghi)perylene	TM218	**97.5** 67.82 : 118.49	**80.5** 62.92 : 114.36
Benzo(k)fluoranthene	TM218	**99.0** 73.10 : 117.03	**88.5** 69.98 : 116.49
Chrysene	TM218	**90.0** 69.58 : 115.47	**84.5** 69.86 : 114.50
Dibenzo(ah)anthracene	TM218	**95.5** 67.32 : 121.35	**81.0** 64.54 : 115.22
Fluoranthene	TM218	**87.0** 75.16 : 117.28	**81.5** 72.56 : 111.70
Fluorene	TM218	**100.0** 73.81 : 108.66	**93.0** 79.13 : 111.49
Indeno(123cd)pyrene	TM218	**88.0** 68.91 : 117.62	**80.5** 61.22 : 113.25

PAH by GCMS

		QC 2454	QC 2481
Naphthalene	TM218	**95.5** 72.12 : 106.18	**88.0** 77.96 : 110.91
Phenanthrene	TM218	**98.0** 69.01 : 113.72	**89.5** 76.83 : 113.25
Pyrene	TM218	**92.0** 64.28 : 115.75	**83.5** 72.45 : 110.77

PCBs by GCMS

Component	Method Code	QC 2490
PCB congener 101	TM168	**68.9** 65.66 : 110.06
PCB congener 105	TM168	**65.0** 58.10 : 106.34
PCB congener 114	TM168	**69.7** 59.38 : 106.48
PCB congener 118	TM168	**66.8** 60.02 : 106.23
PCB congener 123	TM168	**70.0** 65.01 : 99.81
PCB congener 126	TM168	**66.3** 59.31 : 109.23
PCB congener 138	TM168	**68.3** 63.95 : 107.63
PCB congener 153	TM168	**68.2** 62.65 : 108.85
PCB congener 156	TM168	**63.8** 61.69 : 112.27
PCB congener 157	TM168	**61.8** 55.37 : 104.81
PCB congener 167	TM168	**65.7** 65.58 : 109.14
PCB congener 169	TM168	**64.9** 56.84 : 112.10
PCB congener 180	TM168	**67.1** 66.99 : 111.63
PCB congener 189	TM168	**61.1** 57.75 : 112.59
PCB congener 28	TM168	**76.6** 73.68 : 105.96
PCB congener 52	TM168	**73.7** 67.24 : 107.62
PCB congener 77	TM168	**71.3** 64.87 : 108.49
PCB congener 81	TM168	**71.2** 70.78 : 110.80

pH

pH

Component	Method Code	QC 2453
pH	TM133	**99.85** 98.09 : 101.62

Phenols by HPLC (S)

Component	Method Code	QC 2435
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**46.1** 70.71 : 116.42
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**39.18** 64.54 : 117.79
Cresols by HPLC (S)	TM062 (S)	**43.01** 74.40 : 108.98
Phenol by HPLC (S)	TM062 (S)	**44.37** 69.44 : 122.18
Xylenols by HPLC (S)	TM062 (S)	**43.54** 76.56 : 106.38

Phenols by HPLC (W)

Component	Method Code	QC 2449
2.3.5 Trimethyl-Phenol by HPLC (W)	TM259	**95.7** 76.00 : 124.00
2-Isopropyl Phenol by HPLC (W)	TM259	**87.95** 76.00 : 124.00
Cresols by HPLC (W)	TM259	**94.74** 76.00 : 124.00
Napthol by HPLC (W)	TM259	**91.8** 76.00 : 124.00
Phenol by HPLC (W)	TM259	**86.96** 76.00 : 124.00
Xylenols by HPLC (W)	TM259	**92.41** 76.00 : 124.00

Total Dissolved Solids

Component	Method Code	QC 2445
Total Dissolved Solids	TM123	**99.9** 97.30 : 100.92

Total Organic Carbon

Component	Method Code	QC 2457	QC 2461
Total Organic Carbon	TM132	**93.36** 84.82 : 117.61	**92.97** 84.82 : 117.61

VOC MS (S)

Component	Method Code	QC 2498
1,1,1,2-tetrachloroethane	TM116	**99.6** 84.84 : 116.25
1,1,1-Trichloroethane	TM116	**99.8** 73.73 : 118.05
1,1,2-Trichloroethane	TM116	**95.8** 77.12 : 116.04
1,1-Dichloroethane	TM116	**108.2** 74.46 : 129.15
1,2-Dichloroethane	TM116	**116.8** 92.38 : 131.65
1,4-Dichlorobenzene	TM116	**106.4** 83.64 : 126.18
2-Chlorotoluene	TM116	**102.0** 76.03 : 113.25
4-Chlorotoluene	TM116	**90.0** 66.90 : 112.46
Benzene	TM116	**102.8** 88.60 : 113.80
Carbon Disulphide	TM116	**101.6** 74.91 : 122.14
Carbontetrachloride	TM116	**105.0** 80.31 : 124.50
Chlorobenzene	TM116	**101.2** 83.81 : 114.18
Chloroform	TM116	**106.0** 87.40 : 122.49
Chloromethane	TM116	**109.4** 63.11 : 124.36
Cis-1,2-Dichloroethene	TM116	**104.6** 80.67 : 126.72
Dibromomethane	TM116	**96.0** 73.23 : 118.35
Dichloromethane	TM116	**112.8** 81.11 : 133.25
Ethylbenzene	TM116	**95.6** 75.92 : 110.41
Hexachlorobutadiene	TM116	**73.6** 12.82 : 152.73
Isopropylbenzene	TM116	**90.6** 54.30 : 105.91
Naphthalene	TM116	**103.4** 80.86 : 128.81
o-Xylene	TM116	**89.2** 69.99 : 108.74
p/m-Xylene	TM116	**89.4** 68.32 : 108.91
Sec-Butylbenzene	TM116	**90.0** 38.50 : 101.50
Tetrachloroethene	TM116	**104.2** 76.95 : 121.02
Toluene	TM116	**91.6** 74.24 : 107.42
Trichloroethene	TM116	**98.8** 85.28 : 109.36

VOC MS (S)

		QC 2498
Trichlorofluoromethane	TM116	**107.6** 81.46 : 120.52
Vinyl Chloride	TM116	**110.8** 68.02 : 143.37

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

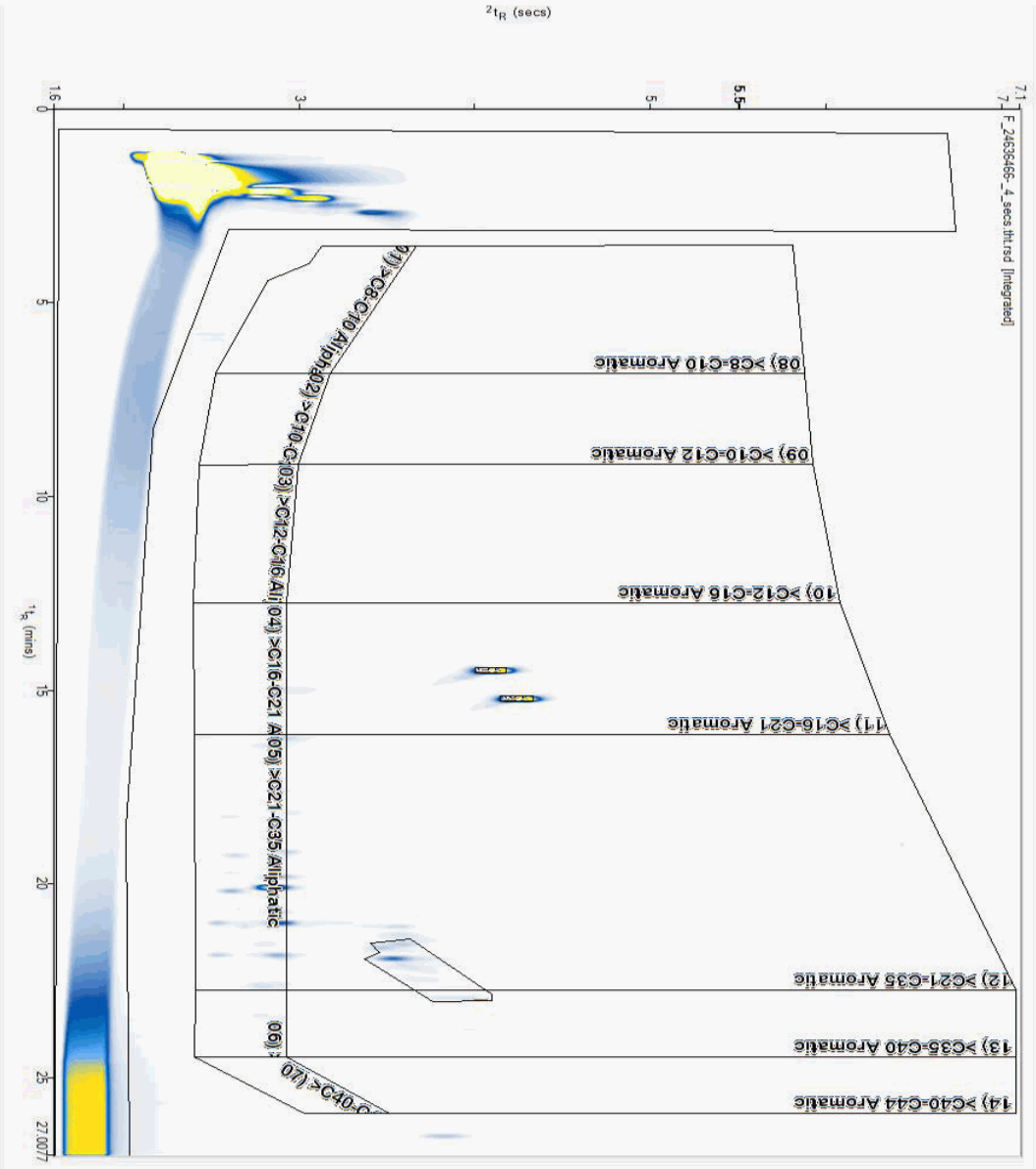
CERTIFICATE OF ANALYSIS

SDG:	210715-47	**Client Reference:**	784-B026948	**Report Number:**	607384
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	606937

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 24636466 **Depth :** 0.10 - 0.20
Sample ID : BH55

```
   ChromSpace LIMS export
  Current batch
Sample Identity:  F_24636466-_4_secs.tht
Date Acquired   :  18/07/21 01:29:34
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
```



CERTIFICATE OF ANALYSIS

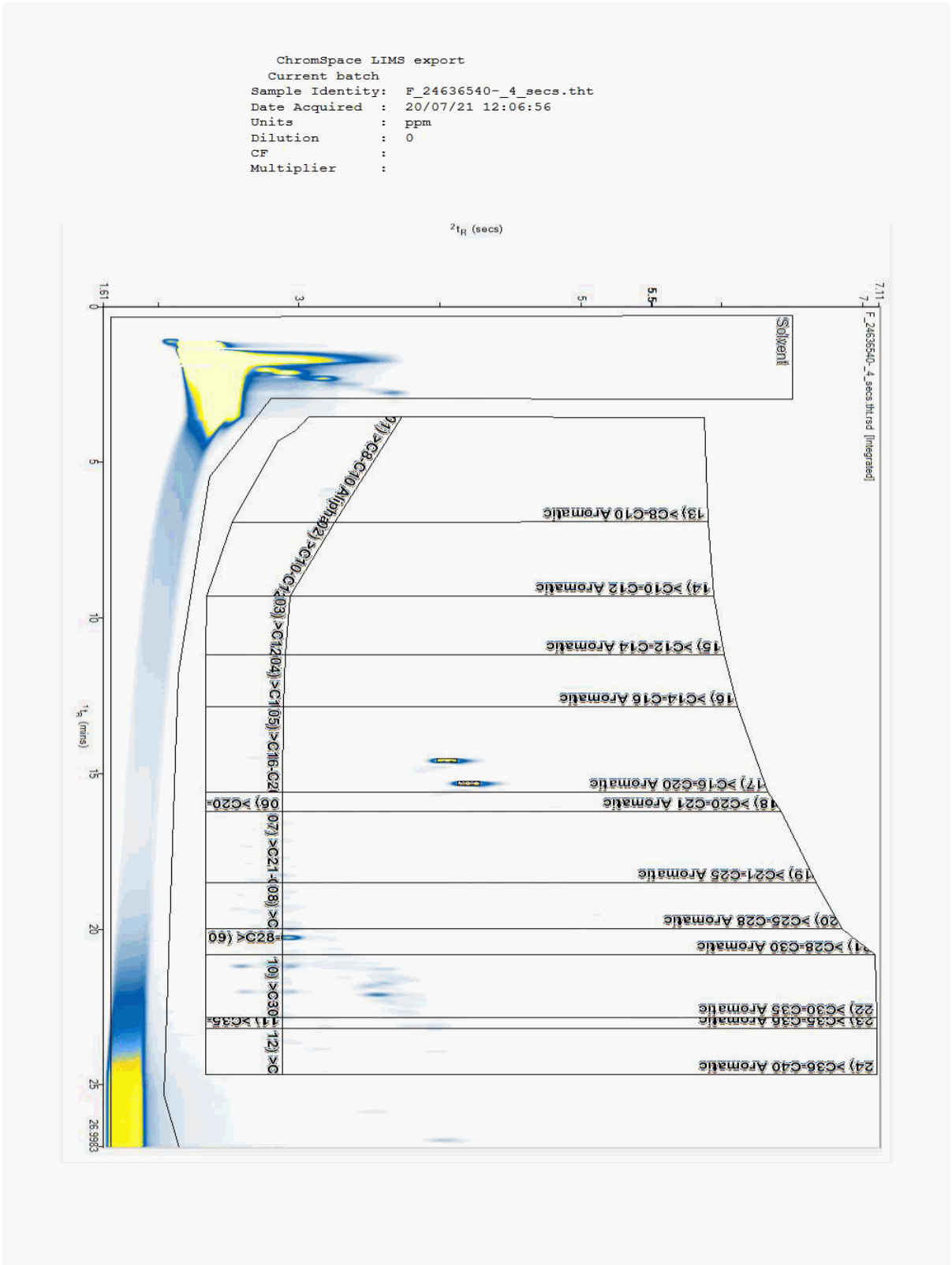
SDG:	210715-47	**Client Reference:**	784-B026948	**Report Number:**	607384
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	606937

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 24636540
Sample ID : BH55

Depth : 0.10 - 0.20



CERTIFICATE OF ANALYSIS

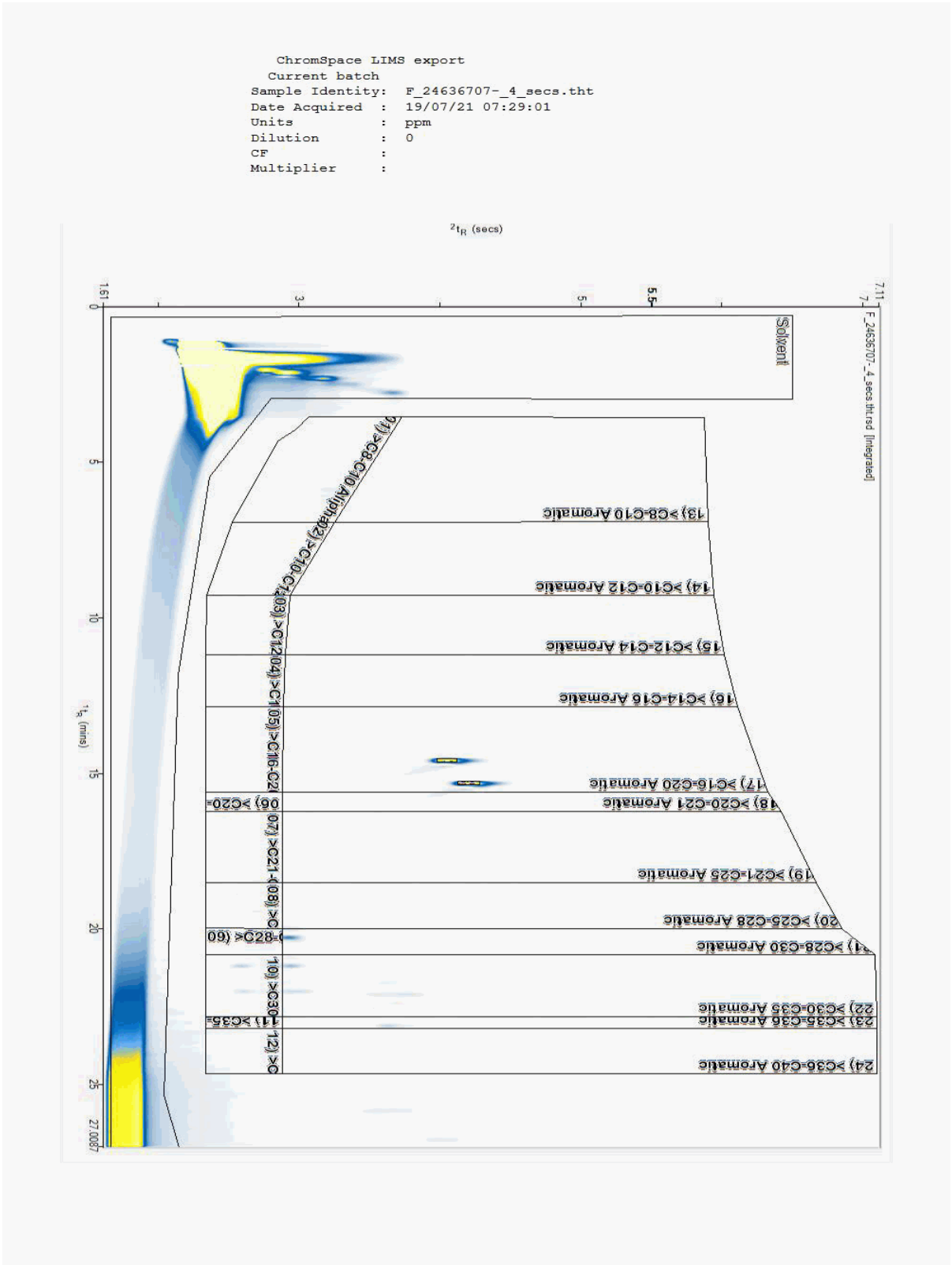
SDG:	210715-47	**Client Reference:**	784-B026948	**Report Number:**	607384
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	606937

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 24636707
Sample ID : TP08

Depth : 0.50 - 0.60



CERTIFICATE OF ANALYSIS

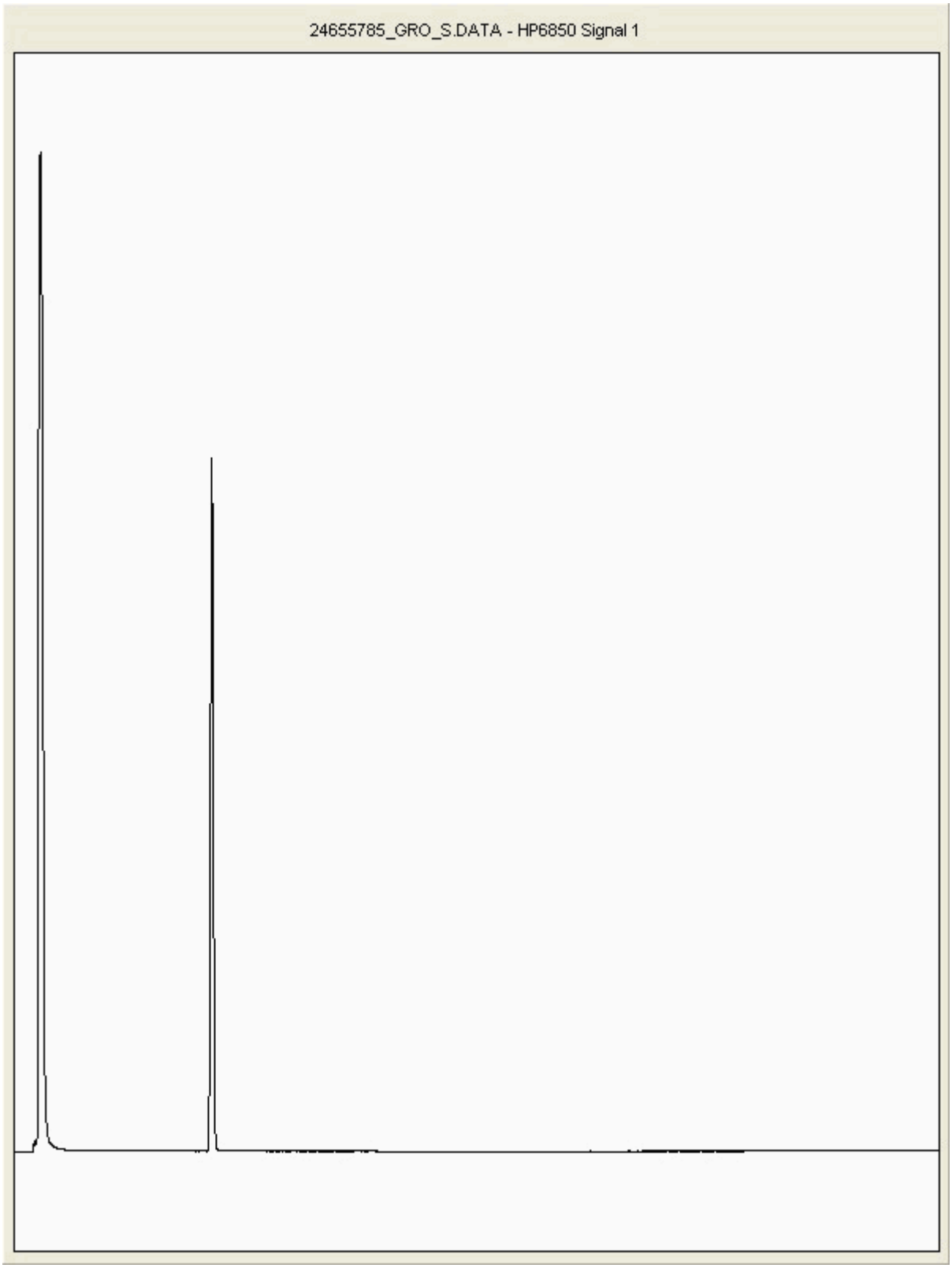
SDG:	210715-47	**Client Reference:**	784-B026948	**Report Number:**	607384
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	606937

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 24655785
Sample ID : BH55

Depth : 0.10 - 0.20



CERTIFICATE OF ANALYSIS

Work Order	: **PR2167622**	Issue Date	: 28-Jul-2021
Customer	: **ALS Life Sciences Ltd**	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: ALS Hawarden Reporting	Contact	: Client Service
Address	: Unit 7-8 Hawarden Business Park Manor Road, Hawarden CH5 3US Deeside United Kingdom	Address	: Na Harfe 336/9 Prague 9 - Vysocany 190 00 Czech Republic
E-mail	: euhdnsubconresults@ALSGlobal.com	E-mail	: customer.support@alsglobal.com
Telephone	: ----	Telephone	: +420 226 226 228
Project	: 210715-47	Page	: 1 of 2
Order number	: ----	Date Samples Received	: 19-Jul-2021
		Quote number	: PR2018ALSAL-GB0004 (CZ-256-18-0022)
Site	: ----	Date of test	: 20-Jul-2021 - 28-Jul-2021
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories		*Position*
Zdeněk Jirák	[redacted]	Environmental Business Unit Manager

The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)

Analytical Results

Sub-Matrix: **SOIL**			Client sample ID	**24636529 BH55**		**----**		**----**	
			Laboratory sample ID	*PR2167622-001*		----		----	
			Client sampling date / time	15-Jul-2021		----		----	
Parameter	*Method*	*LOR*	*Unit*	**Result**	**MU**	**Result**	**MU**	**Result**	**MU**
Physical Parameters									
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	**75.6**	± 6.0%	**----**	----	**----**	----
Pesticides									
2.4.5-T	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4.5-TP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-D	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
2.4-DP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
4-CPP	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bentazone	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dinoseb	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Fluroxypyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPA	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPB	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
MCPP (isomers)	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Acifluorfen	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Bromoxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
DNOC	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Dicamba	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Diclofop	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Ioxynil	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Propoxycarbazone-sodium	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclopyr	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----
Triclosan	S-PESLMSA1	0.0100	mg/kg DW	<0.0100	----	**----**	----	**----**	----

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.
Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	*Method Descriptions*
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-PESLMSA1	CZ_SOP_D06_03_182.B (CSN EN 15637, US EPA 1694) Determination of acidic herbicides and drug residues by liquid chromatography method with MS/MS detection.

A "*" symbol preceding any method indicates laboratory or subcontractor non-accredited test. If the UNICO-SUB code is stated in the method table, this only informs that the tests have been performed by a subcontractor and the results are given in an annex to the test report, including information on test accreditation. In the case when a procedure specified in an accredited method was used for non-accredited matrix, the reported results are non-accredited; please refer to information in General Comment section on the front page. If the report contains subcontracted analyses, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.
The calculation methods of summation parameters are available on request in the client service.

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
[redacted]

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	28 July 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210721-20
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	607395

We received 9 samples on Friday July 16, 2021 and 2 of these samples were scheduled for analysis which was completed on Wednesday July 28, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved [redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210721-20	**Client Reference:**	784-B026948	**Report Number:**	607395
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24665836	BH56	ES1	0.10 - 0.20	15/07/2021
24665840	BH56	ES2	0.30 - 0.40	15/07/2021
24665844	BH56	ES3	1.00 - 1.10	15/07/2021
24665812	BH45a	ES4	1.70 - 1.80	15/07/2021
24665832	BH45a	ES5	2.30 - 2.40	15/07/2021
24665816	BH45a	ES6	3.40 - 3.50	15/07/2021
24665820	BH45a	ES8	4.40 - 4.50	15/07/2021
24665824	BH45a	ES10	6.40 - 6.50	15/07/2021
24665828	BH45a	ES11	7.40 - 7.50	15/07/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	210721-20	**Client Reference:**	784-B026948	**Report Number:**	607395
Location:	A46 Newark Northern Bypa	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24665812				24665824					
Customer Sample Reference			BH45a				BH45a					
AGS Reference			ES4				ES10					
Depth (m)			1.70 - 1.80				6.40 - 6.50					
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)				
Sample Type			S	S	S	S	S	S				
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 2		X			X					
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1	X									
Ammonium Soil by Titration	All	NDPs: 0 Tests: 2		X			X					
Anions by Kone (soil)	All	NDPs: 0 Tests: 2		X			X					
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2	X			X						
Boron Water Soluble	All	NDPs: 0 Tests: 2		X			X					
CEN Readings	All	NDPs: 0 Tests: 1	X									
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 3	X	X			X					
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1	X									
EPH	All	NDPs: 0 Tests: 2		X			X					
EPH by GCxGC-FID	All	NDPs: 0 Tests: 2		X			X					
EPH CWG GC (S)	All	NDPs: 0 Tests: 2		X			X					
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2			X			X				
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 2		X			X					
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1	X									

CERTIFICATE OF ANALYSIS

SDG:	210721-20	**Client Reference:**	784-B026948	**Report Number:**	607395
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)					24665812						24665824
Customer Sample Reference					BH45a						BH45a
AGS Reference					ES4						ES10
Depth (m)					1.70 - 1.80						6.40 - 6.50
Container					1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type					S	S	S	S	S	S	
Mercury Dissolved	All	NDPs: 0 Tests: 1			X						
Metals in solid samples by OES	All	NDPs: 0 Tests: 2				X			X		
PAH by GCMS	All	NDPs: 0 Tests: 2				X			X		
pH	All	NDPs: 0 Tests: 2				X			X		
pH Value of Filtered Water	All	NDPs: 0 Tests: 1			X						
Phenols by HPLC (S)	All	NDPs: 0 Tests: 2				X			X		
Sample description	All	NDPs: 0 Tests: 2				X			X		
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1				X					
Sulphide	All	NDPs: 0 Tests: 1			X						
Total Organic Carbon	All	NDPs: 0 Tests: 2				X			X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 2				X			X		
VOC MS (S)	All	NDPs: 0 Tests: 2					X			X	

CERTIFICATE OF ANALYSIS

SDG:	210721-20	**Client Reference:**	784-B026948	**Report Number:**	607395
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24665812	BH45a	1.70 - 1.80	Dark Brown	Silty Sand	Stones	None
24665824	BH45a	6.40 - 6.50	Dark Brown	Clay	None	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210721-20	**Client Reference:**	784-B026948	**Report Number:**	607395
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.							
			BH45a		BH45a					
Depth (m)			1.70 - 1.80		6.40 - 6.50					
Sample Type			Soil/Solid (S)		Soil/Solid (S)					
Date Sampled			15/07/2021		15/07/2021					
Sampled Time			.		.					
Date Received			16/07/2021		16/07/2021					
SDG Ref			210721-20		210721-20					
Lab Sample No.(s)			24665812		24665824					
AGS Reference			ES4		ES10					
Moisture Content Ratio (% of as received sample)	%	PM024	17		19					
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12	M	99.4	M				
Phenol	<0.01 mg/kg	TM062 (S)	<0.01	M	<0.01	M				
Cresols	<0.01 mg/kg	TM062 (S)	<0.01	M	<0.01	M				
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015	M	<0.015	M				
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035	M	<0.035	M				
Soil Organic Matter (SOM)	<0.35 %	TM132	4.79	#	2.74	#				
pH	1 pH Units	TM133	9.95	M	6.93	M				
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6	#	<0.6	#				
Cyanide, Total	<1 mg/kg	TM153	<1	M	<1	M				
Arsenic	<0.6 mg/kg	TM181	99.7	M	15.2	M				
Cadmium	<0.02 mg/kg	TM181	0.0947	M	1.48	M				
Chromium	<0.9 mg/kg	TM181	36.9	M	36	M				
Copper	<1.4 mg/kg	TM181	73.8	M	42.5	M				
Iron	<1000 mg/kg	TM181	28500	#	40100	#				
Lead	<0.7 mg/kg	TM181	40.2	M	200	M				
Mercury	<0.1 mg/kg	TM181	<0.1	M	<0.1	M				
Nickel	<0.2 mg/kg	TM181	47	M	41.4	M				
Selenium	<1 mg/kg	TM181	1.5	#	<1	#				
Vanadium	<0.2 mg/kg	TM181	97.2	#	62.3	#				
Zinc	<1.9 mg/kg	TM181	56.5	M	246	M				
Boron, water soluble	<1 mg/kg	TM222	17.4	M	1.68	M				
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	1.25	M	0.0502	M				
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248	5.93		10.2					
EPH (C5-C40)	<35 mg/kg	TM415	<35		<35					
EPH Surrogate % recovery**	%	TM415	87.4		92.6					
EPH >C10-C40	<35 mg/kg	TM415	<35	M	<35	M				

CERTIFICATE OF ANALYSIS

SDG:	210721-20	**Client Reference:**	784-B026948	**Report Number:**	607395
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH45a	BH45a
			Depth (m)	1.70 - 1.80	6.40 - 6.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	15/07/2021	15/07/2021
			Sampled Time	.	.
			Date Received	16/07/2021	16/07/2021
			SDG Ref	210721-20	210721-20
			Lab Sample No.(s)	24665812	24665824
			AGS Reference	ES4	ES10
Naphthalene-d8 % recovery**	%	TM218		50.1	87.4
Acenaphthene-d10 % recovery**	%	TM218		50	84.9
Phenanthrene-d10 % recovery**	%	TM218		32.1	87
Chrysene-d12 % recovery**	%	TM218		8.72	83.5
Perylene-d12 % recovery**	%	TM218		2.89	85.2
Naphthalene	<0.009 mg/kg	TM218		<0.009 M	<0.009 M
Acenaphthylene	<0.012 mg/kg	TM218		<0.012 M	<0.012 M
Acenaphthene	<0.008 mg/kg	TM218		<0.008 M	<0.008 M
Fluorene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M
Phenanthrene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M
Anthracene	<0.016 mg/kg	TM218		<0.016 M	<0.016 M
Fluoranthene	<0.017 mg/kg	TM218		<0.017 M	<0.017 M
Pyrene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M
Benz(a)anthracene	<0.014 mg/kg	TM218		<0.014 M	<0.014 M
Chrysene	<0.01 mg/kg	TM218		<0.01 M	<0.01 M
Benzo(b)fluoranthene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M
Benzo(k)fluoranthene	<0.014 mg/kg	TM218		<0.014 M	<0.014 M
Benzo(a)pyrene	<0.015 mg/kg	TM218		<0.015 M	<0.015 M
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218		<0.018 M	<0.018 M
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218		<0.023 M	<0.023 M
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218		<0.024 M	<0.024 M
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218		<0.118	<0.118

CERTIFICATE OF ANALYSIS

SDG:	210721-20	**Client Reference:**	784-B026948	**Report Number:**	607395
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH45a
Depth (m)	1.70 - 1.80
Sample Type	Soil/Solid (S)
Date Sampled	15/07/2021
Sampled Time	.
Date Received	16/07/2021
SDG Ref	210721-20
Lab Sample No.(s)	24665812
AGS Reference	ES4

Component	LOD/Units	Method	
Phenol	<0.1 mg/kg	TM157	<0.1
Pentachlorophenol	<0.1 mg/kg	TM157	<0.1
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157	<0.1
Nitrobenzene	<0.1 mg/kg	TM157	<0.1
Isophorone	<0.1 mg/kg	TM157	<0.1
Hexachloroethane	<0.1 mg/kg	TM157	<0.1
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157	<0.1
Hexachlorobutadiene	<0.1 mg/kg	TM157	<0.1
Hexachlorobenzene	<0.1 mg/kg	TM157	<0.1
n-Dioctyl phthalate	<0.1 mg/kg	TM157	<0.1
Dimethyl phthalate	<0.1 mg/kg	TM157	<0.1
Diethyl phthalate	<0.1 mg/kg	TM157	<0.1
n-Dibutyl phthalate	<0.1 mg/kg	TM157	<0.1
Dibenzofuran	<0.1 mg/kg	TM157	<0.1
Carbazole	<0.1 mg/kg	TM157	<0.1
Butylbenzyl phthalate	<0.1 mg/kg	TM157	<0.1
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157	<0.1
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157	<0.1
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157	<0.1
Azobenzene	<0.1 mg/kg	TM157	<0.1
4-Nitrophenol	<0.1 mg/kg	TM157	<0.1
4-Nitroaniline	<0.1 mg/kg	TM157	<0.1
4-Methylphenol	<0.1 mg/kg	TM157	<0.1
4-Chlorophenylphenylether	<0.1 mg/kg	TM157	<0.1
4-Chloroaniline	<0.1 mg/kg	TM157	<0.1
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157	<0.1
4-Bromophenylphenylether	<0.1 mg/kg	TM157	<0.1
3-Nitroaniline	<0.1 mg/kg	TM157	<0.1
2-Nitrophenol	<0.1 mg/kg	TM157	<0.1
2-Nitroaniline	<0.1 mg/kg	TM157	<0.1
2-Methylphenol	<0.1 mg/kg	TM157	<0.1
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157	<0.1

CERTIFICATE OF ANALYSIS

SDG:	210721-20	**Client Reference:**	784-B026948	**Report Number:**	607395
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.			BH45a
Depth (m)			1.70 - 1.80
Sample Type			Soil/Solid (S)
Date Sampled			15/07/2021
Sampled Time			.
Date Received			16/07/2021
SDG Ref			210721-20
Lab Sample No.(s)			24665812
AGS Reference			ES4
Component	**LOD/Units**	**Method**	
2-Chlorophenol	<0.1 mg/kg	TM157	<0.1
2,6-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1
2,4-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1
2,4-Dimethylphenol	<0.1 mg/kg	TM157	<0.1
2,4-Dichlorophenol	<0.1 mg/kg	TM157	<0.1
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157	<0.1
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157	<0.1
1,4-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1
1,3-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1
1,2-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1
2-Chloronaphthalene	<0.1 mg/kg	TM157	<0.1
2-Methylnaphthalene	<0.1 mg/kg	TM157	<0.1
Acenaphthylene	<0.1 mg/kg	TM157	<0.1
Acenaphthene	<0.1 mg/kg	TM157	<0.1
Anthracene	<0.1 mg/kg	TM157	<0.1
Benzo(a)anthracene	<0.1 mg/kg	TM157	<0.1
Benzo(b)fluoranthene	<0.1 mg/kg	TM157	<0.1
Benzo(k)fluoranthene	<0.1 mg/kg	TM157	<0.1
Benzo(a)pyrene	<0.1 mg/kg	TM157	<0.1
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157	<0.1
Chrysene	<0.1 mg/kg	TM157	<0.1
Fluoranthene	<0.1 mg/kg	TM157	<0.1
Fluorene	<0.1 mg/kg	TM157	<0.1
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157	<0.1
Phenanthrene	<0.1 mg/kg	TM157	<0.1
Pyrene	<0.1 mg/kg	TM157	<0.1
Naphthalene	<0.1 mg/kg	TM157	<0.1
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157	<0.1
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157	<0.1

CERTIFICATE OF ANALYSIS

SDG:	210721-20	**Client Reference:**	784-B026948	**Report Number:**	607395
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH45a	BH45a
			Depth (m)	1.70 - 1.80	6.40 - 6.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	15/07/2021	15/07/2021
			Sampled Time	.	.
			Date Received	16/07/2021	16/07/2021
			SDG Ref	210721-20	210721-20
			Lab Sample No.(s)	24665812	24665824
			AGS Reference	ES4	ES10
GRO Surrogate % recovery**	%	TM089		31.9	90.7
Aliphatics >C5-C6	<0.01 mg/kg	TM089		0.0216	<0.01
Aliphatics >C6-C8	<0.01 mg/kg	TM089		0.0204	<0.01
Aliphatics >C8-C10	<0.01 mg/kg	TM089		0.012	<0.01
Aliphatics >C10-C12	<1 mg/kg	TM414		<1 #	<1 #
Aliphatics >C12-C16	<1 mg/kg	TM414		<1 #	<1 #
Aliphatics >C16-C21	<1 mg/kg	TM414		<1 #	<1 #
Aliphatics >C21-C35	<1 mg/kg	TM414		29.7 #	4.35 #
Aliphatics >C35-C44	<1 mg/kg	TM414		1.64	<1
Total Aliphatics >C10-C44	<5 mg/kg	TM414		31.9	<5
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414		38.9	<10
Aromatics >EC5-EC7	<0.01 mg/kg	TM089		<0.01	<0.01
Aromatics >EC7-EC8	<0.01 mg/kg	TM089		<0.01	<0.01
Aromatics >EC8-EC10	<0.01 mg/kg	TM089		<0.01	<0.01
Aromatics > EC10-EC12	<1 mg/kg	TM414		<1 #	<1 #
Aromatics > EC12-EC16	<1 mg/kg	TM414		<1 #	<1 #
Aromatics > EC16-EC21	<1 mg/kg	TM414		<1 #	<1 #
Aromatics > EC21-EC35	<1 mg/kg	TM414		5.93 #	<1 #
Aromatics >EC35-EC44	<1 mg/kg	TM414		<1	<1
Aromatics > EC40-EC44	<1 mg/kg	TM414		<1	<1
Total Aromatics > EC10-EC44	<5 mg/kg	TM414		6.99	<5
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414		39	<10
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089		0.054	<0.05
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089		<0.05	<0.05
GRO >C5-C10	<0.02 mg/kg	TM089		0.054	<0.02

CERTIFICATE OF ANALYSIS

SDG:	210721-20	**Client Reference:**	784-B026948	**Report Number:**	607395
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH45a	BH45a
			Depth (m)	1.70 - 1.80	6.40 - 6.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	15/07/2021	15/07/2021
			Sampled Time	.	.
			Date Received	16/07/2021	16/07/2021
			SDG Ref	210721-20	210721-20
			Lab Sample No.(s)	24665812	24665824
			AGS Reference	ES4	ES10
Dibromofluoromethane**	%	TM116		115	111
Toluene-d8**	%	TM116		99.3	100
4-Bromofluorobenzene**	%	TM116		94.3	98.1
Dichlorodifluoromethane	<0.006 mg/kg	TM116		<0.12 M	
Chloromethane	<0.007 mg/kg	TM116		<0.14 #	
Vinyl Chloride	<0.006 mg/kg	TM116		<0.12 M	
Bromomethane	<0.01 mg/kg	TM116		<0.2 M	
Chloroethane	<0.01 mg/kg	TM116		<0.2 M	
Trichlorofluorormethane	<0.006 mg/kg	TM116		<0.12 M	
1,1-Dichloroethene	<0.01 mg/kg	TM116		<0.2 #	
Carbon Disulphide	<0.007 mg/kg	TM116		<0.14 M	
Dichloromethane	<0.01 mg/kg	TM116		<0.2 #	
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116		<0.2 M	
1,1-Dichloroethane	<0.008 mg/kg	TM116		<0.16 M	
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116		<0.12 M	
2,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2	
Bromochloromethane	<0.01 mg/kg	TM116		<0.2 M	
Chloroform	<0.008 mg/kg	TM116		<0.16 M	
1,1,1-Trichloroethane	<0.007 mg/kg	TM116		<0.14 M	
1,1-Dichloropropene	<0.01 mg/kg	TM116		<0.2 M	
Carbontetrachloride	<0.01 mg/kg	TM116		<0.2 M	
1,2-Dichloroethane	<0.005 mg/kg	TM116		<0.1 3 M	
Benzene	<0.009 mg/kg	TM116		<0.18 M	<0.18 M
Trichloroethene	<0.009 mg/kg	TM116		<0.18 #	
1,2-Dichloropropane	<0.01 mg/kg	TM116		<0.2 M	
Dibromomethane	<0.009 mg/kg	TM116		<0.18 M	
Bromodichloromethane	<0.007 mg/kg	TM116		<0.14 M	
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2 M	
Toluene	<0.007 mg/kg	TM116		<0.14 M	<0.14 M
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116		<0.2	
1,1,2-Trichloroethane	<0.01 mg/kg	TM116		<0.2 M	

CERTIFICATE OF ANALYSIS

SDG:	210721-20	**Client Reference:**	784-B026948	**Report Number:**	607395
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH45a	BH45a
			Depth (m)	1.70 - 1.80	6.40 - 6.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	15/07/2021	15/07/2021
			Sampled Time	.	.
			Date Received	16/07/2021	16/07/2021
			SDG Ref	210721-20	210721-20
			Lab Sample No.(s)	24665812	24665824
			AGS Reference	ES4	ES10
1,3-Dichloropropane	<0.007 mg/kg	TM116		<0.14 M	
Tetrachloroethene	<0.005 mg/kg	TM116		<0.1 M	
Dibromochloromethane	<0.01 mg/kg	TM116		<0.2 M	
1,2-Dibromoethane	<0.01 mg/kg	TM116		<0.2 M	
Chlorobenzene	<0.005 mg/kg	TM116		<0.1 M	
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 M	
Ethylbenzene	<0.004 mg/kg	TM116		<0.08 M	<0.08 M
p/m-Xylene	<0.01 mg/kg	TM116		<0.2 #	<0.2 #
o-Xylene	<0.01 mg/kg	TM116		<0.2 M	<0.2 M
Styrene	<0.01 mg/kg	TM116		<0.2 #	
Bromoform	<0.01 mg/kg	TM116		<0.2 M	
Isopropylbenzene	<0.005 mg/kg	TM116		<0.1 #	
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116		<0.2 #	
1,2,3-Trichloropropane	<0.016 mg/kg	TM116		<0.32 M	
Bromobenzene	<0.01 mg/kg	TM116		<0.2 M	
Propylbenzene	<0.01 mg/kg	TM116		<0.2 M	
2-Chlorotoluene	<0.009 mg/kg	TM116		<0.18 M	
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116		<0.16 M	
4-Chlorotoluene	<0.01 mg/kg	TM116		<0.2 M	
tert-Butylbenzene	<0.014 mg/kg	TM116		<0.28 M	
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116		<0.18 #	
sec-Butylbenzene	<0.01 mg/kg	TM116		<0.2	
4-Isopropyltoluene	<0.01 mg/kg	TM116		<0.2 M	
1,3-Dichlorobenzene	<0.008 mg/kg	TM116		<0.16 M	
1,4-Dichlorobenzene	<0.005 mg/kg	TM116		<0.1 M	
n-Butylbenzene	<0.011 mg/kg	TM116		<0.22	
1,2-Dichlorobenzene	<0.01 mg/kg	TM116		<0.2 M	
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116		<0.28 M	
Tert-amyl methyl ether	<0.01 mg/kg	TM116		<0.2 #	
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4	
Hexachlorobutadiene	<0.02 mg/kg	TM116		<0.4	
Naphthalene	<0.013 mg/kg	TM116		<0.26 M	

CERTIFICATE OF ANALYSIS

SDG:	210721-20	**Client Reference:**	784-B026948	**Report Number:**	607395
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH45a	BH45a
			Depth (m)	1.70 - 1.80	6.40 - 6.50
			Sample Type	Soil/Solid (S)	Soil/Solid (S)
			Date Sampled	15/07/2021	15/07/2021
			Sampled Time	.	.
			Date Received	16/07/2021	16/07/2021
			SDG Ref	210721-20	210721-20
			Lab Sample No.(s)	24665812	24665824
			AGS Reference	ES4	ES10
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4 #	
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116		<0.4	
Sum of Detected Xylenes	<0.02 mg/kg	TM116		<0.4	<0.4
Sum of BTEX	<0.04 mg/kg	TM116		<0.8	<0.8

CERTIFICATE OF ANALYSIS

SDG:	210721-20	**Client Reference:**	784-B026948	**Report Number:**	607395
Location:	A46 Newark Northern Bypa	**Order Number:**	7001649	**Superseded Report:**	

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH45aES4 1.70 - 1.80 SOLID 15/07/2021 00:00:00 16/07/2021 05:00:00 210721-20 24665812 TM048	26/07/2021	Agnieszka Chelmowska	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH45aES10 6.40 - 6.50 SOLID 15/07/2021 00:00:00 16/07/2021 05:00:00 210721-20 24665824 TM048	26/07/2021	Agnieszka Chelmowska	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	210721-20	**Client Reference:**	784-B026948	**Report Number:**	607395
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.113	**Natural Moisture Content (%)**	24.5
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	80.3
Particle Size <4mm	>95%		

Case	
SDG	210721-20
Lab Sample Number(s)	24665812
Sampled Date	15-Jul-2021
Customer Sample Ref.	BH45a ES4
Depth (m)	1.70 - 1.80

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.0466	<0.0005	0.466	<0.005	-	-	-
Boron	0.759	<0.01	7.59	<0.1	-	-	-
Cadmium	0.000336	<0.00008	0.00336	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.19	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	0.0135	<0.001	0.135	<0.01	-	-	-
Vanadium	0.16	<0.001	1.6	<0.01	-	-	-
Zinc	0.00121	<0.001	0.0121	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	22-Jul-2021
pH (pH Units)	10.56
Conductivity (µS/cm)	721.00
Temperature (°C)	20.00
Volume Leachant (Litres)	0.878

28/07/2021 14:56:57

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210721-20	**Client Reference:**	784-B026948	**Report Number:**	607395
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24665812	24665824
Customer Sample Ref.	BH45a	BH45a
AGS Ref.	ES4	ES10
Depth	1.70 - 1.80	6.40 - 6.50
Type	Soil/Solid (S)	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	22-Jul-2021	22-Jul-2021
Ammoniacal Nitrogen	26-Jul-2021	
Ammonium Soil by Titration	23-Jul-2021	23-Jul-2021
Anions by Kone (soil)	26-Jul-2021	26-Jul-2021
Asbestos ID in Solid Samples	26-Jul-2021	26-Jul-2021
Boron Water Soluble	26-Jul-2021	26-Jul-2021
CEN 10:1 Leachate (1 Stage)	22-Jul-2021	
CEN Readings	27-Jul-2021	
Cyanide Comp/Free/Total/Thiocyanate	27-Jul-2021	23-Jul-2021
Dissolved Metals by ICP-MS	27-Jul-2021	
EPH	24-Jul-2021	23-Jul-2021
EPH by GCxGC-FID	23-Jul-2021	23-Jul-2021
EPH CWG GC (S)	22-Jul-2021	22-Jul-2021
GRO by GC-FID (S)	23-Jul-2021	22-Jul-2021
Hexavalent Chromium (s)	23-Jul-2021	23-Jul-2021
Hexavalent Chromium (w)	26-Jul-2021	
Mercury Dissolved	27-Jul-2021	
Metals in solid samples by OES	27-Jul-2021	27-Jul-2021
Moisture at 105C	22-Jul-2021	
PAH by GCMS	26-Jul-2021	22-Jul-2021
pH	22-Jul-2021	22-Jul-2021
pH Value of Filtered Water	27-Jul-2021	
Phenols by HPLC (S)	23-Jul-2021	23-Jul-2021
Sample description	21-Jul-2021	21-Jul-2021
Semi Volatile Organic Compounds	24-Jul-2021	
Sulphide	28-Jul-2021	
Total Organic Carbon	28-Jul-2021	28-Jul-2021
TPH CWG GC (S)	23-Jul-2021	22-Jul-2021
VOC MS (S)	22-Jul-2021	22-Jul-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2479
Ammoniacal Nitrogen as N	TM099	**97.6** 88.02 : 104.70

Ammonium Soil by Titration

Component	Method Code	QC 2494
Exchangeable Ammonium as NH4	TM024	**85.57** 74.04 : 103.44

Boron Water Soluble

Component	Method Code	QC 2486
Water Soluble Boron	TM222	**101.0** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2488	QC 2440
Free Cyanide	TM153	**96.24** 78.00 : 114.00	
Free Cyanide (W)	TM227		**85.0** 90.67 : 122.67
Thiocyanate	TM153	**100.0** 93.33 : 110.53	
Thiocyanate (W)	TM227		**111.25** 92.25 : 117.75
Total Cyanide	TM153	**102.1** 77.13 : 111.53	
Total Cyanide (W)	TM227		**107.25** 88.75 : 111.25

Dissolved Metals by ICP-MS

Component	Method Code	QC 2443
Aluminium	TM152	**104.67** 94.21 : 111.52
Antimony	TM152	**100.0** 88.37 : 130.57
Arsenic	TM152	**101.5** 92.62 : 113.52
Barium	TM152	**102.5** 88.62 : 113.14

Dissolved Metals by ICP-MS

		QC 2443
Beryllium	TM152	**104.67** 87.08 : 111.38
Bismuth	TM152	**101.0** 92.62 : 115.02
Boron	TM152	**106.33** 86.31 : 120.88
Cadmium	TM152	**100.0** 93.85 : 111.65
Calcium	TM152	**104.0** 89.20 : 126.91
Chromium	TM152	**102.83** 92.50 : 113.03
Cobalt	TM152	**102.33** 85.01 : 114.87
Copper	TM152	**103.17** 89.87 : 119.73
Iron	TM152	**103.33** 93.02 : 113.86
Lead	TM152	**101.33** 91.11 : 116.98
Lithium	TM152	**105.0** 87.70 : 115.90
Magnesium	TM152	**104.0** 89.60 : 116.61
Manganese	TM152	**102.17** 93.97 : 112.46
Molybdenum	TM152	**97.33** 89.07 : 110.96
Nickel	TM152	**102.67** 93.70 : 112.15
Phosphorus	TM152	**103.5** 89.24 : 114.18
Potassium	TM152	**104.0** 93.20 : 115.55
Selenium	TM152	**103.17** 91.69 : 117.12
Silver	TM152	**97.83** 90.93 : 121.73
Sodium	TM152	**106.0** 92.42 : 113.24
Strontium	TM152	**101.67** 92.14 : 116.24
Tellurium	TM152	**97.33** 89.88 : 111.78
Thallium	TM152	**91.67** 82.43 : 113.83
Tin	TM152	**99.33** 94.62 : 107.79
Titanium	TM152	**104.5** 90.29 : 115.23
Tungsten	TM152	**99.17** 77.61 : 132.31
Uranium	TM152	**100.67** 86.97 : 115.76

Dissolved Metals by ICP-MS

		QC 2443
Vanadium	TM152	**101.17** 89.61 : 115.48
Zinc	TM152	**103.33** 87.51 : 116.26

GRO by GC-FID (S)

Component	Method Code	QC 2484	QC 2466
QC	TM089	**98.18** 68.78 : 110.61	**91.39** 68.78 : 110.61

Hexavalent Chromium (s)

Component	Method Code	QC 2429
Hexavalent Chromium	TM151	**114.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2496
Hexavalent Chromium	TM241	**100.2** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2452
Mercury Dissolved (CVAF)	TM183	**95.4** 0.00 : 0.00

Metals in solid samples by OES

Component	Method Code	QC 2449
Aluminium	TM181	**103.51** 87.31 : 119.03
Antimony	TM181	**101.57** 91.44 : 127.13
Arsenic	TM181	**100.34** 88.32 : 120.05
Barium	TM181	**107.69** 94.57 : 124.93
Beryllium	TM181	**101.46** 85.72 : 122.69

CERTIFICATE OF ANALYSIS

SDG:	210721-20	**Client Reference:**	784-B026948	**Report Number:**	607395
Location:	A46 Newark Northern Bypa	**Order Number:**	7001649	**Superseded Report:**	

Metals in solid samples by OES

		QC 2449
Boron	TM181	**100.0** 85.66 : 120.25
Cadmium	TM181	**99.63** 87.31 : 121.62
Chromium	TM181	**95.12** 85.06 : 113.81
Cobalt	TM181	**98.55** 92.91 : 111.38
Copper	TM181	**93.74** 81.22 : 113.40
Iron	TM181	**103.67** 86.44 : 122.27
Lead	TM181	**100.99** 86.83 : 123.12
Manganese	TM181	**101.4** 89.22 : 121.75
Mercury	TM181	**97.07** 84.95 : 119.42
Molybdenum	TM181	**101.68** 85.98 : 123.80
Nickel	TM181	**98.81** 88.05 : 119.19
Phosphorus	TM181	**103.08** 90.13 : 121.54
Selenium	TM181	**99.63** 88.10 : 117.92
Strontium	TM181	**92.39** 79.10 : 111.59
Thallium	TM181	**97.65** 84.67 : 122.64
Tin	TM181	**99.11** 86.96 : 122.18
Titanium	TM181	**90.91** 84.66 : 112.24
Vanadium	TM181	**96.76** 84.00 : 115.50
Zinc	TM181	**98.87** 85.62 : 122.35

PAH by GCMS

Component	Method Code	QC 2451	QC 2481
Acenaphthene	TM218	**96.5** 73.47 : 109.80	**87.5** 76.79 : 103.90
Acenaphthylene	TM218	**97.0** 70.00 : 130.00	**86.0** 74.19 : 106.17
Anthracene	TM218	**94.5** 68.68 : 111.89	**87.5** 70.90 : 109.22
Benz(a)anthracene	TM218	**97.0** 68.12 : 118.39	**81.0** 73.77 : 119.26
Benzo(a)pyrene	TM218	**102.5** 71.72 : 115.31	**83.0** 73.20 : 114.18
Benzo(b)fluoranthene	TM218	**99.5** 66.89 : 120.40	**83.0** 75.36 : 117.58

PAH by GCMS

		QC 2451	QC 2481
Benzo(ghi)perylene	TM218	**102.5** 67.82 : 118.49	**77.0** 70.73 : 116.12
Benzo(k)fluoranthene	TM218	**95.5** 73.10 : 117.03	**82.5** 75.98 : 116.59
Chrysene	TM218	**95.5** 69.58 : 115.47	**81.0** 74.82 : 114.18
Dibenzo(ah)anthracene	TM218	**99.0** 67.32 : 121.35	**76.0** 69.17 : 115.30
Fluoranthene	TM218	**95.0** 75.16 : 117.28	**91.0** 66.06 : 114.63
Fluorene	TM218	**95.5** 73.81 : 108.66	**89.0** 76.66 : 107.56
Indeno(123cd)pyrene	TM218	**91.0** 68.91 : 117.62	**73.5** 70.26 : 117.95
Naphthalene	TM218	**97.0** 72.12 : 106.18	**87.5** 74.70 : 101.83
Phenanthrene	TM218	**97.5** 69.01 : 113.72	**90.0** 73.62 : 109.34
Pyrene	TM218	**96.5** 64.28 : 115.75	**90.5** 71.46 : 117.00

pH

Component	Method Code	QC 2403
pH	TM133	**99.41** 98.09 : 101.62

pH Value of Filtered Water

Component	Method Code	QC 2484
pH	TM256	**101.2** 99.33 : 102.54

Phenols by HPLC (S)

Component	Method Code	QC 2455
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**53.9** 69.38 : 125.27
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**48.54** 69.79 : 122.84
Cresols by HPLC (S)	TM062 (S)	**51.77** 77.98 : 111.41
Phenol by HPLC (S)	TM062 (S)	**53.64** 67.94 : 117.69
Xylenols by HPLC (S)	TM062 (S)	**51.67** 88.23 : 104.42

Semi Volatile Organic Compounds

Semi Volatile Organic Compounds

Component	Method Code	QC 2409
4-Bromophenylphenylether (Soil)	TM157	**94.5** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**96.0** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**98.5** 68.25 : 126.75
Naphthalene (Soil)	TM157	**97.0** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**82.5** 66.50 : 123.50
Phenol (Soil)	TM157	**104.0** 69.92 : 114.02

Sulphide

Component	Method Code	QC 2405
Sulphide	TM101	**108.0** 88.90 : 112.50

Total Organic Carbon

Component	Method Code	QC 2492
Total Organic Carbon	TM132	**98.05** 84.82 : 117.61

VOC MS (S)

Component	Method Code	QC 2478
1,1,1,2-tetrachloroethane	TM116	**106.0** 84.84 : 116.25
1,1,1-Trichloroethane	TM116	**102.6** 73.73 : 118.05
1,1,2-Trichloroethane	TM116	**101.2** 77.12 : 116.04
1,1-Dichloroethane	TM116	**108.6** 74.46 : 129.15
1,2-Dichloroethane	TM116	**122.0** 92.38 : 131.65
1,4-Dichlorobenzene	TM116	**107.8** 83.64 : 126.18
2-Chlorotoluene	TM116	**101.8** 76.03 : 113.25
4-Chlorotoluene	TM116	**102.2** 66.90 : 112.46
Benzene	TM116	**105.6** 88.60 : 113.80
Carbon Disulphide	TM116	**99.0** 74.91 : 122.14

VOC MS (S)

		QC 2478
Carbontetrachloride	TM116	**110.0** 80.31 : 124.50
Chlorobenzene	TM116	**105.4** 83.81 : 114.18
Chloroform	TM116	**109.8** 87.40 : 122.49
Chloromethane	TM116	**106.0** 63.11 : 124.36
Cis-1,2-Dichloroethene	TM116	**105.0** 80.67 : 126.72
Dibromomethane	TM116	**103.0** 73.23 : 118.35
Dichloromethane	TM116	**116.6** 81.11 : 133.25
Ethylbenzene	TM116	**99.4** 75.92 : 110.41
Hexachlorobutadiene	TM116	**90.2** 12.82 : 152.73
Isopropylbenzene	TM116	**97.0** 54.30 : 105.91
Naphthalene	TM116	**115.4** 80.86 : 128.81
o-Xylene	TM116	**95.0** 69.99 : 108.74
p/m-Xylene	TM116	**97.7** 68.32 : 108.91
Sec-Butylbenzene	TM116	**96.2** 38.50 : 101.50
Tetrachloroethene	TM116	**109.2** 76.95 : 121.02
Toluene	TM116	**96.2** 74.24 : 107.42
Trichloroethene	TM116	**102.8** 85.28 : 109.36
Trichlorofluoromethane	TM116	**108.4** 81.46 : 120.52
Vinyl Chloride	TM116	**108.2** 68.02 : 143.37

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

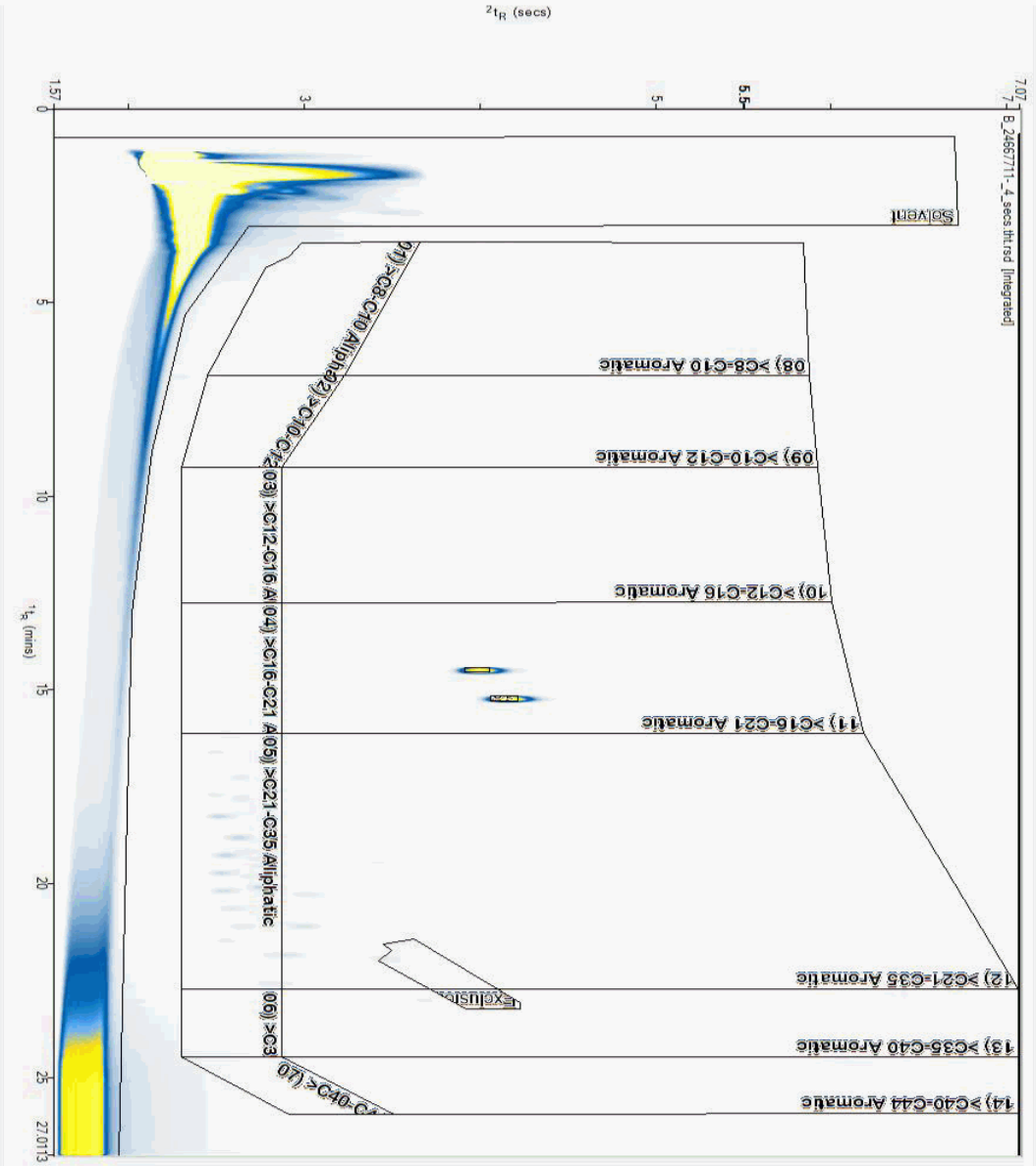
CERTIFICATE OF ANALYSIS

SDG:	210721-20	**Client Reference:**	784-B026948	**Report Number:**	607395
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 24667711 **Depth :** 6.40 - 6.50
Sample ID : BH45a

```
  ChromSpace LIMS export
 Current batch
Sample Identity:  B_24667711-_4_secs.tht
Date Acquired   :  21/07/21 06:58:49
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
```



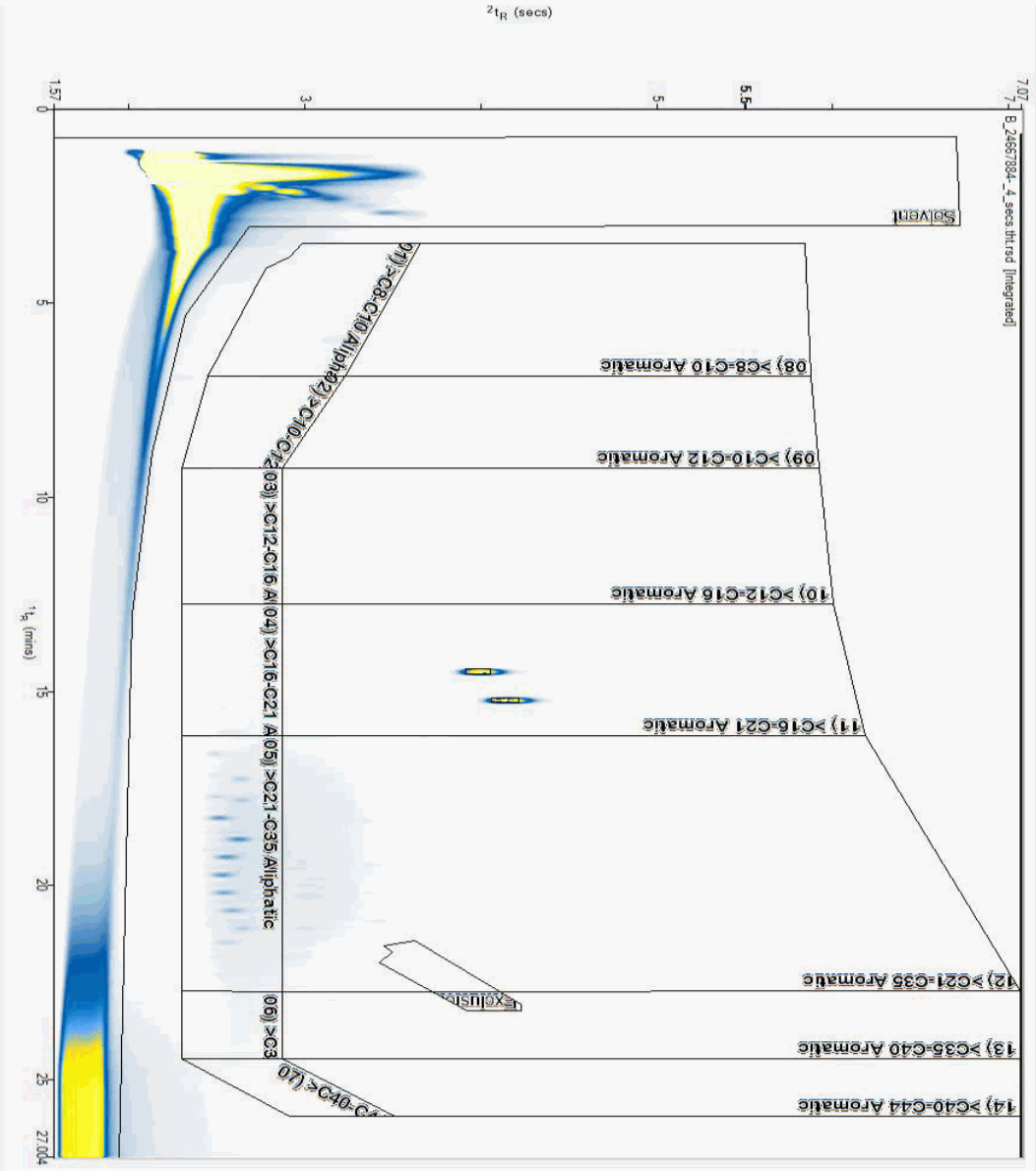
CERTIFICATE OF ANALYSIS

SDG:	210721-20	**Client Reference:**	784-B026948	**Report Number:**	607395
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 24667884 **Depth :** 1.70 - 1.80
Sample ID : BH45a

```
  ChromSpace LIMS export
 Current batch
Sample Identity:  B_24667884-_4_secs.tht
Date Acquired   :  21/07/21 06:27:56
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
```

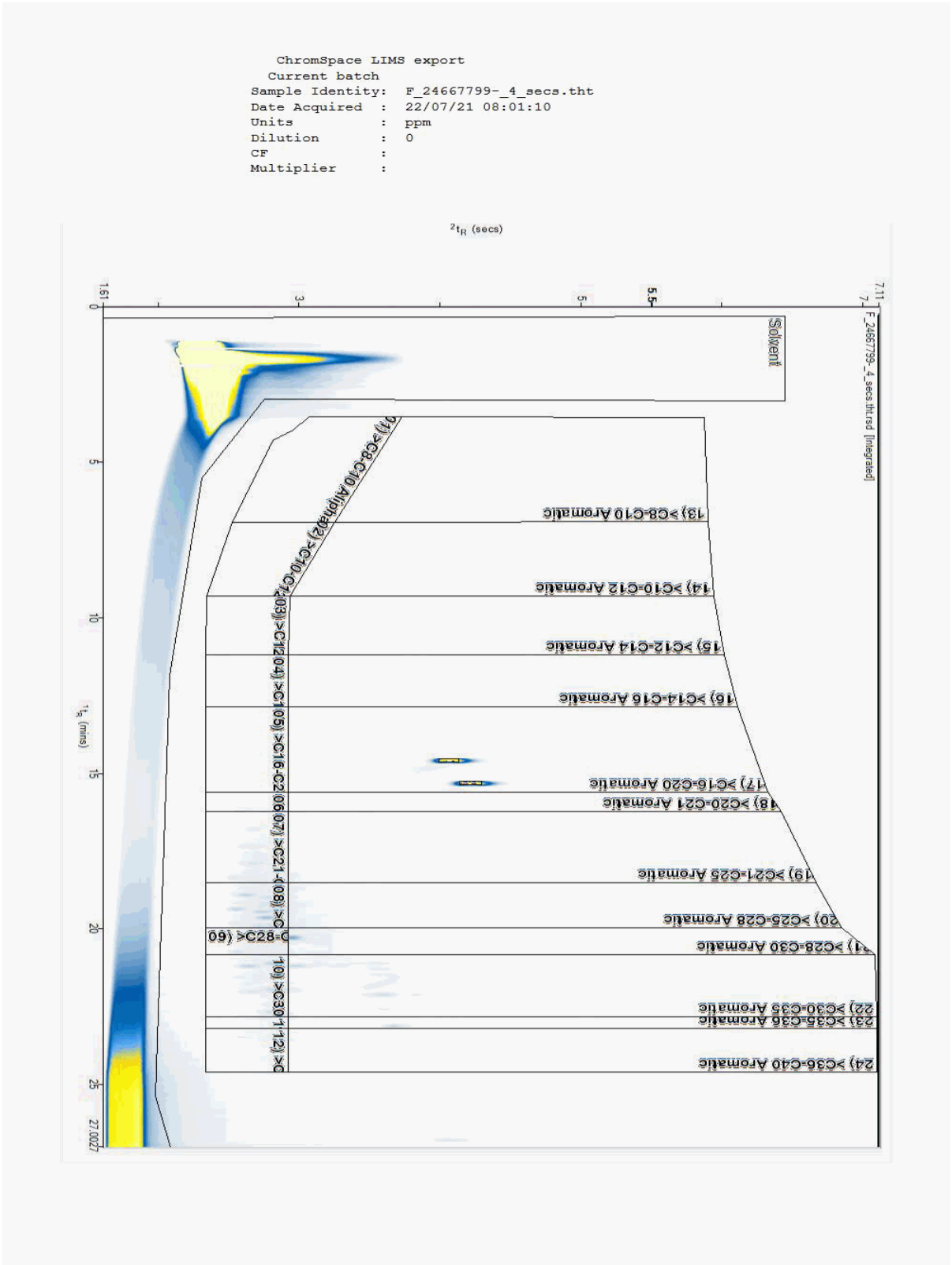


CERTIFICATE OF ANALYSIS

SDG:	210721-20	**Client Reference:**	784-B026948	**Report Number:**	607395
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH by GCxGC-FID **Sample No :** 24667799 **Depth :** 6.40 - 6.50
Sample ID : BH45a



CERTIFICATE OF ANALYSIS

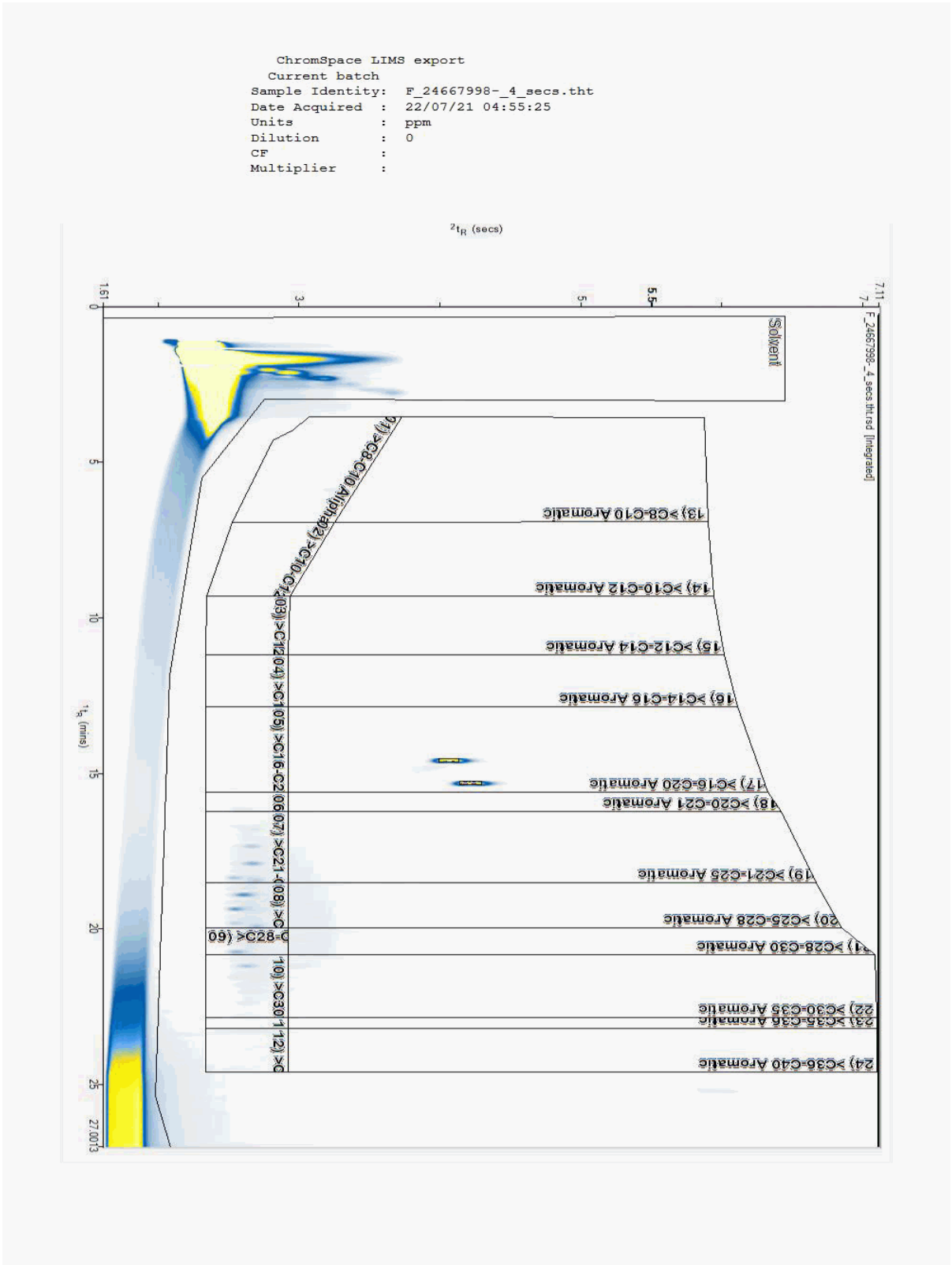
SDG:	210721-20	**Client Reference:**	784-B026948	**Report Number:**	607395
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH by GCxGC-FID

Sample No : 24667998
Sample ID : BH45a

Depth : 1.70 - 1.80



CERTIFICATE OF ANALYSIS

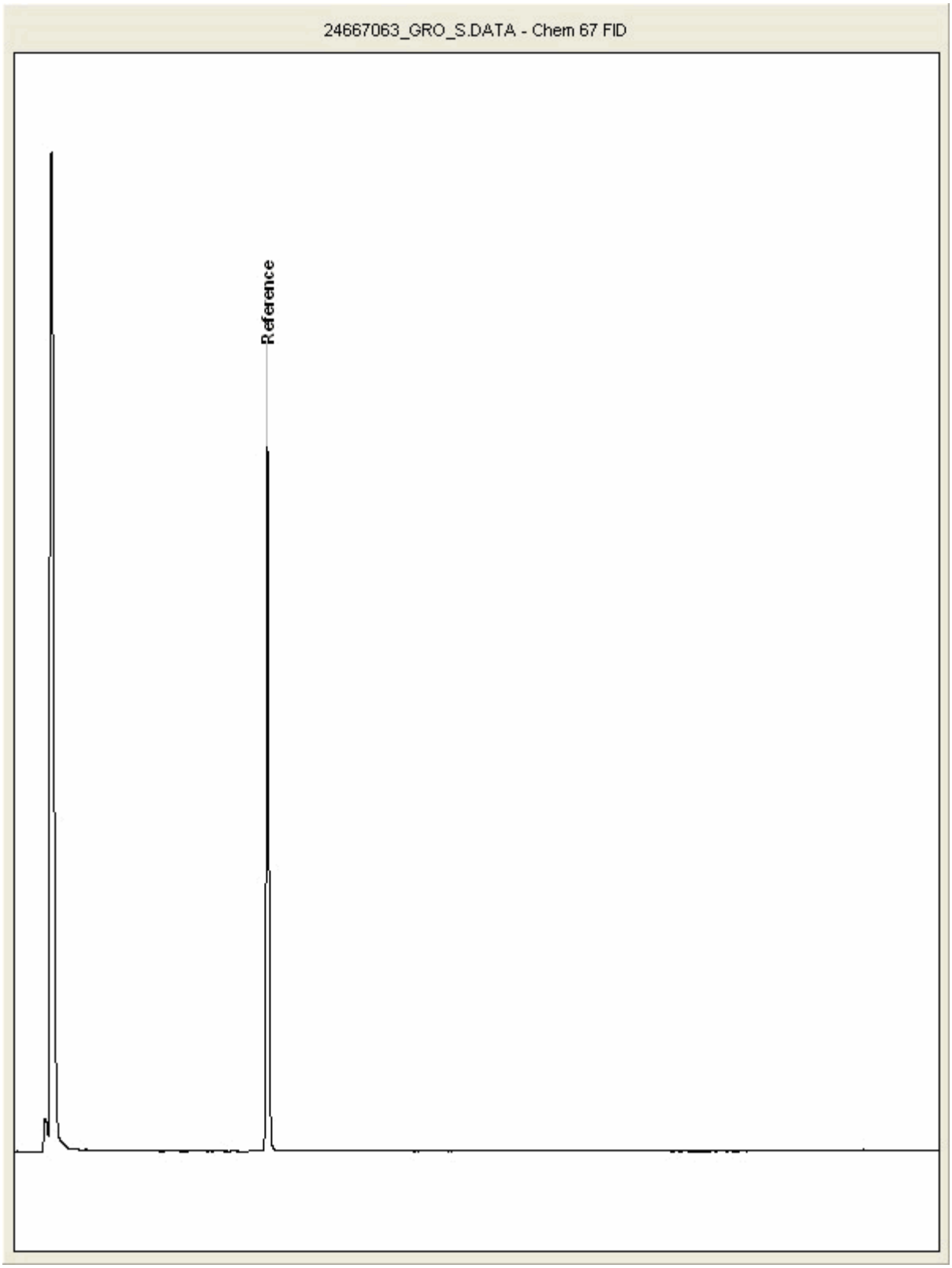
SDG:	210721-20	**Client Reference:**	784-B026948	**Report Number:**	607395
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 24667063
Sample ID : BH45a

Depth : 6.40 - 6.50



CERTIFICATE OF ANALYSIS

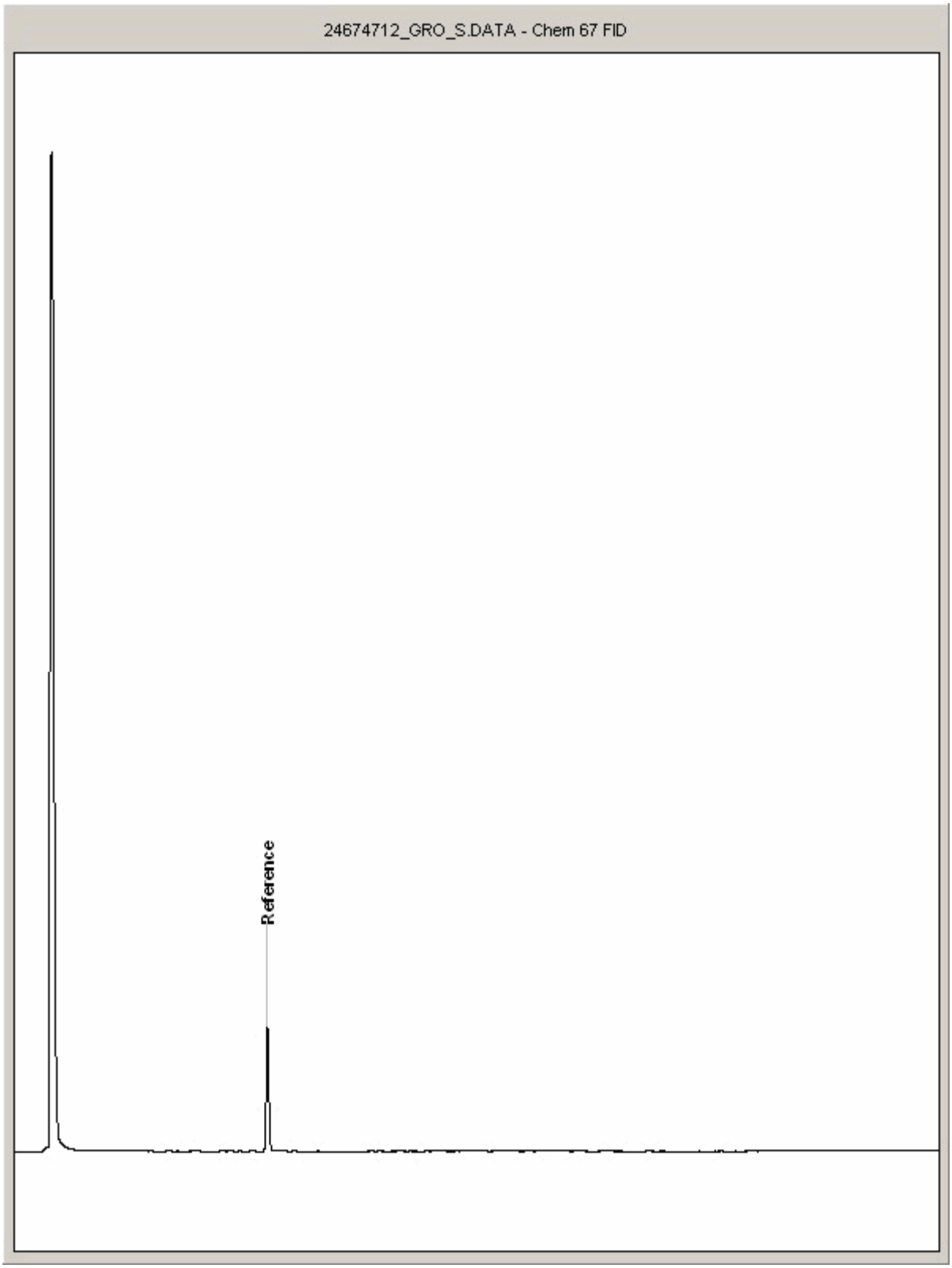
SDG:	210721-20	**Client Reference:**	784-B026948	**Report Number:**	607395
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 24674712
Sample ID : BH45a

Depth : 1.70 - 1.80



Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
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email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	29 July 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210722-31
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	607582

We received 3 samples on Wednesday July 21, 2021 and 1 of these samples were scheduled for analysis which was completed on Thursday July 29, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210722-31	**Client Reference:**	784-B026948	**Report Number:**	607582
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24671863	BH42	ES12	10.50 - 10.60	19/07/2021
24671867	BH42	ES13	11.50 - 11.60	19/07/2021
24671871	BH42	ES14	11.90 - 12.00	19/07/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	210722-31	**Client Reference:**	784-B026948	**Report Number:**	607582
Location:	A46 Newark Northern Bypa	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	24671863
			Customer Sample Reference	BH42
			AGS Reference	ES12
			Depth (m)	10.50 - 10.60
			Container	1kg TUB with Handle (ALE260) / 250g Amber Jar (ALE210) / 60g VOC (ALE215)
			Sample Type	S / S / S
Ammoniacal N as NH4 in 2:1 extract	All	NDPs: 0 Tests: 1		X	
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 1	X		
Ammonium Soil by Titration	All	NDPs: 0 Tests: 1		X	
Anions by Kone (soil)	All	NDPs: 0 Tests: 1		X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 1	X		
Boron Water Soluble	All	NDPs: 0 Tests: 1		X	
CEN Readings	All	NDPs: 0 Tests: 1	X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 2	X	X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1	X		
EPH	All	NDPs: 0 Tests: 1		X	
EPH by GCxGC-FID	All	NDPs: 0 Tests: 1		X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 1		X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 1		X	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 1	X		

CERTIFICATE OF ANALYSIS

SDG:	210722-31	**Client Reference:**	784-B026948	**Report Number:**	607582
Location:	A46 Newark Northern Bypa	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24671863			
Customer Sample Reference			BH42			
AGS Reference			ES12			
Depth (m)			10.50 - 10.60			
Container			1kg TUB with Handle (ALE260)	250g Amber Jar (ALE210)	60g VOC (ALE215)	
Sample Type			S	S	S	
Mercury Dissolved	All	NDPs: 0 Tests: 1	X			
Metals in solid samples by OES	All	NDPs: 0 Tests: 1		X		
PAH by GCMS	All	NDPs: 0 Tests: 1		X		
pH	All	NDPs: 0 Tests: 1		X		
pH Value of Filtered Water	All	NDPs: 0 Tests: 1	X			
Phenols by HPLC (S)	All	NDPs: 0 Tests: 1		X		
Sample description	All	NDPs: 0 Tests: 1		X		
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1		X		
Sulphide	All	NDPs: 0 Tests: 1	X			
Total Organic Carbon	All	NDPs: 0 Tests: 1		X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 1		X		
VOC MS (S)	All	NDPs: 0 Tests: 1			X	

CERTIFICATE OF ANALYSIS

SDG:	210722-31	**Client Reference:**	784-B026948	**Report Number:**	607582
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	<0.063mm	**fine**	0.063mm - 0.1mm	**medium**	0.1mm - 2mm	**coarse**	2mm - 10mm	**very coarse**	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
24671863	BH42	10.50 - 10.60	Dark Brown	Silty Sand	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

CERTIFICATE OF ANALYSIS

SDG:	210722-31	**Client Reference:**	784-B026948	**Report Number:**	607582
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH42
Depth (m)	10.50 - 10.60
Sample Type	Soil/Solid (S)
Date Sampled	19/07/2021
Sampled Time	.
Date Received	21/07/2021
SDG Ref	210722-31
Lab Sample No.(s)	24671863
AGS Reference	ES12

Component	LOD/Units	Method		
Moisture Content Ratio (% of as received sample)	%	PM024	16	
Exchangeable Ammonia as N	<12 mg/kg	TM024	<12	M
Phenol	<0.01 mg/kg	TM062 (S)	<0.01	M
Cresols	<0.01 mg/kg	TM062 (S)	<0.01	M
Xylenols	<0.015 mg/kg	TM062 (S)	<0.015	M
Phenols, Total Detected monohydric	<0.035 mg/kg	TM062 (S)	<0.035	M
Soil Organic Matter (SOM)	<0.35 %	TM132	5.1	#
pH	1 pH Units	TM133	10.4	M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6	#
Cyanide, Total	<1 mg/kg	TM153	<1	M
Arsenic	<0.6 mg/kg	TM181	112	M
Cadmium	<0.02 mg/kg	TM181	<0.02	M
Chromium	<0.9 mg/kg	TM181	41.3	M
Copper	<1.4 mg/kg	TM181	87.1	M
Iron	<1000 mg/kg	TM181	33600	#
Lead	<0.7 mg/kg	TM181	46	M
Mercury	<0.1 mg/kg	TM181	<0.1	M
Nickel	<0.2 mg/kg	TM181	53	M
Selenium	<1 mg/kg	TM181	2.75	#
Vanadium	<0.2 mg/kg	TM181	111	#
Zinc	<1.9 mg/kg	TM181	61	M
Boron, water soluble	<1 mg/kg	TM222	24.6	M
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243	1.78	M
Ammoniacal N as NH4 in 2:1 extract	<0.5 mg/kg	TM248	5.56	
EPH (C5-C40)	<35 mg/kg	TM415	<35	
EPH Surrogate % recovery**	%	TM415	99	
EPH >C10-C40	<35 mg/kg	TM415	<35	M

CERTIFICATE OF ANALYSIS

SDG:	210722-31	**Client Reference:**	784-B026948	**Report Number:**	607582
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH42
Depth (m)	10.50 - 10.60
Sample Type	Soil/Solid (S)
Date Sampled	19/07/2021
Sampled Time	.
Date Received	21/07/2021
SDG Ref	210722-31
Lab Sample No.(s)	24671863
AGS Reference	ES12

Component	LOD/Units	Method						
Naphthalene-d8 % recovery**	%	TM218	54.2					
Acenaphthene-d10 % recovery**	%	TM218	48.4					
Phenanthrene-d10 % recovery**	%	TM218	29.6					
Chrysene-d12 % recovery**	%	TM218	13.2					
Perylene-d12 % recovery**	%	TM218	7.28					
Naphthalene	<0.009 mg/kg	TM218	<0.009 M					
Acenaphthylene	<0.012 mg/kg	TM218	<0.012 M					
Acenaphthene	<0.008 mg/kg	TM218	<0.008 M					
Fluorene	<0.01 mg/kg	TM218	<0.01 M					
Phenanthrene	<0.015 mg/kg	TM218	<0.015 M					
Anthracene	<0.016 mg/kg	TM218	<0.016 M					
Fluoranthene	<0.017 mg/kg	TM218	<0.017 M					
Pyrene	<0.015 mg/kg	TM218	<0.015 M					
Benz(a)anthracene	<0.014 mg/kg	TM218	<0.014 M					
Chrysene	<0.01 mg/kg	TM218	<0.01 M					
Benzo(b)fluoranthene	<0.015 mg/kg	TM218	<0.015 M					
Benzo(k)fluoranthene	<0.014 mg/kg	TM218	<0.014 M					
Benzo(a)pyrene	<0.015 mg/kg	TM218	<0.015 M					
Indeno(1,2,3-cd)pyrene	<0.018 mg/kg	TM218	<0.018 M					
Dibenzo(a,h)anthracene	<0.023 mg/kg	TM218	<0.023 M					
Benzo(g,h,i)perylene	<0.024 mg/kg	TM218	<0.024 M					
PAH, Total Detected USEPA 16	<0.118 mg/kg	TM218	<0.118					

CERTIFICATE OF ANALYSIS

SDG:	210722-31	**Client Reference:**	784-B026948	**Report Number:**	607582
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH42
Depth (m)	10.50 - 10.60
Sample Type	Soil/Solid (S)
Date Sampled	19/07/2021
Sampled Time	.
Date Received	21/07/2021
SDG Ref	210722-31
Lab Sample No.(s)	24671863
AGS Reference	ES12

Component	LOD/Units	Method	
Phenol	<0.1 mg/kg	TM157	<0.1
Pentachlorophenol	<0.1 mg/kg	TM157	<0.1
n-Nitroso-n-dipropylamine	<0.1 mg/kg	TM157	<0.1
Nitrobenzene	<0.1 mg/kg	TM157	<0.1
Isophorone	<0.1 mg/kg	TM157	<0.1
Hexachloroethane	<0.1 mg/kg	TM157	<0.1
Hexachlorocyclopentadiene	<0.1 mg/kg	TM157	<0.1
Hexachlorobutadiene	<0.1 mg/kg	TM157	<0.1
Hexachlorobenzene	<0.1 mg/kg	TM157	<0.1
n-Dioctyl phthalate	<0.1 mg/kg	TM157	<0.1
Dimethyl phthalate	<0.1 mg/kg	TM157	<0.1
Diethyl phthalate	<0.1 mg/kg	TM157	<0.1
n-Dibutyl phthalate	<0.1 mg/kg	TM157	<0.1
Dibenzofuran	<0.1 mg/kg	TM157	<0.1
Carbazole	<0.1 mg/kg	TM157	<0.1
Butylbenzyl phthalate	<0.1 mg/kg	TM157	<0.1
bis(2-Ethylhexyl) phthalate	<0.1 mg/kg	TM157	<0.1
bis(2-Chloroethoxy)methane	<0.1 mg/kg	TM157	<0.1
bis(2-Chloroethyl)ether	<0.1 mg/kg	TM157	<0.1
Azobenzene	<0.1 mg/kg	TM157	<0.1
4-Nitrophenol	<0.1 mg/kg	TM157	<0.1
4-Nitroaniline	<0.1 mg/kg	TM157	<0.1
4-Methylphenol	<0.1 mg/kg	TM157	<0.1
4-Chlorophenylphenylether	<0.1 mg/kg	TM157	<0.1
4-Chloroaniline	<0.1 mg/kg	TM157	<0.1
4-Chloro-3-methylphenol	<0.1 mg/kg	TM157	<0.1
4-Bromophenylphenylether	<0.1 mg/kg	TM157	<0.1
3-Nitroaniline	<0.1 mg/kg	TM157	<0.1
2-Nitrophenol	<0.1 mg/kg	TM157	<0.1
2-Nitroaniline	<0.1 mg/kg	TM157	<0.1
2-Methylphenol	<0.1 mg/kg	TM157	<0.1
1,2,4-Trichlorobenzene	<0.1 mg/kg	TM157	<0.1

CERTIFICATE OF ANALYSIS

SDG:	210722-31	**Client Reference:**	784-B026948	**Report Number:**	607582
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH42
Depth (m)	10.50 - 10.60
Sample Type	Soil/Solid (S)
Date Sampled	19/07/2021
Sampled Time	.
Date Received	21/07/2021
SDG Ref	210722-31
Lab Sample No.(s)	24671863
AGS Reference	ES12

Component	LOD/Units	Method	
2-Chlorophenol	<0.1 mg/kg	TM157	<0.1
2,6-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1
2,4-Dinitrotoluene	<0.1 mg/kg	TM157	<0.1
2,4-Dimethylphenol	<0.1 mg/kg	TM157	<0.1
2,4-Dichlorophenol	<0.1 mg/kg	TM157	<0.1
2,4,6-Trichlorophenol	<0.1 mg/kg	TM157	<0.1
2,4,5-Trichlorophenol	<0.1 mg/kg	TM157	<0.1
1,4-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1
1,3-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1
1,2-Dichlorobenzene	<0.1 mg/kg	TM157	<0.1
2-Chloronaphthalene	<0.1 mg/kg	TM157	<0.1
2-Methylnaphthalene	<0.1 mg/kg	TM157	<0.1
Acenaphthylene	<0.1 mg/kg	TM157	<0.1
Acenaphthene	<0.1 mg/kg	TM157	<0.1
Anthracene	<0.1 mg/kg	TM157	<0.1
Benzo(a)anthracene	<0.1 mg/kg	TM157	<0.1
Benzo(b)fluoranthene	<0.1 mg/kg	TM157	<0.1
Benzo(k)fluoranthene	<0.1 mg/kg	TM157	<0.1
Benzo(a)pyrene	<0.1 mg/kg	TM157	<0.1
Benzo(g,h,i)perylene	<0.1 mg/kg	TM157	<0.1
Chrysene	<0.1 mg/kg	TM157	<0.1
Fluoranthene	<0.1 mg/kg	TM157	<0.1
Fluorene	<0.1 mg/kg	TM157	<0.1
Indeno(1,2,3-cd)pyrene	<0.1 mg/kg	TM157	<0.1
Phenanthrene	<0.1 mg/kg	TM157	<0.1
Pyrene	<0.1 mg/kg	TM157	<0.1
Naphthalene	<0.1 mg/kg	TM157	<0.1
Dibenzo(a,h)anthracene	<0.1 mg/kg	TM157	<0.1
Bis(2-chloroisopropyl) ether	<0.1 mg/kg	TM157	<0.1

CERTIFICATE OF ANALYSIS

SDG:	210722-31	**Client Reference:**	784-B026948	**Report Number:**	607582
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref. BH42 Depth (m) 10.50 - 10.60 Sample Type Soil/Solid (S) Date Sampled 19/07/2021 Sampled Time . Date Received 21/07/2021 SDG Ref 210722-31 Lab Sample No.(s) 24671863 AGS Reference ES12
GRO Surrogate % recovery**	%	TM089	24.8 4
Aliphatics >C5-C6	<0.01 mg/kg	TM089	<0.01 4
Aliphatics >C6-C8	<0.01 mg/kg	TM089	<0.01 4
Aliphatics >C8-C10	<0.01 mg/kg	TM089	<0.01 4
Aliphatics >C10-C12	<1 mg/kg	TM414	<1 #
Aliphatics >C12-C16	<1 mg/kg	TM414	<1 #
Aliphatics >C16-C21	<1 mg/kg	TM414	<1 #
Aliphatics >C21-C35	<1 mg/kg	TM414	4.65 #
Aliphatics >C35-C44	<1 mg/kg	TM414	<1
Total Aliphatics >C10-C44	<5 mg/kg	TM414	<5
Total Aliphatics & Aromatics >C10-C44	<10 mg/kg	TM414	<10
Aromatics >EC5-EC7	<0.01 mg/kg	TM089	<0.01 4
Aromatics >EC7-EC8	<0.01 mg/kg	TM089	<0.01 4
Aromatics >EC8-EC10	<0.01 mg/kg	TM089	<0.01 4
Aromatics > EC10-EC12	<1 mg/kg	TM414	<1 #
Aromatics > EC12-EC16	<1 mg/kg	TM414	<1 #
Aromatics > EC16-EC21	<1 mg/kg	TM414	1.06 #
Aromatics > EC21-EC35	<1 mg/kg	TM414	<1 #
Aromatics >EC35-EC44	<1 mg/kg	TM414	<1
Aromatics > EC40-EC44	<1 mg/kg	TM414	<1
Total Aromatics > EC10-EC44	<5 mg/kg	TM414	<5
Total Aliphatics & Aromatics >C5-C44	<10 mg/kg	TM414	<10
Total Aliphatics >C5-C10	<0.05 mg/kg	TM089	<0.05 4
Total Aromatics >EC5-EC10	<0.05 mg/kg	TM089	<0.05 4
GRO >C5-C10	<0.02 mg/kg	TM089	<0.02 4

CERTIFICATE OF ANALYSIS

SDG:	210722-31	**Client Reference:**	784-B026948	**Report Number:**	607582
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH42
Depth (m)	10.50 - 10.60
Sample Type	Soil/Solid (S)
Date Sampled	19/07/2021
Sampled Time	.
Date Received	21/07/2021
SDG Ref	210722-31
Lab Sample No.(s)	24671863
AGS Reference	ES12

Component	LOD/Units	Method	
Dibromofluoromethane**	%	TM116	109
Toluene-d8**	%	TM116	99
4-Bromofluorobenzene**	%	TM116	88.4
Dichlorodifluoromethane	<0.006 mg/kg	TM116	<0.12 M
Chloromethane	<0.007 mg/kg	TM116	<0.14 3 #
Vinyl Chloride	<0.006 mg/kg	TM116	<0.12 M
Bromomethane	<0.01 mg/kg	TM116	<0.2 M
Chloroethane	<0.01 mg/kg	TM116	<0.2 M
Trichlorofluorormethane	<0.006 mg/kg	TM116	<0.12 M
1,1-Dichloroethene	<0.01 mg/kg	TM116	<0.2 #
Carbon Disulphide	<0.007 mg/kg	TM116	<0.14 M
Dichloromethane	<0.01 mg/kg	TM116	<0.2 #
Methyl Tertiary Butyl Ether	<0.01 mg/kg	TM116	<0.2 M
trans-1,2-Dichloroethene	<0.01 mg/kg	TM116	<0.2 M
1,1-Dichloroethane	<0.008 mg/kg	TM116	<0.16 M
cis-1,2-Dichloroethene	<0.006 mg/kg	TM116	<0.12 M
2,2-Dichloropropane	<0.01 mg/kg	TM116	<0.2
Bromochloromethane	<0.01 mg/kg	TM116	<0.2 M
Chloroform	<0.008 mg/kg	TM116	<0.16 M
1,1,1-Trichloroethane	<0.007 mg/kg	TM116	<0.14 M
1,1-Dichloropropene	<0.01 mg/kg	TM116	<0.2 M
Carbontetrachloride	<0.01 mg/kg	TM116	<0.2 M
1,2-Dichloroethane	<0.005 mg/kg	TM116	<0.1 M
Benzene	<0.009 mg/kg	TM116	<0.18 M
Trichloroethene	<0.009 mg/kg	TM116	<0.18 #
1,2-Dichloropropane	<0.01 mg/kg	TM116	<0.2 M
Dibromomethane	<0.009 mg/kg	TM116	<0.18 M
Bromodichloromethane	<0.007 mg/kg	TM116	<0.14 M
cis-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.2 M
Toluene	<0.007 mg/kg	TM116	<0.14 M
trans-1,3-Dichloropropene	<0.01 mg/kg	TM116	<0.2
1,1,2-Trichloroethane	<0.01 mg/kg	TM116	<0.2 M

CERTIFICATE OF ANALYSIS

SDG:	210722-31	**Client Reference:**	784-B026948	**Report Number:**	607582
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH42
Depth (m)	10.50 - 10.60
Sample Type	Soil/Solid (S)
Date Sampled	19/07/2021
Sampled Time	.
Date Received	21/07/2021
SDG Ref	210722-31
Lab Sample No.(s)	24671863
AGS Reference	ES12

Component	LOD/Units	Method					
1,3-Dichloropropane	<0.007 mg/kg	TM116	<0.14 M				
Tetrachloroethene	<0.005 mg/kg	TM116	<0.1 M				
Dibromochloromethane	<0.01 mg/kg	TM116	<0.2 M				
1,2-Dibromoethane	<0.01 mg/kg	TM116	<0.2 M				
Chlorobenzene	<0.005 mg/kg	TM116	<0.1 M				
1,1,1,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.2 M				
Ethylbenzene	<0.004 mg/kg	TM116	<0.08 M				
p/m-Xylene	<0.01 mg/kg	TM116	<0.2 #				
o-Xylene	<0.01 mg/kg	TM116	<0.2 M				
Styrene	<0.01 mg/kg	TM116	<0.2 #				
Bromoform	<0.01 mg/kg	TM116	<0.2 M				
Isopropylbenzene	<0.005 mg/kg	TM116	<0.1 #				
1,1,2,2-Tetrachloroethane	<0.01 mg/kg	TM116	<0.2 #				
1,2,3-Trichloropropane	<0.016 mg/kg	TM116	<0.32 M				
Bromobenzene	<0.01 mg/kg	TM116	<0.2 M				
Propylbenzene	<0.01 mg/kg	TM116	<0.2 M				
2-Chlorotoluene	<0.009 mg/kg	TM116	<0.18 M				
1,3,5-Trimethylbenzene	<0.008 mg/kg	TM116	<0.16 M				
4-Chlorotoluene	<0.01 mg/kg	TM116	<0.2 M				
tert-Butylbenzene	<0.014 mg/kg	TM116	<0.28 M				
1,2,4-Trimethylbenzene	<0.009 mg/kg	TM116	<0.18 #				
sec-Butylbenzene	<0.01 mg/kg	TM116	<0.2 3				
4-Isopropyltoluene	<0.01 mg/kg	TM116	<0.2 M				
1,3-Dichlorobenzene	<0.008 mg/kg	TM116	<0.16 M				
1,4-Dichlorobenzene	<0.005 mg/kg	TM116	<0.1 M				
n-Butylbenzene	<0.011 mg/kg	TM116	<0.22				
1,2-Dichlorobenzene	<0.01 mg/kg	TM116	<0.2 M				
1,2-Dibromo-3-chloropropane	<0.014 mg/kg	TM116	<0.28 M				
Tert-amyl methyl ether	<0.01 mg/kg	TM116	<0.2 #				
1,2,4-Trichlorobenzene	<0.02 mg/kg	TM116	<0.4				
Hexachlorobutadiene	<0.02 mg/kg	TM116	<0.4				
Naphthalene	<0.013 mg/kg	TM116	<0.26 M				

CERTIFICATE OF ANALYSIS

SDG:	210722-31	**Client Reference:**	784-B026948	**Report Number:**	607582
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+S@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref. BH42					
			Depth (m)	10.50 - 10.60				
			Sample Type	Soil/Solid (S)				
			Date Sampled	19/07/2021				
			Sampled Time	.				
			Date Received	21/07/2021				
			SDG Ref	210722-31				
			Lab Sample No.(s)	24671863				
			AGS Reference	ES12				
1,2,3-Trichlorobenzene	<0.02 mg/kg	TM116	<0.4 #					
1,3,5-Trichlorobenzene	<0.02 mg/kg	TM116	<0.4					
Sum of Detected Xylenes	<0.02 mg/kg	TM116	<0.4					
Sum of BTEX	<0.04 mg/kg	TM116	<0.8					

CERTIFICATE OF ANALYSIS

SDG:	210722-31	**Client Reference:**	784-B026948	**Report Number:**	607582
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Asbestos Identification - Solid Samples

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
*	Subcontracted test.
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref.	BH42ES12 10.50 - 10.60	27/07/2021	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	SOLID										
Sample Type	19/07/2021 00:00:00										
Date Sampled	21/07/2021 05:00:00										
Date Receieved	210722-31										
SDG	24671863										
Original Sample	TM048										
Method Number											

CERTIFICATE OF ANALYSIS

SDG:	210722-31	**Client Reference:**	784-B026948	**Report Number:**	607582
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		**Site Location**	A46 Newark Northern Bypass
Mass Sample taken (kg)	0.108	**Natural Moisture Content (%)**	20.9
Mass of dry sample (kg)	0.090	**Dry Matter Content (%)**	82.7
Particle Size <4mm	>95%		

Case	
SDG	210722-31
Lab Sample Number(s)	24671863
Sampled Date	19-Jul-2021
Customer Sample Ref.	BH42 ES12
Depth (m)	10.50 - 10.60

Eluate Analysis	**C_2** Concⁿ in 10:1 eluate (mg/l)		**A_2** 10:1 concⁿ leached (mg/kg)				
	Result	**Limit of Detection**	**Result**	**Limit of Detection**			
Ammoniacal Nitrogen as N	<0.2	<0.2	<2	<2	-	-	-
Total Ammonium as NH4	<0.3	<0.3	<3	<3	-	-	-
Hexavalent Chromium	<0.03	<0.03	<0.3	<0.3	-	-	-
Free Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Total Cyanide (W)	<0.05	<0.05	<0.5	<0.5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Arsenic	0.0345	<0.0005	0.345	<0.005	-	-	-
Boron	0.563	<0.01	5.63	<0.1	-	-	-
Cadmium	0.000745	<0.00008	0.00745	<0.0008	-	-	-
Chromium	0.00351	<0.001	0.0351	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Iron (Dis.Filt) mg/l	<0.019	<0.019	<0.19	<0.19	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Nickel	0.00094	<0.0004	0.0094	<0.004	-	-	-
Selenium	0.0205	<0.001	0.205	<0.01	-	-	-
Vanadium	0.182	<0.001	1.82	<0.01	-	-	-
Zinc	0.00152	<0.001	0.0152	<0.01	-	-	-
Sulphide	<0.01	<0.01	<0.1	<0.1	-	-	-

Leach Test Information

Date Prepared	23-Jul-2021
pH (pH Units)	9.90
Conductivity (µS/cm)	667.00
Temperature (°C)	19.40
Volume Leachant (Litres)	0.882

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Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:Soil) by ICP OES.
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM243		Mixed Anions In Soils By Kone
TM248	In-House Method	Determination of Ammonium BRE (2:1 Extract) on solids
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210722-31	**Client Reference:**	784-B026948	**Report Number:**	607582
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24671863
Customer Sample Ref.	BH42
AGS Ref.	ES12
Depth	10.50 - 10.60
Type	Soil/Solid (S)
Ammoniacal N as NH4 in 2:1 extract	26-Jul-2021
Ammoniacal Nitrogen	27-Jul-2021
Ammonium Soil by Titration	29-Jul-2021
Anions by Kone (soil)	27-Jul-2021
Asbestos ID in Solid Samples	27-Jul-2021
Boron Water Soluble	26-Jul-2021
CEN 10:1 Leachate (1 Stage)	23-Jul-2021
CEN Readings	28-Jul-2021
Cyanide Comp/Free/Total/Thiocyanate	28-Jul-2021
Dissolved Metals by ICP-MS	27-Jul-2021
EPH	27-Jul-2021
EPH by GCxGC-FID	27-Jul-2021
EPH CWG GC (S)	26-Jul-2021
GRO by GC-FID (S)	26-Jul-2021
Hexavalent Chromium (s)	26-Jul-2021
Hexavalent Chromium (w)	27-Jul-2021
Mercury Dissolved	26-Jul-2021
Metals in solid samples by OES	27-Jul-2021
Moisture at 105C	23-Jul-2021
PAH by GCMS	26-Jul-2021
pH	22-Jul-2021
pH Value of Filtered Water	27-Jul-2021
Phenols by HPLC (S)	26-Jul-2021
Sample description	22-Jul-2021
Semi Volatile Organic Compounds	27-Jul-2021
Sulphide	28-Jul-2021
Total Organic Carbon	28-Jul-2021
TPH CWG GC (S)	26-Jul-2021
VOC MS (S)	27-Jul-2021

ASSOCIATED AQC DATA

Ammoniacal Nitrogen

Component	Method Code	QC 2480
Ammoniacal Nitrogen as N	TM099	**97.2** 88.02 : 104.70

Ammonium Soil by Titration

Component	Method Code	QC 2430
Exchangeable Ammonium as NH4	TM024	**96.02** 74.04 : 103.44

Anions by Kone (soil)

Component	Method Code	QC 2477
Chloride (soluble)	TM243	**136.79** 80.93 : 111.66
Water Soluble Sulphate as SO4 2:1 Extract	TM243	**149.53** 70.00 : 130.00

Boron Water Soluble

Component	Method Code	QC 2486
Water Soluble Boron	TM222	**101.0** 84.00 : 111.00

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2407	QC 2457
Free Cyanide	TM153	**101.98** 78.00 : 114.00	
Free Cyanide (W)	TM227		**85.25** 90.67 : 122.67
Thiocyanate	TM153	**108.97** 93.33 : 110.53	
Thiocyanate (W)	TM227		**108.5** 92.25 : 117.75
Total Cyanide	TM153	**109.09** 77.13 : 111.53	
Total Cyanide (W)	TM227		**108.25** 88.75 : 111.25

Dissolved Metals by ICP-MS

CERTIFICATE OF ANALYSIS

SDG:	210722-31	**Client Reference:**	784-B026948	**Report Number:**	607582
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Dissolved Metals by ICP-MS

Component	Method Code	QC 2423
Aluminium	TM152	**98.67** 94.21 : 111.52
Antimony	TM152	**100.0** 88.37 : 130.57
Arsenic	TM152	**98.83** 92.62 : 113.52
Barium	TM152	**103.0** 88.62 : 113.14
Beryllium	TM152	**99.67** 87.08 : 111.38
Bismuth	TM152	**100.0** 92.62 : 115.02
Boron	TM152	**96.67** 86.31 : 120.88
Cadmium	TM152	**98.67** 93.85 : 111.65
Calcium	TM152	**99.33** 89.20 : 126.91
Chromium	TM152	**96.17** 92.50 : 113.03
Cobalt	TM152	**95.17** 85.01 : 114.87
Copper	TM152	**96.0** 89.87 : 119.73
Iron	TM152	**97.33** 93.02 : 113.86
Lead	TM152	**102.0** 91.11 : 116.98
Lithium	TM152	**98.17** 87.70 : 115.90
Magnesium	TM152	**100.67** 89.60 : 116.61
Manganese	TM152	**97.5** 93.97 : 112.46
Molybdenum	TM152	**95.5** 89.07 : 110.96
Nickel	TM152	**96.33** 93.70 : 112.15
Phosphorus	TM152	**98.5** 89.24 : 114.18
Potassium	TM152	**101.33** 93.20 : 115.55
Selenium	TM152	**98.0** 91.69 : 117.12
Silver	TM152	**94.67** 90.93 : 121.73
Sodium	TM152	**100.0** 92.42 : 113.24
Strontium	TM152	**100.67** 92.14 : 116.24
Tellurium	TM152	**96.83** 89.88 : 111.78
Thallium	TM152	**92.83** 82.43 : 113.83

Dissolved Metals by ICP-MS

		QC 2423
Tin	TM152	**99.83** 94.62 : 107.79
Titanium	TM152	**98.0** 90.29 : 115.23
Tungsten	TM152	**101.33** 77.61 : 132.31
Uranium	TM152	**96.83** 86.97 : 115.76
Vanadium	TM152	**93.0** 89.61 : 115.48
Zinc	TM152	**98.0** 87.51 : 116.26

GRO by GC-FID (S)

Component	Method Code	QC 2456
QC	TM089	**94.41** 70.34 : 111.95

Hexavalent Chromium (s)

Component	Method Code	QC 2400
Hexavalent Chromium	TM151	**104.0** 91.40 : 115.40

Hexavalent Chromium (w)

Component	Method Code	QC 2421
Hexavalent Chromium	TM241	**104.2** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2446
Mercury Dissolved (CVAF)	TM183	**100.0** 0.00 : 0.00

Metals in solid samples by OES

CERTIFICATE OF ANALYSIS

SDG:	210722-31	**Client Reference:**	784-B026948	**Report Number:**	607582
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Metals in solid samples by OES

Component	Method Code	QC 2490
Aluminium	TM181	**107.02** 87.31 : 119.03
Antimony	TM181	**108.66** 91.44 : 127.13
Arsenic	TM181	**104.05** 88.32 : 120.05
Barium	TM181	**110.77** 94.57 : 124.93
Beryllium	TM181	**103.5** 85.72 : 122.69
Boron	TM181	**100.0** 85.66 : 120.25
Cadmium	TM181	**103.32** 87.31 : 121.62
Chromium	TM181	**97.56** 85.06 : 113.81
Cobalt	TM181	**101.09** 92.91 : 111.38
Copper	TM181	**97.12** 81.22 : 113.40
Iron	TM181	**107.34** 86.44 : 122.27
Lead	TM181	**102.48** 86.83 : 123.12
Manganese	TM181	**103.93** 89.22 : 121.75
Mercury	TM181	**101.3** 84.95 : 119.42
Molybdenum	TM181	**104.71** 85.98 : 123.80
Nickel	TM181	**102.08** 88.05 : 119.19
Phosphorus	TM181	**106.32** 90.13 : 121.54
Selenium	TM181	**104.03** 88.10 : 117.92
Strontium	TM181	**93.96** 79.10 : 111.59
Thallium	TM181	**109.4** 84.67 : 122.64
Tin	TM181	**104.75** 86.96 : 122.18
Titanium	TM181	**99.09** 84.66 : 112.24
Vanadium	TM181	**98.92** 84.00 : 115.50
Zinc	TM181	**104.74** 85.62 : 122.35

PAH by GCMS

PAH by GCMS

Component	Method Code	QC 2484
Acenaphthene	TM218	**93.5** 73.47 : 109.80
Acenaphthylene	TM218	**95.5** 70.00 : 130.00
Anthracene	TM218	**88.5** 68.68 : 111.89
Benz(a)anthracene	TM218	**84.0** 68.12 : 118.39
Benzo(a)pyrene	TM218	**86.5** 71.72 : 115.31
Benzo(b)fluoranthene	TM218	**87.5** 66.89 : 120.40
Benzo(ghi)perylene	TM218	**85.5** 67.82 : 118.49
Benzo(k)fluoranthene	TM218	**84.0** 73.10 : 117.03
Chrysene	TM218	**83.5** 69.58 : 115.47
Dibenzo(ah)anthracene	TM218	**84.0** 67.32 : 121.35
Fluoranthene	TM218	**84.0** 75.16 : 117.28
Fluorene	TM218	**93.5** 73.81 : 108.66
Indeno(123cd)pyrene	TM218	**87.5** 68.91 : 117.62
Naphthalene	TM218	**100.5** 72.12 : 106.18
Phenanthrene	TM218	**91.0** 69.01 : 113.72
Pyrene	TM218	**87.0** 64.28 : 115.75

pH

Component	Method Code	QC 2446
pH	TM133	**100.88** 98.09 : 101.62

pH Value of Filtered Water

Component	Method Code	QC 2416
pH	TM256	**101.07** 99.33 : 102.54

Phenols by HPLC (S)

Phenols by HPLC (S)

Component	Method Code	QC 2462
2.3.5 Trimethyl-Phenol by HPLC (S)	TM062 (S)	**51.95** 69.38 : 125.27
2-Isopropyl Phenol by HPLC (S)	TM062 (S)	**46.2** 69.79 : 122.84
Cresols by HPLC (S)	TM062 (S)	**49.69** 77.98 : 111.41
Phenol by HPLC (S)	TM062 (S)	**52.32** 67.94 : 117.69
Xylenols by HPLC (S)	TM062 (S)	**49.48** 88.23 : 104.42

Semi Volatile Organic Compounds

Component	Method Code	QC 2438
4-Bromophenylphenylether (Soil)	TM157	**99.5** 66.75 : 125.25
Benzo(a)anthracene (Soil)	TM157	**99.0** 67.40 : 120.50
Hexachlorobutadiene (Soil)	TM157	**100.5** 68.25 : 126.75
Naphthalene (Soil)	TM157	**100.5** 67.55 : 125.45
Nitrobenzene (Soil)	TM157	**92.5** 66.50 : 123.50
Phenol (Soil)	TM157	**106.5** 69.92 : 114.02

Sulphide

Component	Method Code	QC 2496
Sulphide	TM101	**107.33** 88.90 : 112.50

Total Organic Carbon

Component	Method Code	QC 2434
Total Organic Carbon	TM132	**93.36** 84.82 : 117.61

VOC MS (S)

Component	Method Code	QC 2493
1,1,1,2-tetrachloroethane	TM116	**108.0** 84.84 : 116.25
1,1,1-Trichloroethane	TM116	**108.0** 73.73 : 118.05
1,1,2-Trichloroethane	TM116	**100.6** 77.12 : 116.04

VOC MS (S)

		QC 2493
1,1-Dichloroethane	TM116	**116.0** 74.46 : 129.15
1,2-Dichloroethane	TM116	**116.6** 92.38 : 131.65
1,4-Dichlorobenzene	TM116	**110.4** 83.64 : 126.18
2-Chlorotoluene	TM116	**101.4** 76.03 : 113.25
4-Chlorotoluene	TM116	**94.6** 66.90 : 112.46
Benzene	TM116	**105.6** 88.60 : 113.80
Carbon Disulphide	TM116	**106.4** 74.91 : 122.14
Carbontetrachloride	TM116	**107.4** 80.31 : 124.50
Chlorobenzene	TM116	**105.0** 83.81 : 114.18
Chloroform	TM116	**114.4** 87.40 : 122.49
Chloromethane	TM116	**126.2** 63.11 : 124.36
Cis-1,2-Dichloroethene	TM116	**112.0** 80.67 : 126.72
Dibromomethane	TM116	**102.2** 73.23 : 118.35
Dichloromethane	TM116	**119.4** 81.11 : 133.25
Ethylbenzene	TM116	**95.4** 75.92 : 110.41
Hexachlorobutadiene	TM116	**82.4** 12.82 : 152.73
Isopropylbenzene	TM116	**95.4** 54.30 : 105.91
Naphthalene	TM116	**109.8** 80.86 : 128.81
o-Xylene	TM116	**91.6** 69.99 : 108.74
p/m-Xylene	TM116	**91.1** 68.32 : 108.91
Sec-Butylbenzene	TM116	**96.4** 38.50 : 101.50
Tetrachloroethene	TM116	**105.0** 76.95 : 121.02
Toluene	TM116	**93.6** 74.24 : 107.42
Trichloroethene	TM116	**101.2** 85.28 : 109.36
Trichlorofluoromethane	TM116	**114.6** 81.46 : 120.52
Vinyl Chloride	TM116	**121.2** 68.02 : 143.37

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

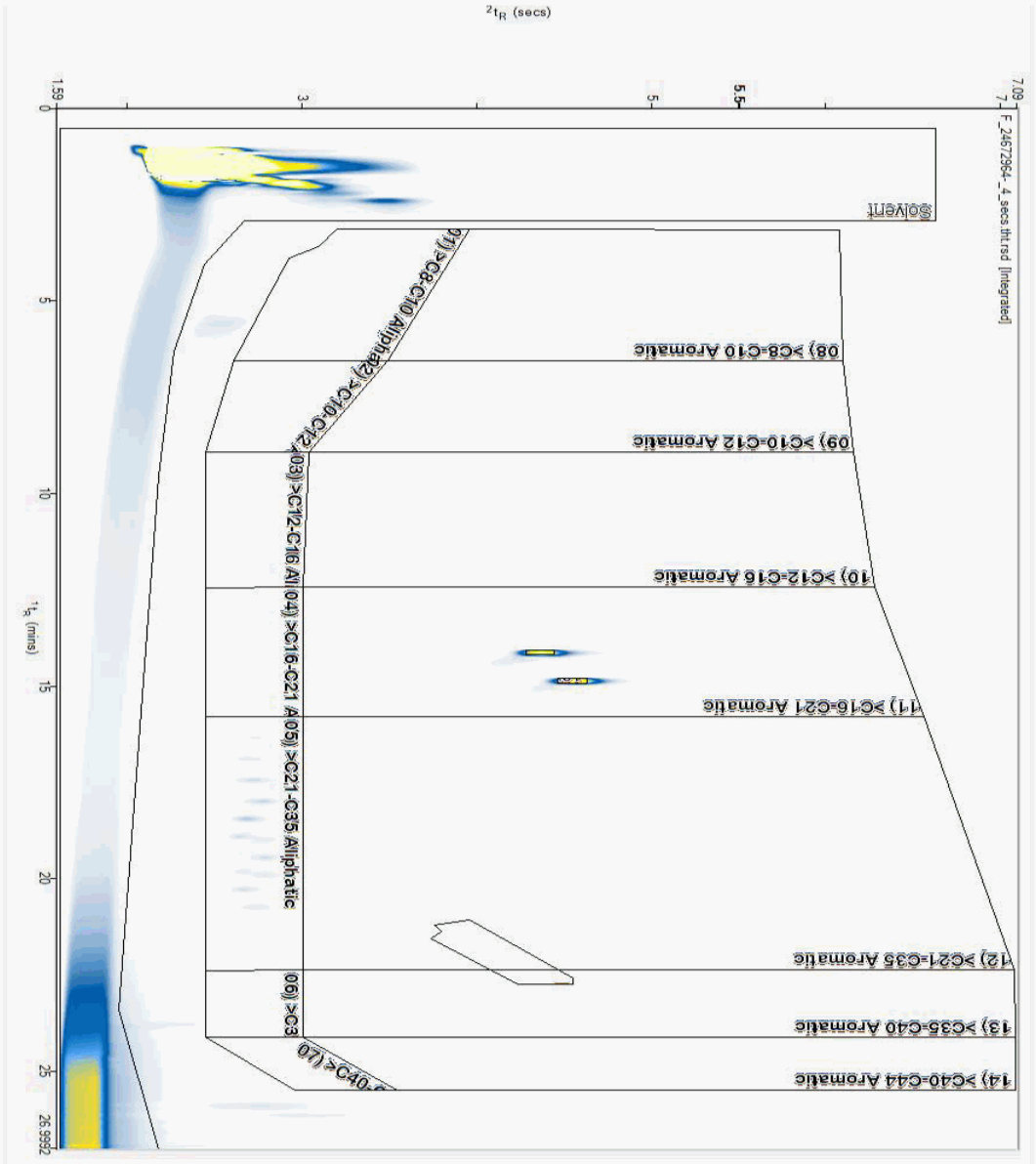
CERTIFICATE OF ANALYSIS

SDG:	210722-31	**Client Reference:**	784-B026948	**Report Number:**	607582
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG GC (S) **Sample No :** 24672964 **Depth :** 10.50 - 10.60
Sample ID : BH42

```
  ChromSpace LIMS export
 Current batch
Sample Identity:  F_24672964-_4_secs.tht
Date Acquired   :  24/07/21 10:07:23
Units           :  ppm
Dilution        :  0
CF              :
Multiplier      :
```

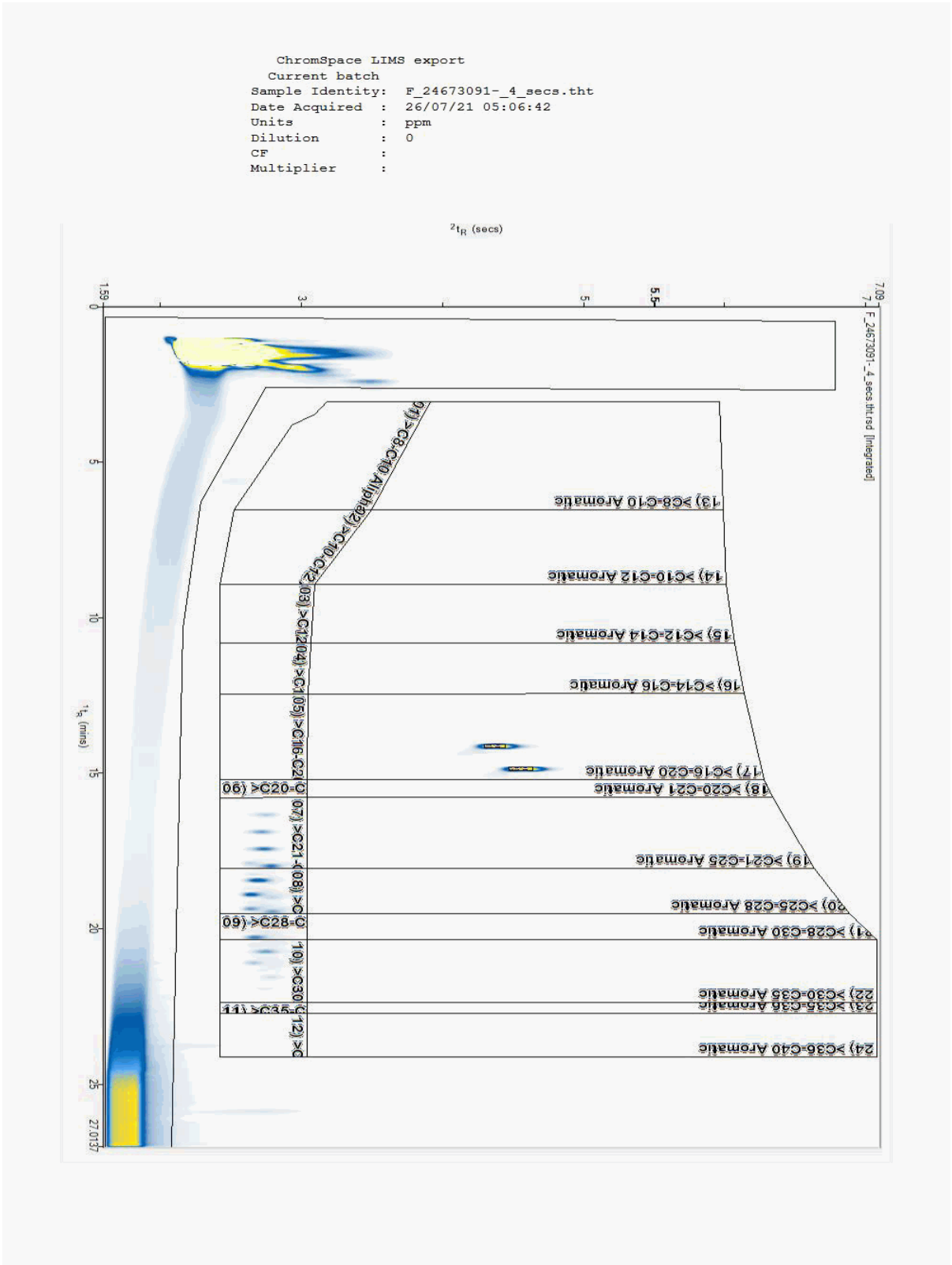


CERTIFICATE OF ANALYSIS

SDG:	210722-31	**Client Reference:**	784-B026948	**Report Number:**	607582
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH by GCxGC-FID **Sample No :** 24673091 **Depth :** 10.50 - 10.60
Sample ID : BH42



CERTIFICATE OF ANALYSIS

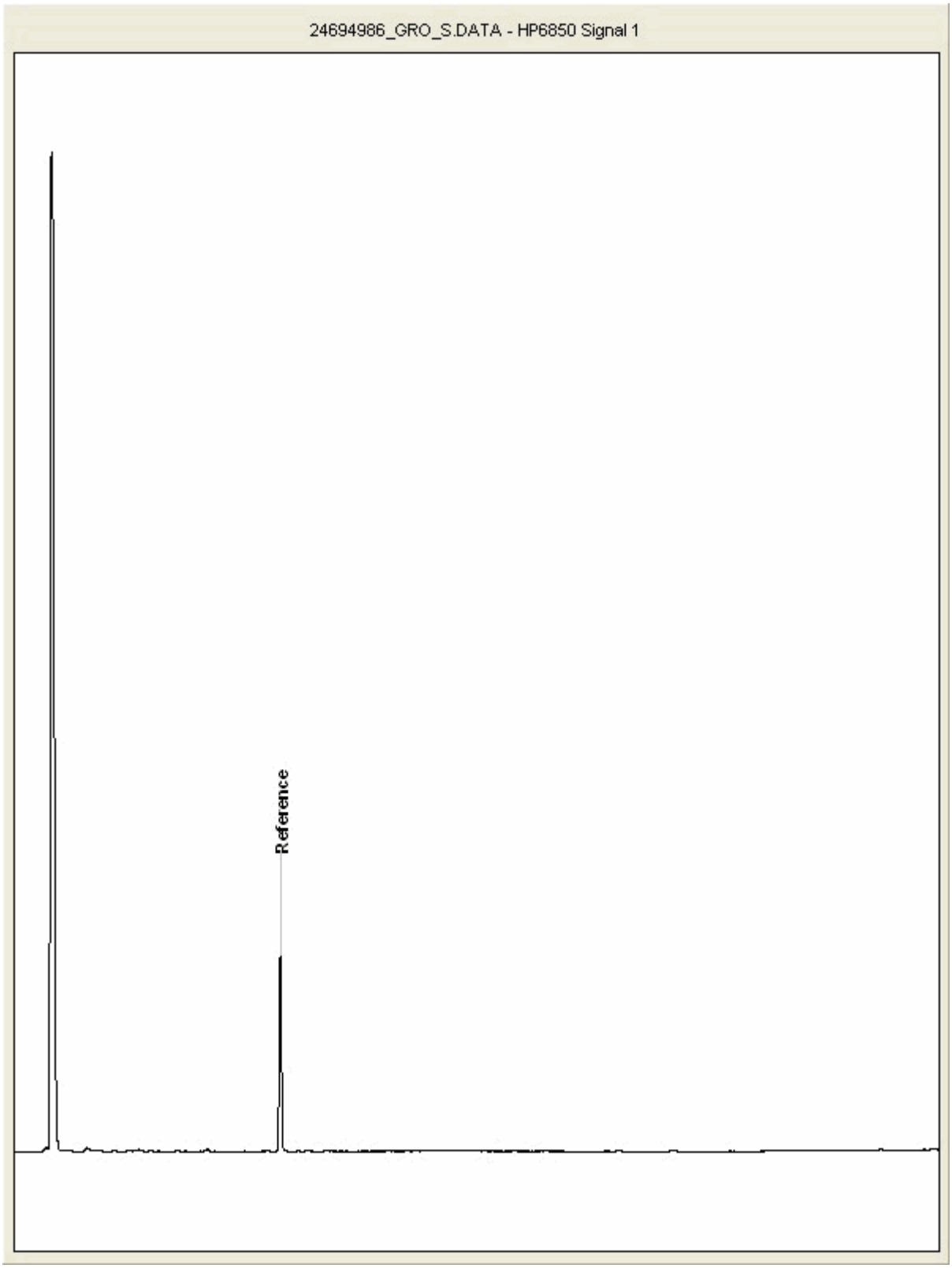
SDG:	210722-31	**Client Reference:**	784-B026948	**Report Number:**	607582
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 24694986
Sample ID : BH42

Depth : 10.50 - 10.60



Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
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Deeside
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email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	06 September 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210825-101
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	611872

We received 5 samples on Wednesday August 25, 2021 and 5 of these samples were scheduled for analysis which was completed on Monday September 06, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24869017	BH01	ES1	0.00 - 0.00	20/08/2021
24869041	BH02	ES1	0.00 - 0.00	20/08/2021
24869033	BH03	ES1	0.00 - 0.00	20/08/2021
24869051	WS08	ES1	0.00 - 0.00	20/08/2021
24869025	WS12	ES1	0.00 - 0.00	20/08/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24869017							24869041							24869033							24869051		
Customer Sample Reference			BH01							BH02							BH03							WS08		
AGS Reference			ES1							ES1							ES1							ES1		
Depth (m)			0.00 - 0.00							0.00 - 0.00							0.00 - 0.00							0.00 - 0.00		
Container			0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)			
Sample Type			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW		
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 1																								
Ammonium Low	All	NDPs: 0 Tests: 5			X						X						X						X			
Anions by Kone (w)	All	NDPs: 0 Tests: 5		X						X						X						X				
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 5					X						X						X							
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 5				X						X						X								
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 5	X						X						X						X					
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 5	X						X						X						X					
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 5	X						X						X						X					
GRO by GC-FID (W)	All	NDPs: 0 Tests: 5						X						X						X						
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 5		X						X						X						X				
Mercury Dissolved	All	NDPs: 0 Tests: 5				X						X						X								
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 5	X						X						X						X					
Pesticides (Suite I) by GCMS	All	NDPs: 0 Tests: 1																								
Pesticides (Suite II) by GCMS	All	NDPs: 0 Tests: 1																								
pH Value	All	NDPs: 0 Tests: 5		X						X						X						X				

24869025	WS12	ES1	0.00 - 0.00	Vial (ALE297)	GW									X						
				NaOH (ALE245)	GW				X											
				HNO3 Filtered (ALE204)	GW					X						X				
				H2SO4 (ALE244)	GW		X													
				500ml Plastic (ALE208)	GW			X							X					X
				0.5l glass bottle (ALE227)	GW	X					X	X	X				X	X	X	
24869051	WS08	ES1	0.00 - 0.00	Vial (ALE297)	GW									X						
				NaOH (ALE245)	GW				X											
				HNO3 Filtered (ALE204)	GW					X						X				

CERTIFICATE OF ANALYSIS

SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)								24869017							24869041							24869033				24869051
Customer Sample Reference								BH01							BH02							BH03				WS08
AGS Reference								ES1							ES1							ES1				ES1
Depth (m)								0.00 - 0.00							0.00 - 0.00							0.00 - 0.00				0.00 - 0.00
Container								0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)
Sample Type								GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
Phenols by HPLC (W)	All	NDPs: 0 Tests: 5								X						X						X						X
Sulphide	All	NDPs: 0 Tests: 5							X						X						X						X	
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 1																										
Total Metals by ICP-MS	All	NDPs: 0 Tests: 5							X						X						X						X	
TPH CWG (W)	All	NDPs: 0 Tests: 5	X											X						X						X		
VOC MS (W)	All	NDPs: 0 Tests: 1																										

									24869025
									WS12
									ES1
									0.00 - 0.00
GW	GW	GW	GW	GW	GW	GW	GW	GW	
Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	
X									
			X						
				X					
				X					
				X					
					X				
									24869051
									WS08
									ES1
									0.00 - 0.00
GW	GW	GW	GW	GW	GW	GW	GW	GW	
Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	

CERTIFICATE OF ANALYSIS

SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	BH01	BH02	BH03	WS08	WS12
Customer Sample Ref.			BH01	BH02	BH03	WS08	WS12
Depth (m)			0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Sample Type			Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
Date Sampled			20/08/2021	20/08/2021	20/08/2021	20/08/2021	20/08/2021
Sampled Time			.	.	.	.	.
Date Received			25/08/2021	25/08/2021	25/08/2021	25/08/2021	25/08/2021
SDG Ref			210825-101	210825-101	210825-101	210825-101	210825-101
Lab Sample No.(s)			24869017	24869041	24869033	24869051	24869025
AGS Reference			ES1	ES1	ES1	ES1	ES1
Carbon, Organic (diss.filt)	<3 mg/l	TM090	<3	<3	<3	<3	<3
Ammoniacal Nitrogen as N (low level)	<0.01 mg/l	TM099	0.042 #	0.04 #	0.044 #	0.05 #	0.054 #
Ammoniacal Nitrogen Low as NH4	<0.01 mg/l	TM099	0.054 #	0.0514 #	0.0566 #	0.0643 #	0.0694 #
Sulphide	<0.01 mg/l	TM101	<0.01 2 #	<0.01 2 #	0.0188 2 #	0.0267 2 #	<0.01 2 #
Arsenic (diss.filt)	<0.5 µg/l	TM152	1.31 #	1.24 #	1.41 #	1.3 #	1.46 #
Boron (diss.filt)	<10 µg/l	TM152	67.8 #	67.5 #	68.1 #	65.6 #	70.4 #
Cadmium (diss.filt)	<0.08 µg/l	TM152	<0.08 #	<0.08 #	<0.08 #	<0.08 #	<0.08 #
Chromium (diss.filt)	<1 µg/l	TM152	<1 #	<1 #	<1 #	<1 #	<1 #
Copper (diss.filt)	<0.3 µg/l	TM152	<0.3 #	<0.3 #	<0.3 #	0.427 #	<0.3 #
Lead (diss.filt)	<0.2 µg/l	TM152	<0.2 #	<0.2 #	<0.2 #	0.482 #	<0.2 #
Manganese (diss.filt)	<3 µg/l	TM152	553 #	574 #	564 #	625 #	581 #
Nickel (diss.filt)	<0.4 µg/l	TM152	1.91 #	1.66 #	1.72 #	1.93 #	1.65 #
Selenium (diss.filt)	<1 µg/l	TM152	<1 #	<1 #	<1 #	<1 #	<1 #
Vanadium (diss.filt)	<1 µg/l	TM152	<1 #	<1 #	<1 #	<1 #	<1 #
Zinc (diss.filt)	<1 µg/l	TM152	1.42 #	1.98 #	1.32 #	2.95 #	2.53 #
Calcium (Dis.Filt)	<0.2 mg/l	TM152	175 #	177 #	173 #	169 #	175 #
Iron (Dis.Filt)	<0.019 mg/l	TM152	0.14 #	0.166 #	0.192 #	0.179 #	0.217 #
Hardness, Total as CaCO3 unfiltered	<0.35 mg/l	TM152	555 2	576 2	555 2	534 2	544 2
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #
Sulphate	<2 mg/l	TM184	266 #	257 #	262 #	247 #	253 #
Nitrate as NO3	<0.3 mg/l	TM184	<0.3	<0.3	<0.3	<0.3	<0.3
Cyanide, Total	<0.05 mg/l	TM227	<0.05 @ #	<0.05 @ #	<0.05 @ #	<0.05 @ #	<0.05 @ #
Cyanide, Free	<0.05 mg/l	TM227	<0.05 @ #	<0.05 @ #	<0.05 @ #	<0.05 @ #	<0.05 @ #
Chromium, Hexavalent	<0.03 mg/l	TM241	<0.03 #	<0.03 #	<0.03 #	<0.03 #	<0.03 #
pH	<1 pH Units	TM256	7.37 #	7.4 #	7.38 #	7.35 #	7.4 #
Phenol	<0.002 mg/l	TM259	<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 #
Cresols	<0.006 mg/l	TM259	<0.006 #	<0.006 #	<0.006 #	<0.006 #	<0.006 #
Xylenols	<0.008 mg/l	TM259	<0.008 #	<0.008 #	<0.008 #	<0.008 #	<0.008 #
Phenols, Total Detected monohydric	<0.016 mg/l	TM259	<0.016 #	<0.016 #	<0.016 #	<0.016 #	<0.016 #
Trifluralin	<0.01 µg/l	TM343					<0.05
alpha-HCH	<0.01 µg/l	TM343					<0.05
gamma-HCH (Lindane)	<0.01 µg/l	TM343					<0.05

CERTIFICATE OF ANALYSIS

SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH01	BH02	BH03	WS08	WS12	
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	
			Date Sampled	20/08/2021	20/08/2021	20/08/2021	20/08/2021	20/08/2021	
			Sampled Time	.	.	.	.	.	
			Date Received	25/08/2021	25/08/2021	25/08/2021	25/08/2021	25/08/2021	
			SDG Ref	210825-101	210825-101	210825-101	210825-101	210825-101	
			Lab Sample No.(s)	24869017	24869041	24869033	24869051	24869025	
			AGS Reference	ES1	ES1	ES1	ES1	ES1	
Heptachlor	<0.01 µg/l	TM343						<0.05	
Aldrin	<0.01 µg/l	TM343						<0.05	
beta-HCH	<0.01 µg/l	TM343						<0.05	
Isodrin	<0.01 µg/l	TM343						<0.05	
delta-HCH	<0.01 µg/l	TM343						<0.05	
Heptachlor epoxide	<0.01 µg/l	TM343						<0.05	
o,p'-DDE	<0.01 µg/l	TM343						<0.05	
Endosulphan I	<0.01 µg/l	TM343						<0.05	
trans-Chlordane	<0.01 µg/l	TM343						<0.05	
cis-Chlordane	<0.01 µg/l	TM343						<0.05	
p,p'-DDE	<0.01 µg/l	TM343						<0.05	
Dieldrin	<0.01 µg/l	TM343						<0.05	
o,p'-DDD (TDE)	<0.01 µg/l	TM343						<0.05	
Endrin	<0.01 µg/l	TM343						<0.05	
o,p'-DDT	<0.01 µg/l	TM343						<0.05	
p,p'-DDD (TDE)	<0.01 µg/l	TM343						<0.05	
Endosulphan II	<0.02 µg/l	TM343						<0.1	
p,p'-DDT	<0.01 µg/l	TM343						<0.1	
o,p'-Methoxychlor	<0.01 µg/l	TM343						<0.05	
p,p'-Methoxychlor	<0.01 µg/l	TM343						<0.05	
Endosulphan Sulphate	<0.02 µg/l	TM343						<0.1	
Permethrin I	<0.01 µg/l	TM343						<0.05	
Permethrin II	<0.01 µg/l	TM343						<0.05	
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344						<0.01	
Hexachlorobutadiene	<0.01 µg/l	TM344						<0.01	
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344						<0.01	
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344						<0.01	
Dichlorvos	<0.01 µg/l	TM344						<0.01	
Dichlobenil	<0.01 µg/l	TM344						<0.01	
Mevinphos	<0.01 µg/l	TM344						<0.01	
Tecnazene	<0.01 µg/l	TM344						<0.01	
Hexachlorobenzene	<0.01 µg/l	TM344						<0.01	

CERTIFICATE OF ANALYSIS

SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH01	BH02	BH03	WS08	WS12
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	20/08/2021	20/08/2021	20/08/2021	20/08/2021	20/08/2021
			Sampled Time	.	.	.	.	.
			Date Received	25/08/2021	25/08/2021	25/08/2021	25/08/2021	25/08/2021
			SDG Ref	210825-101	210825-101	210825-101	210825-101	210825-101
			Lab Sample No.(s)	24869017	24869041	24869033	24869051	24869025
			AGS Reference	ES1	ES1	ES1	ES1	ES1
Demeton-S-methyl	<0.01 µg/l	TM344						<0.01
Phorate	<0.01 µg/l	TM344						<0.01
Diazinon	<0.01 µg/l	TM344						<0.01
Triallate	<0.01 µg/l	TM344						<0.01
Atrazine	<0.01 µg/l	TM344						<0.01
Simazine	<0.01 µg/l	TM344						<0.01
Disulfoton	<0.01 µg/l	TM344						<0.01
Propetamphos	<0.01 µg/l	TM344						<0.01
Chlorpyriphos-methyl	<0.01 µg/l	TM344						<0.01
Dimethoate	<0.01 µg/l	TM344						<0.01
Pirimiphos-methyl	<0.01 µg/l	TM344						<0.01
Chlorpyriphos	<0.01 µg/l	TM344						<0.01
Methyl Parathion	<0.01 µg/l	TM344						<0.01
Malathion	<0.01 µg/l	TM344						<0.01
Fenthion	<0.01 µg/l	TM344						<0.01
Fenitrothion	<0.01 µg/l	TM344						<0.01
Triadimefon	<0.01 µg/l	TM344						<0.01
Pendimethalin	<0.01 µg/l	TM344						<0.01
Parathion	<0.01 µg/l	TM344						<0.01
Chlorfenvinphos	<0.01 µg/l	TM344						<0.01
trans-Chlordane	<0.01 µg/l	TM344						<0.01
cis-Chlordane	<0.01 µg/l	TM344						<0.01
Ethion	<0.01 µg/l	TM344						<0.01
Carbophenothion	<0.01 µg/l	TM344						<0.01
Triazophos	<0.01 µg/l	TM344						<0.01
Phosalone	<0.01 µg/l	TM344						<0.02
Azinphos methyl	<0.02 µg/l	TM344						<0.04
Azinphos ethyl	<0.02 µg/l	TM344						<0.02
Dinitro-o-cresol	<0.1 µg/l	TM411						<0.1
Clopyralid	<0.04 µg/l	TM411						<0.04
MCPA	<0.05 µg/l	TM411						<0.05
Mecoprop	<0.04 µg/l	TM411						<0.04

CERTIFICATE OF ANALYSIS

SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	BH01	BH02	BH03	WS08	WS12
Customer Sample Ref.			BH01	BH02	BH03	WS08	WS12
Depth (m)			0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Sample Type			Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
Date Sampled			20/08/2021	20/08/2021	20/08/2021	20/08/2021	20/08/2021
Sampled Time			.	.	.	.	.
Date Received			25/08/2021	25/08/2021	25/08/2021	25/08/2021	25/08/2021
SDG Ref			210825-101	210825-101	210825-101	210825-101	210825-101
Lab Sample No.(s)			24869017	24869041	24869033	24869051	24869025
AGS Reference			ES1	ES1	ES1	ES1	ES1
Dicamba	<0.04 µg/l	TM411					<0.04
MCPB	<0.05 µg/l	TM411					<0.05
2,4-DB	<0.1 µg/l	TM411					<0.1
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411					<0.05
Dichlorprop	<0.1 µg/l	TM411					<0.1
Triclopyr	<0.05 µg/l	TM411					<0.05
Fenoprop (Silvex)	<0.1 µg/l	TM411					<0.1
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411					<0.05
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411					<0.05
Bromoxynil	<0.04 µg/l	TM411					<0.04
Benazolin	<0.04 µg/l	TM411					<0.04
Ioxynil	<0.05 µg/l	TM411					<0.05
Pentachlorophenol	<0.04 µg/l	TM411					<0.04
Fluoroxypyr	<0.1 µg/l	TM411					<0.1

CERTIFICATE OF ANALYSIS

SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	BH01	BH02	BH03	WS08	WS12
Customer Sample Ref.			BH01	BH02	BH03	WS08	WS12
Depth (m)			0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Sample Type			Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
Date Sampled			20/08/2021	20/08/2021	20/08/2021	20/08/2021	20/08/2021
Sampled Time			.	.	.	.	.
Date Received			25/08/2021	25/08/2021	25/08/2021	25/08/2021	25/08/2021
SDG Ref			210825-101	210825-101	210825-101	210825-101	210825-101
Lab Sample No.(s)			24869017	24869041	24869033	24869051	24869025
AGS Reference			ES1	ES1	ES1	ES1	ES1
Naphthalene (aq)	<0.01 µg/l	TM178	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #
Acenaphthene (aq)	<0.005 µg/l	TM178	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Acenaphthylene (aq)	<0.005 µg/l	TM178	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Fluoranthene (aq)	<0.005 µg/l	TM178	<0.005 #	0.00799 #	<0.005 #	<0.005 #	<0.005 #
Anthracene (aq)	<0.005 µg/l	TM178	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Phenanthrene (aq)	<0.005 µg/l	TM178	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Fluorene (aq)	<0.005 µg/l	TM178	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Chrysene (aq)	<0.005 µg/l	TM178	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Pyrene (aq)	<0.005 µg/l	TM178	<0.005 #	0.00864 #	<0.005 #	<0.005 #	<0.005 #
Benzo(a)anthracene (aq)	<0.005 µg/l	TM178	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Benzo(b)fluoranthene (aq)	<0.005 µg/l	TM178	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Benzo(k)fluoranthene (aq)	<0.005 µg/l	TM178	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Benzo(a)pyrene (aq)	<0.002 µg/l	TM178	<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 #
Dibenzo(a,h)anthracene (aq)	<0.005 µg/l	TM178	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Benzo(g,h,i)perylene (aq)	<0.005 µg/l	TM178	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Indeno(1,2,3-cd)pyrene (aq)	<0.005 µg/l	TM178	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
PAH, Total Detected USEPA 16 (aq)	<0.082 µg/l	TM178	<0.082 #	<0.082 #	<0.082 #	<0.082 #	<0.082 #

CERTIFICATE OF ANALYSIS

SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

SVOC MS (W) - Aqueous

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	WS12
Depth (m)	0.00 - 0.00
Sample Type	Ground Water (GW)
Date Sampled	20/08/2021
Sampled Time	.
Date Received	25/08/2021
SDG Ref	210825-101
Lab Sample No.(s)	24869025
AGS Reference	ES1

Component	LOD/Units	Method	
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176	<1 @ #
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176	<1 @ #
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176	<1 @ #
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176	<1 @ #
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176	<1 @ #
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176	<1 @ #
2,4-Dichlorophenol (aq)	<1 µg/l	TM176	<1 @ #
2,4-Dimethylphenol (aq)	<1 µg/l	TM176	<1 @ #
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176	<1 @ #
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176	<1 @ #
2-Chloronaphthalene (aq)	<1 µg/l	TM176	<1 @ #
2-Chlorophenol (aq)	<1 µg/l	TM176	<1 @ #
2-Methylnaphthalene (aq)	<1 µg/l	TM176	<1 @ #
2-Methylphenol (aq)	<1 µg/l	TM176	<1 @ #
2-Nitroaniline (aq)	<1 µg/l	TM176	<1 @ #
2-Nitrophenol (aq)	<1 µg/l	TM176	<1 @ #
3-Nitroaniline (aq)	<1 µg/l	TM176	<1 @ #
4-Bromophenylphenylether (aq)	<1 µg/l	TM176	<1 @ #
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176	<1 @ #
4-Chloroaniline (aq)	<1 µg/l	TM176	<1
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176	<1 @ #
4-Methylphenol (aq)	<1 µg/l	TM176	<1 @ #
4-Nitroaniline (aq)	<1 µg/l	TM176	<1 @ #
4-Nitrophenol (aq)	<1 µg/l	TM176	<1
Azobenzene (aq)	<1 µg/l	TM176	<1 @ #
Acenaphthylene (aq)	<1 µg/l	TM176	<1 @ #
Acenaphthene (aq)	<1 µg/l	TM176	<1 @ #
Anthracene (aq)	<1 µg/l	TM176	<1 @ #
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176	<1 @ #
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176	<1 @ #
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176	<2 @ #
Butylbenzyl phthalate (aq)	<1 µg/l	TM176	<1 @ #

CERTIFICATE OF ANALYSIS

SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

SVOC MS (W) - Aqueous

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	WS12
Depth (m)	0.00 - 0.00
Sample Type	Ground Water (GW)
Date Sampled	20/08/2021
Sampled Time	.
Date Received	25/08/2021
SDG Ref	210825-101
Lab Sample No.(s)	24869025
AGS Reference	ES1

Component	LOD/Units	Method					
Benzo(a)anthracene (aq)	<1 µg/l	TM176	<1 @ #				
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176	<1 @ #				
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176	<1 @ #				
Benzo(a)pyrene (aq)	<1 µg/l	TM176	<1 @ #				
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176	<1 @ #				
Carbazole (aq)	<1 µg/l	TM176	<1 @ #				
Chrysene (aq)	<1 µg/l	TM176	<1 @ #				
Dibenzofuran (aq)	<1 µg/l	TM176	<1 @ #				
n-Dibutyl phthalate (aq)	<1 µg/l	TM176	<1 @ #				
Diethyl phthalate (aq)	<1 µg/l	TM176	<1 @ #				
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176	<1 @ #				
Dimethyl phthalate (aq)	<1 µg/l	TM176	<1 @ #				
n-Dioctyl phthalate (aq)	<5 µg/l	TM176	<5 @ #				
Fluoranthene (aq)	<1 µg/l	TM176	<1 @ #				
Fluorene (aq)	<1 µg/l	TM176	<1 @ #				
Hexachlorobenzene (aq)	<1 µg/l	TM176	<1 @ #				
Hexachlorobutadiene (aq)	<1 µg/l	TM176	<1 @ #				
Pentachlorophenol (aq)	<1 µg/l	TM176	<1				
Phenol (aq)	<1 µg/l	TM176	<1				
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176	<1 @ #				
Hexachloroethane (aq)	<1 µg/l	TM176	<1 @ #				
Nitrobenzene (aq)	<1 µg/l	TM176	<1 @ #				
Naphthalene (aq)	<1 µg/l	TM176	<1 @ #				
Isophorone (aq)	<1 µg/l	TM176	<1 @ #				
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176	<1				
Phenanthrene (aq)	<1 µg/l	TM176	<1 @ #				
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176	<1 @ #				
Pyrene (aq)	<1 µg/l	TM176	<1 @ #				

CERTIFICATE OF ANALYSIS

SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	BH01	BH02	BH03	WS08	WS12
Customer Sample Ref.			BH01	BH02	BH03	WS08	WS12
Depth (m)			0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Sample Type			Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
Date Sampled			20/08/2021	20/08/2021	20/08/2021	20/08/2021	20/08/2021
Sampled Time			.	.	.	.	.
Date Received			25/08/2021	25/08/2021	25/08/2021	25/08/2021	25/08/2021
SDG Ref			210825-101	210825-101	210825-101	210825-101	210825-101
Lab Sample No.(s)			24869017	24869041	24869033	24869051	24869025
AGS Reference			ES1	ES1	ES1	ES1	ES1
GRO Surrogate % recovery**	%	TM245	107	95	109	105	108
GRO >C5-C12	<50 µg/l	TM245	<50 #	<50 #	<50 #	<50 #	<50 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245	<3 #	<3 #	<3 #	<3 #	<3 #
Benzene	<7 µg/l	TM245	<7 #	<7 #	<7 #	<7 #	<7 #
Toluene	<4 µg/l	TM245	<4 #	<4 #	<4 #	<4 #	<4 #
Ethylbenzene	<5 µg/l	TM245	<5 #	<5 #	<5 #	<5 #	<5 #
m,p-Xylene	<8 µg/l	TM245	<8 #	<8 #	<8 #	<8 #	<8 #
o-Xylene	<3 µg/l	TM245	<3 #	<3 #	<3 #	<3 #	<3 #
Sum of detected Xylenes	<11 µg/l	TM245	<11	<11	<11	<11	<11
Sum of detected BTEX	<28 µg/l	TM245	<28	<28	<28	<28	<28
Aliphatics >C5-C6	<10 µg/l	TM245	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/l	TM245	<10	<10	<10	<10	<10
Aliphatics >C10-C12	<10 µg/l	TM245	<10	<10	<10	<10	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174	<10	<10	<10	<10	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174	<10	<10	<10	<10	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174	<10	<10	<10	<10	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174	<10	<10	<10	<10	<10
Aromatics >EC5-EC7	<10 µg/l	TM245	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/l	TM245	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/l	TM245	<10	<10	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/l	TM245	<10	<10	<10	<10	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174	<10	<10	<10	<10	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174	<10	<10	<10	<10	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174	<10	<10	<10	<10	<10
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174	<10	<10	<10	<10	<10
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174	<10	<10	<10	<10	<10
Aliphatics >C16-C35 Aqueous	<10 µg/l	TM174	<10	<10	<10	<10	<10

CERTIFICATE OF ANALYSIS

SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	WS12
Depth (m)	0.00 - 0.00
Sample Type	Ground Water (GW)
Date Sampled	20/08/2021
Sampled Time	.
Date Received	25/08/2021
SDG Ref	210825-101
Lab Sample No.(s)	24869025
AGS Reference	ES1

Component	LOD/Units	Method	
Dibromofluoromethane**	%	TM208	108
Toluene-d8**	%	TM208	99.8
4-Bromofluorobenzene**	%	TM208	97.7
Dichlorodifluoromethane	<1 µg/l	TM208	<1 #
Chloromethane	<1 µg/l	TM208	<1 #
Vinyl chloride	<1 µg/l	TM208	<1 #
Bromomethane	<1 µg/l	TM208	<1 #
Chloroethane	<1 µg/l	TM208	<1 #
Trichlorofluoromethane	<1 µg/l	TM208	<1 #
1,1-Dichloroethene	<1 µg/l	TM208	<1 #
Carbon disulphide	<1 µg/l	TM208	<1 #
Dichloromethane	<3 µg/l	TM208	<3 #
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208	<1 #
trans-1,2-Dichloroethene	<1 µg/l	TM208	<1 #
1,1-Dichloroethane	<1 µg/l	TM208	<1 #
cis-1,2-Dichloroethene	<1 µg/l	TM208	<1 #
2,2-Dichloropropane	<1 µg/l	TM208	<1
Bromochloromethane	<1 µg/l	TM208	<1 #
Chloroform	<1 µg/l	TM208	<1 #
1,1,1-Trichloroethane	<1 µg/l	TM208	<1 #
1,1-Dichloropropene	<1 µg/l	TM208	<1 #
Carbontetrachloride	<1 µg/l	TM208	<1 #
1,2-Dichloroethane	<1 µg/l	TM208	<1 #
Benzene	<1 µg/l	TM208	<1 #
Trichloroethene	<1 µg/l	TM208	<1 #
1,2-Dichloropropane	<1 µg/l	TM208	<1 #
Dibromomethane	<1 µg/l	TM208	<1 #
Bromodichloromethane	<1 µg/l	TM208	<1 #
cis-1,3-Dichloropropene	<1 µg/l	TM208	<1 #
Toluene	<1 µg/l	TM208	<1 #
trans-1,3-Dichloropropene	<1 µg/l	TM208	<1 #
1,1,2-Trichloroethane	<1 µg/l	TM208	<1 #

CERTIFICATE OF ANALYSIS

SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	WS12
Depth (m)	0.00 - 0.00
Sample Type	Ground Water (GW)
Date Sampled	20/08/2021
Sampled Time	.
Date Received	25/08/2021
SDG Ref	210825-101
Lab Sample No.(s)	24869025
AGS Reference	ES1

Component	LOD/Units	Method	
1,3-Dichloropropane	<1 µg/l	TM208	<1 #
Tetrachloroethene	<1 µg/l	TM208	<1 #
Dibromochloromethane	<1 µg/l	TM208	<1 #
1,2-Dibromoethane	<1 µg/l	TM208	<1 #
Chlorobenzene	<1 µg/l	TM208	<1 #
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208	<1 #
Ethylbenzene	<1 µg/l	TM208	<1 #
m,p-Xylene	<1 µg/l	TM208	<1 #
o-Xylene	<1 µg/l	TM208	<1 #
Styrene	<1 µg/l	TM208	<1 #
Bromoform	<1 µg/l	TM208	<1 #
Isopropylbenzene	<1 µg/l	TM208	<1 #
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208	<1 #
1,2,3-Trichloropropane	<1 µg/l	TM208	<1 #
Bromobenzene	<1 µg/l	TM208	<1 #
Propylbenzene	<1 µg/l	TM208	<1 #
2-Chlorotoluene	<1 µg/l	TM208	<1 #
1,3,5-Trimethylbenzene	<1 µg/l	TM208	<1 #
4-Chlorotoluene	<1 µg/l	TM208	<1 #
tert-Butylbenzene	<1 µg/l	TM208	<1 #
1,2,4-Trimethylbenzene	<1 µg/l	TM208	<1 #
sec-Butylbenzene	<1 µg/l	TM208	<1 #
4-iso-Propyltoluene	<1 µg/l	TM208	<1 #
1,3-Dichlorobenzene	<1 µg/l	TM208	<1 #
1,4-Dichlorobenzene	<1 µg/l	TM208	<1 #
n-Butylbenzene	<1 µg/l	TM208	<1 #
1,2-Dichlorobenzene	<1 µg/l	TM208	<1 #
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208	<1
1,2,4-Trichlorobenzene	<1 µg/l	TM208	<1 #
Hexachlorobutadiene	<1 µg/l	TM208	<1 #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1 #
Naphthalene	<1 µg/l	TM208	<1 #

CERTIFICATE OF ANALYSIS

SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+S@	Sample deviation (see appendix)

Customer Sample Ref.	WS12
Depth (m)	0.00 - 0.00
Sample Type	Ground Water (GW)
Date Sampled	20/08/2021
Sampled Time	.
Date Received	25/08/2021
SDG Ref	210825-101
Lab Sample No.(s)	24869025
AGS Reference	ES1

Component	LOD/Units	Method	
1,2,3-Trichlorobenzene	<1 µg/l	TM208	<1 #
1,3,5-Trichlorobenzene	<1 µg/l	TM208	<1

CERTIFICATE OF ANALYSIS

SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM343	EPA 8270D - Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of Selected Pesticides (Suite I) in Liquids by GCMS
TM344	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite II) by GCMS
TM411	Acid_Herbs_GCMS	Acid Herbs in Water by GCMS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24869017	24869041	24869033	24869051	24869025
Customer Sample Ref.	BH01	BH02	BH03	WS08	WS12
AGS Ref.	ES1	ES1	ES1	ES1	ES1
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Acid Herbicides by GCMS					06-Sep-2021
Ammonium Low	27-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021
Anions by Kone (w)	01-Sep-2021	01-Sep-2021	01-Sep-2021	01-Sep-2021	01-Sep-2021
Cyanide Comp/Free/Total/Thiocyanate	01-Sep-2021	01-Sep-2021	01-Sep-2021	01-Sep-2021	01-Sep-2021
Dissolved Metals by ICP-MS	31-Aug-2021	31-Aug-2021	31-Aug-2021	31-Aug-2021	31-Aug-2021
Dissolved Organic/Inorganic Carbon	02-Sep-2021	02-Sep-2021	02-Sep-2021	02-Sep-2021	02-Sep-2021
EPH CWG (Aliphatic) Aqueous GC (W)	01-Sep-2021	01-Sep-2021	03-Sep-2021	01-Sep-2021	01-Sep-2021
EPH CWG (Aromatic) Aqueous GC (W)	01-Sep-2021	01-Sep-2021	03-Sep-2021	01-Sep-2021	01-Sep-2021
GRO by GC-FID (W)	26-Aug-2021	26-Aug-2021	26-Aug-2021	26-Aug-2021	26-Aug-2021
Hexavalent Chromium (w)	02-Sep-2021	02-Sep-2021	02-Sep-2021	02-Sep-2021	02-Sep-2021
Mercury Dissolved	31-Aug-2021	31-Aug-2021	31-Aug-2021	31-Aug-2021	31-Aug-2021
Nitrite by Kone (w)	31-Aug-2021	31-Aug-2021	31-Aug-2021	31-Aug-2021	31-Aug-2021
PAH Spec MS - Aqueous (W)	01-Sep-2021	01-Sep-2021	02-Sep-2021	01-Sep-2021	01-Sep-2021
Pesticides (Suite I) by GCMS					31-Aug-2021
Pesticides (Suite II) by GCMS					30-Aug-2021
pH Value	27-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021
Phenols by HPLC (W)	27-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021
Sulphide	01-Sep-2021	01-Sep-2021	01-Sep-2021	01-Sep-2021	01-Sep-2021
SVOC MS (W) - Aqueous					01-Sep-2021
Total Metals by ICP-MS	27-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021
TPH CWG (W)	01-Sep-2021	01-Sep-2021	03-Sep-2021	01-Sep-2021	01-Sep-2021
VOC MS (W)					26-Aug-2021

ASSOCIATED AQC DATA

Acid Herbicides by GCMS

Component	Method Code	QC 2409
2,3,6-TBA (Raw)	TM411	**93.6** 72.24 : 118.28
2,4,5-T (Raw)	TM411	**64.54** 66.88 : 130.00
2,4-D (Raw)	TM411	**95.39** 68.29 : 133.58
2,4-DB (Raw)	TM411	**80.34** 57.23 : 133.50
Benazolin (Raw)	TM411	**110.61** 78.76 : 146.78
Bromoxynil (Raw)	TM411	**94.54** 77.69 : 118.97
Clopyralid (Raw)	TM411	**93.3** 64.11 : 124.08
Dicamba (Raw)	TM411	**93.34** 77.45 : 123.02
Dichloroprop (Raw)	TM411	**87.65** 74.86 : 126.35
DNOC (Raw)	TM411	**89.18** 65.53 : 129.07
Fenoprop (Raw)	TM411	**85.73** 74.33 : 126.19
Fluroxypyr (Raw)	TM411	**110.72** 80.51 : 140.78
Ioxynil (Raw)	TM411	**80.27** 42.19 : 122.44
MCPA (Raw)	TM411	**94.56** 79.83 : 124.11
MCPB (Raw)	TM411	**74.83** 33.12 : 147.97
Mecoprop (Raw)	TM411	**97.54** 80.77 : 125.74
Pentachlorophenol (Raw)	TM411	**101.91** 76.67 : 131.12
Triclopyr (Raw)	TM411	**89.65** 69.64 : 132.21

Ammonium Low

Component	Method Code	QC 2498	QC 2465
Ammoniacal Nitrogen as N	TM099	**96.8** 94.00 : 106.00	**98.4** 94.00 : 106.00

Anions by Kone (w)

Anions by Kone (w)

Component	Method Code	QC 2406
Sulphate (soluble)	TM184	**101.2** 91.99 : 109.30
TON as NO3	TM184	**98.5** 90.35 : 108.35

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2497
Free Cyanide (W)	TM227	**83.75** 90.67 : 122.67
Thiocyanate (W)	TM227	**111.0** 92.25 : 117.75
Total Cyanide (W)	TM227	**109.0** 96.25 : 112.75

Dissolved Metals by ICP-MS

Component	Method Code	QC 2411	QC 2458
Aluminium	TM152	**101.33** 90.98 : 111.82	**103.67** 90.78 : 110.89
Antimony	TM152	**105.33** 90.44 : 113.04	**101.83** 77.22 : 119.42
Arsenic	TM152	**108.0** 88.00 : 112.00	**102.5** 86.77 : 107.67
Barium	TM152	**104.83** 90.20 : 111.19	**104.67** 87.86 : 110.23
Beryllium	TM152	**98.5** 87.77 : 113.97	**105.83** 86.19 : 112.98
Bismuth	TM152	**104.83** 91.90 : 112.20	**104.33** 84.06 : 106.46
Borate	TM152	**98.77** 88.00 : 112.00	**106.17** 88.00 : 112.00
Boron	TM152	**98.67** 96.48 : 114.93	**106.0** 83.92 : 114.90
Cadmium	TM152	**105.33** 96.43 : 110.53	**104.5** 88.89 : 106.69
Calcium	TM152	**108.0** 93.36 : 108.97	**106.67** 80.24 : 117.95
Chromium	TM152	**103.17** 91.84 : 108.67	**101.83** 83.22 : 110.16
Cobalt	TM152	**105.0** 88.00 : 112.00	**102.17** 82.49 : 112.36
Copper	TM152	**106.83** 92.47 : 118.11	**102.17** 83.14 : 113.00
Iron	TM152	**104.67** 93.23 : 106.27	**102.67** 88.40 : 109.24
Lead	TM152	**101.17** 88.00 : 112.00	**103.67** 83.71 : 109.58
Lithium	TM152	**95.83** 91.62 : 113.12	**105.17** 84.50 : 114.28
Magnesium	TM152	**97.33** 87.77 : 110.48	**102.0** 87.56 : 114.57

Dissolved Metals by ICP-MS

		QC 2411	QC 2458
Manganese	TM152	**104.83** 95.03 : 110.58	**103.5** 90.01 : 108.72
Molybdenum	TM152	**105.67** 88.00 : 112.00	**102.33** 85.53 : 107.42
Nickel	TM152	**107.0** 88.00 : 112.00	**102.0** 88.05 : 106.42
Phosphorus	TM152	**103.5** 91.54 : 107.12	**101.67** 82.76 : 107.72
Potassium	TM152	**107.33** 92.16 : 109.93	**103.33** 88.45 : 106.42
Selenium	TM152	**110.83** 91.58 : 115.98	**104.5** 85.61 : 111.03
Silver	TM152	**108.0** 88.80 : 122.30	**105.33** 88.48 : 110.48
Sodium	TM152	**96.67** 89.47 : 109.62	**101.33** 88.32 : 106.30
Strontium	TM152	**107.67** 88.00 : 112.00	**104.67** 83.77 : 107.87
Tellurium	TM152	**114.67** 93.32 : 114.66	**104.83** 82.83 : 104.73
Thallium	TM152	**103.0** 88.00 : 112.00	**100.33** 77.47 : 113.87
Tin	TM152	**105.33** 92.63 : 109.70	**102.17** 87.36 : 109.55
Titanium	TM152	**101.83** 95.58 : 111.68	**100.67** 87.29 : 108.31
Tungsten	TM152	**106.17** 81.32 : 124.72	**103.67** 68.27 : 122.97
Uranium	TM152	**102.17** 88.00 : 112.00	**104.0** 82.46 : 105.16
Vanadium	TM152	**104.67** 88.00 : 112.00	**101.17** 88.43 : 114.30
Zinc	TM152	**106.33** 92.98 : 118.95	**102.33** 85.57 : 114.31

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2463
Dissolved Inorganic Carbon	TM090	**101.0** 93.58 : 112.28
Dissolved Organic Carbon	TM090	**103.0** 97.80 : 107.10

EPH CWG (Aliphatic) Aqueous GC (W)

Component	Method Code	QC 2493	QC 2466
Total Aliphatics >C10-C40	TM174	**98.51** 69.79 : 134.39	**97.03** 68.59 : 134.82

EPH CWG (Aromatic) Aqueous GC (W)

Component	Method Code	QC 2407	QC 2477
Total Aromatics >EC10-EC40	TM174	**77.56** 59.92 : 128.54	**98.05** 60.75 : 129.09

GRO by GC-FID (W)

Component	Method Code	QC 2497
Benzene by GC	TM245	**100.0** 83.48 : 117.21
Ethylbenzene by GC	TM245	**103.5** 84.11 : 114.89
m & p Xylene by GC	TM245	**104.5** 83.73 : 116.33
MTBE GC-FID	TM245	**98.0** 84.42 : 117.50
o Xylene by GC	TM245	**104.5** 85.03 : 117.59
QC	TM245	**99.36** 60.71 : 137.65
Toluene by GC	TM245	**103.5** 84.73 : 116.85

Hexavalent Chromium (w)

Component	Method Code	QC 2434
Hexavalent Chromium	TM241	**103.8** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2470	QC 2420
Mercury Dissolved (CVAF)	TM183	**100.0** 69.30 : 128.70	**97.1** 69.30 : 128.70

PAH Spec MS - Aqueous (W)

Component	Method Code	QC 2428	QC 2482
Acenaphthene by GCMS	TM178	**110.0** 90.45 : 118.63	**108.8** 97.60 : 116.80
Acenaphthylene by GCMS	TM178	**110.8** 90.13 : 116.27	**101.2** 89.20 : 113.20
Anthracene by GCMS	TM178	**106.4** 92.40 : 114.00	**107.6** 92.40 : 116.40
Benz(a)anthracene by GCMS	TM178	**106.8** 89.51 : 117.69	**104.8** 84.40 : 110.80

PAH Spec MS - Aqueous (W)

		QC 2428	QC 2482
Benzo(a)pyrene by GCMS	TM178	**107.6** 89.43 : 118.57	**104.8** 88.40 : 110.00
Benzo(b)fluoranthene by GCMS	TM178	**112.4** 87.80 : 121.80	**101.2** 81.20 : 114.80
Benzo(ghi)perylene by GCMS	TM178	**103.6** 87.10 : 119.30	**107.6** 93.60 : 112.80
Benzo(k)fluoranthene by GCMS	TM178	**106.8** 93.23 : 123.57	**112.0** 90.40 : 119.20
Chrysene by GCMS	TM178	**106.8** 88.68 : 116.92	**110.0** 96.80 : 113.60
Dibenzo(ah)anthracene by GCMS	TM178	**104.4** 86.24 : 118.56	**112.0** 88.00 : 112.00
Fluoranthene by GCMS	TM178	**111.2** 86.04 : 121.96	**111.6** 93.49 : 118.20
Fluorene by GCMS	TM178	**110.8** 90.76 : 121.24	**110.0** 94.39 : 118.66
Indeno(123cd)pyrene by GCMS	TM178	**102.8** 88.39 : 119.61	**105.6** 90.40 : 114.40
Naphthalene by GCMS	TM178	**110.0** 89.40 : 121.80	**109.6** 94.00 : 115.60
Phenanthrene by GCMS	TM178	**108.4** 90.41 : 119.19	**106.4** 94.80 : 114.00
Pyrene by GCMS	TM178	**112.0** 91.00 : 120.20	**114.8** 96.40 : 115.60

Pesticides (Suite I) by GCMS

Component	Method Code	QC 2454
Aldrin - (Inst.)	TM343	**36.2** 59.75 : 143.00
alpha-HCH - (Inst.)	TM343	**26.4** 75.13 : 166.63
beta-HCH - (Inst.)	TM343	**25.45** 85.48 : 166.48
cis-Chlordane - (Inst.)	TM343	**21.63** 71.70 : 156.00
delta-HCH - (Inst.)	TM343	**15.99** 83.98 : 156.58
Dieldrin - (Inst.)	TM343	**57.5** 77.45 : 154.10
Endosulphan I - (Inst.)	TM343	**29.77** 91.30 : 168.70
Endosulphan II - (Inst.)	TM343	**14.02** 82.68 : 161.13
Endosulphan Sulphate - (Inst.)	TM343	**19.66** 69.65 : 165.95
Endrin - (Inst.)	TM343	**48.3** 81.33 : 178.68
gamma-HCH (Lindane) - (Inst.)	TM343	**45.11** 83.15 : 175.40
Heptachlor - (Inst.)	TM343	**25.97** 63.65 : 167.80
Heptachlor epoxide - (Inst.)	TM343	**20.46** 73.28 : 159.38

Pesticides (Suite I) by GCMS

		QC 2454
Isodrin - (Inst.)	TM343	**32.16** 58.34 : 153.81
o,p-DDD (TDE) - (Inst.)	TM343	**24.3** 66.93 : 162.03
o,p-DDE - (Inst.)	TM343	**18.48** 64.68 : 156.78
o,p-DDT - (Inst.)	TM343	**24.48** 72.20 : 170.15
o,p-Methoxychlor - (Inst.)	TM343	**19.99** 73.33 : 171.13
p,p-DDD (TDE) - (Inst.)	TM343	**16.49** 67.95 : 160.20
p,p-DDE - (Inst.)	TM343	**20.46** 67.80 : 159.45
p,p-DDT - (Inst.)	TM343	**32.11** 68.30 : 178.25
p,p-Methoxychlor - (Inst.)	TM343	**24.65** 66.94 : 176.47
Permethrin I - (Inst.)	TM343	**11.9** 63.25 : 146.35
Permethrin II - (Inst.)	TM343	**29.4** 66.00 : 151.80
trans-Chlordane - (Inst.)	TM343	**20.31** 71.68 : 165.88
Trifluralin - (Inst.)	TM343	**24.9** 64.73 : 161.48

pH Value

Component	Method Code	QC 2401	QC 2404
pH	TM256	**101.07** 99.33 : 102.54	**101.07** 99.33 : 102.54

Phenols by HPLC (W)

Component	Method Code	QC 2409
2.3.5 Trimethyl-Phenol by HPLC (W)	TM259	**95.7** 73.97 : 135.63
2-Isopropyl Phenol by HPLC (W)	TM259	**93.69** 88.30 : 124.10
Cresols by HPLC (W)	TM259	**96.71** 85.46 : 124.01
Napthol by HPLC (W)	TM259	**97.66** 75.83 : 130.17
Phenol by HPLC (W)	TM259	**92.63** 89.03 : 126.97
Xylenols by HPLC (W)	TM259	**93.99** 92.20 : 121.33

Sulphide

Sulphide

Component	Method Code	QC 2411
Sulphide	TM101	**100.0** 88.90 : 112.50

SVOC MS (W) - Aqueous

Component	Method Code	QC 2451
4-Bromophenylphenylether	TM176	**97.6** 52.80 : 111.84
Benzo(a)anthracene	TM176	**86.4** 59.28 : 107.76
Benzo(a)pyrene	TM176	**76.64** 54.40 : 105.76
Butylbenzyl phthalate	TM176	**88.0** 51.68 : 117.92
Hexachlorobutadiene	TM176	**76.8** 48.64 : 95.68
Naphthalene	TM176	**95.2** 63.04 : 111.04
Nitrobenzene	TM176	**88.0** 59.92 : 108.40
Phenol	TM176	**56.72** 36.88 : 72.40

Total Metals by ICP-MS

Component	Method Code	QC 2410
Aluminium	TM152	**104.33** 88.99 : 114.16
Antimony	TM152	**102.17** 93.05 : 123.32
Arsenic	TM152	**103.0** 97.95 : 112.90
Barium	TM152	**105.0** 95.11 : 116.80
Beryllium	TM152	**103.83** 96.06 : 116.39
Bismuth	TM152	**101.67** 93.21 : 113.89
Boron	TM152	**104.33** 86.68 : 117.67
Cadmium	TM152	**103.5** 96.08 : 112.92
Calcium	TM152	**106.67** 95.17 : 121.17
Chromium	TM152	**102.17** 97.65 : 111.90
Cobalt	TM152	**102.33** 96.52 : 113.04
Copper	TM152	**103.5** 97.32 : 113.53

Total Metals by ICP-MS

		QC 2410
Iron	TM152	**103.33** 96.27 : 111.69
Lead	TM152	**101.17** 96.90 : 113.51
Lithium	TM152	**103.33** 94.68 : 116.74
Magnesium	TM152	**100.67** 92.42 : 114.10
Manganese	TM152	**104.17** 97.04 : 112.45
Molybdenum	TM152	**102.17** 87.00 : 108.89
Nickel	TM152	**102.67** 97.57 : 113.15
Phosphorus	TM152	**101.33** 96.28 : 113.79
Potassium	TM152	**105.33** 96.14 : 114.83
Selenium	TM152	**105.67** 96.70 : 113.86
Silver	TM152	**104.83** 82.13 : 120.33
Sodium	TM152	**101.33** 92.77 : 115.64
Strontium	TM152	**104.0** 90.72 : 114.82
Tellurium	TM152	**106.17** 95.55 : 115.82
Thallium	TM152	**100.0** 80.92 : 114.72
Tin	TM152	**102.0** 96.04 : 111.04
Titanium	TM152	**103.17** 96.48 : 114.94
Uranium	TM152	**101.0** 95.56 : 112.07
Vanadium	TM152	**103.33** 88.43 : 114.30
Zinc	TM152	**103.67** 97.95 : 113.95

VOC MS (W)

Component	Method Code	QC 2417
1,1,1,2-Tetrachloroethane	TM208	**96.0** 87.41 : 110.84
1,1,1-Trichloroethane	TM208	**94.0** 81.01 : 112.00
1,1-Dichloroethane	TM208	**96.0** 82.09 : 116.41
1,2-Dichloroethane	TM208	**96.0** 80.28 : 123.63
2-Chlorotoluene	TM208	**93.0** 83.31 : 110.91

VOC MS (W)

		QC 2417
4-Chlorotoluene	TM208	**92.5** 84.01 : 111.46
Benzene	TM208	**97.5** 87.46 : 118.30
Bromomethane	TM208	**89.0** 76.99 : 118.39
Carbontetrachloride	TM208	**95.0** 81.73 : 114.22
Chlorobenzene	TM208	**96.0** 90.24 : 109.71
Chloroform	TM208	**94.5** 83.67 : 118.08
Chloromethane	TM208	**91.0** 70.42 : 127.06
Cis-1,2-Dichloroethene	TM208	**93.0** 83.95 : 112.60
Dichloromethane	TM208	**93.5** 81.65 : 120.83
Ethylbenzene	TM208	**93.0** 85.59 : 106.44
Hexachlorobutadiene	TM208	**86.0** 66.83 : 108.27
o-Xylene	TM208	**93.5** 78.40 : 110.68
p/m-Xylene	TM208	**92.5** 82.64 : 112.12
Tert-butyl methyl ether	TM208	**90.5** 68.23 : 127.69
Tetrachloroethene	TM208	**90.5** 81.10 : 112.63
Toluene	TM208	**95.0** 87.40 : 109.78
Trichloroethene	TM208	**92.5** 81.17 : 111.80
Vinyl Chloride	TM208	**88.5** 72.73 : 123.40

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

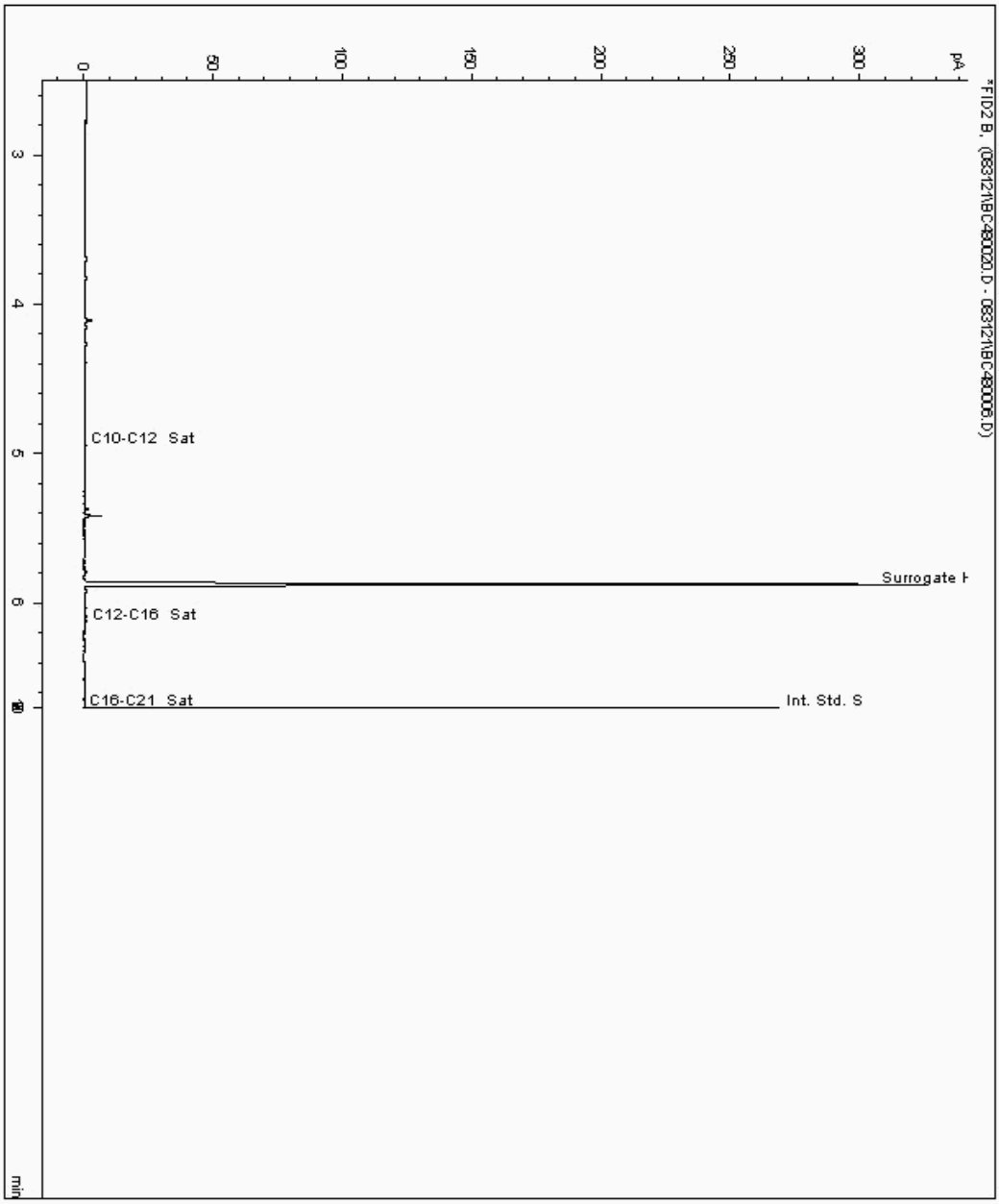
SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24872656 **Sample ID :** WS08 **Depth :** 0.00 - 0.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23258450-
Date Acquired : 01/09/2021 00:50:28 PM
Units : ppb
Dilution : SE WS08[0.00 - 0.00] ->
CF : 1
Multiplier : 0.026



CERTIFICATE OF ANALYSIS

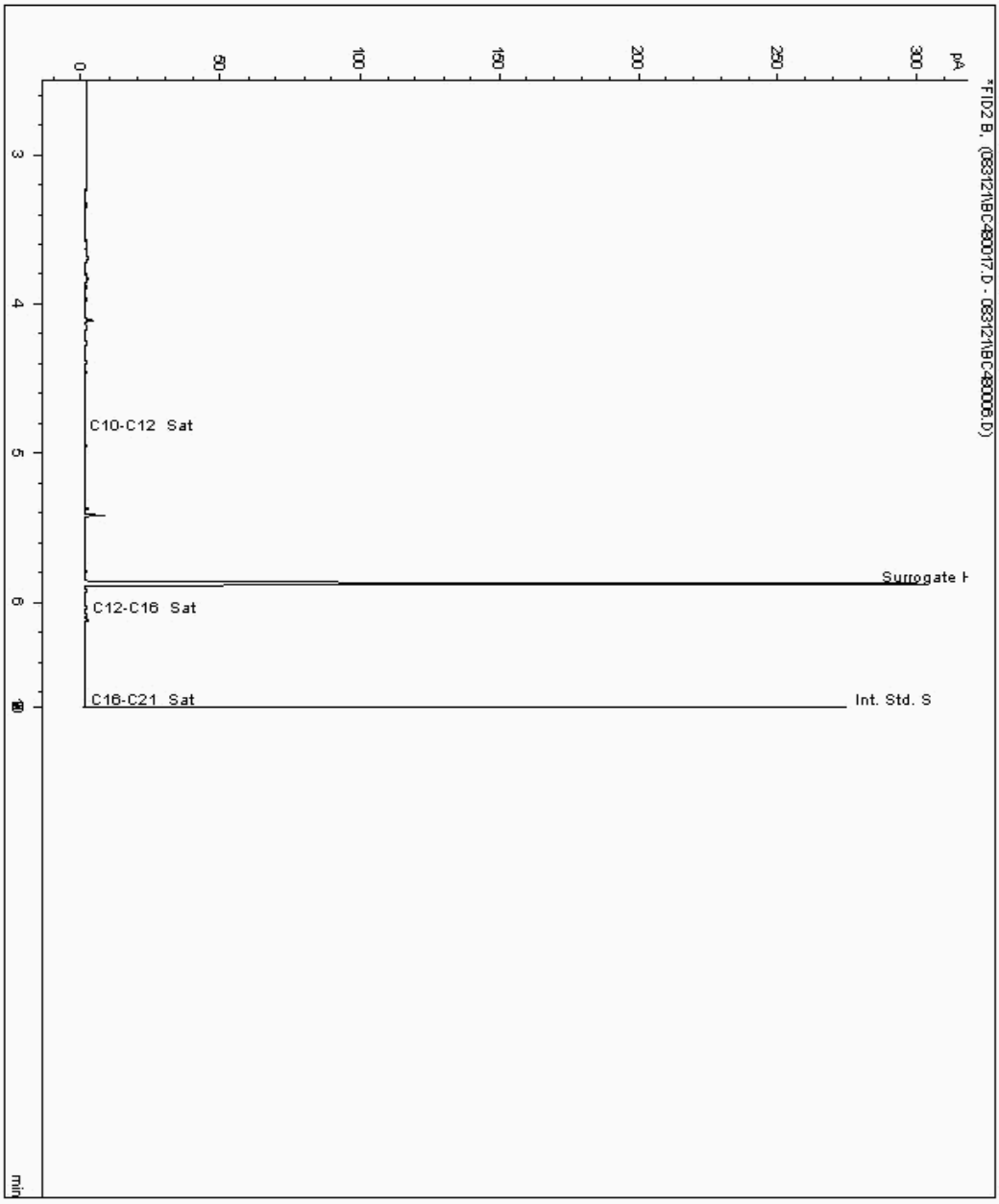
SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24872666 **Sample ID :** WS12 **Depth :** 0.00 - 0.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23258382-
Date Acquired : 31/08/2021 23:41:25 PM
Units : ppb
Dilution : SE WS12[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

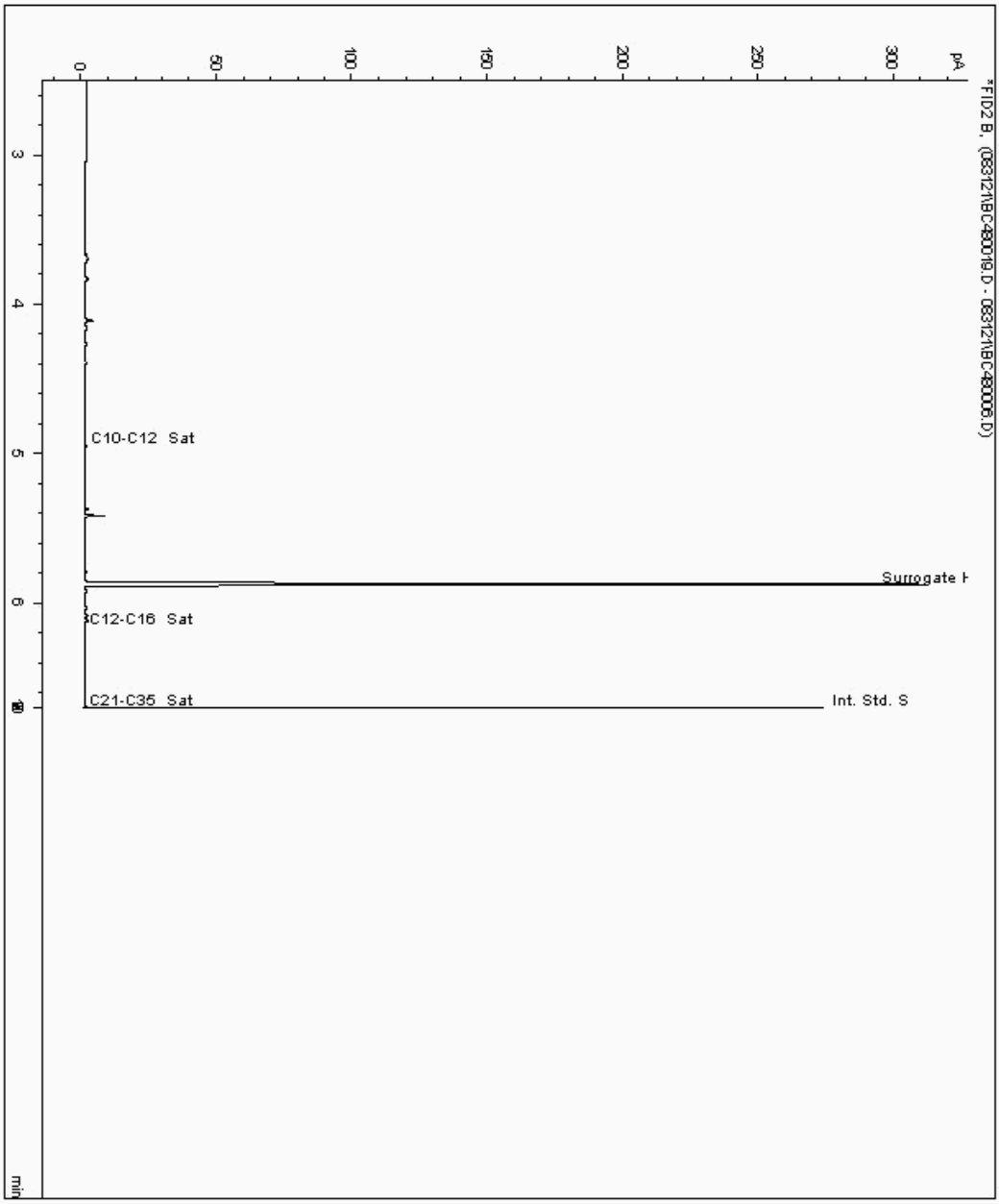
SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24872680 **Depth :** 0.00 - 0.00
Sample ID : BH01

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23258364-
Date Acquired : 01/09/2021 00:27:30 PM
Units : ppb
Dilution : SE BH01[0.00 - 0.00] ->
CF : 1
Multiplier : 0.027

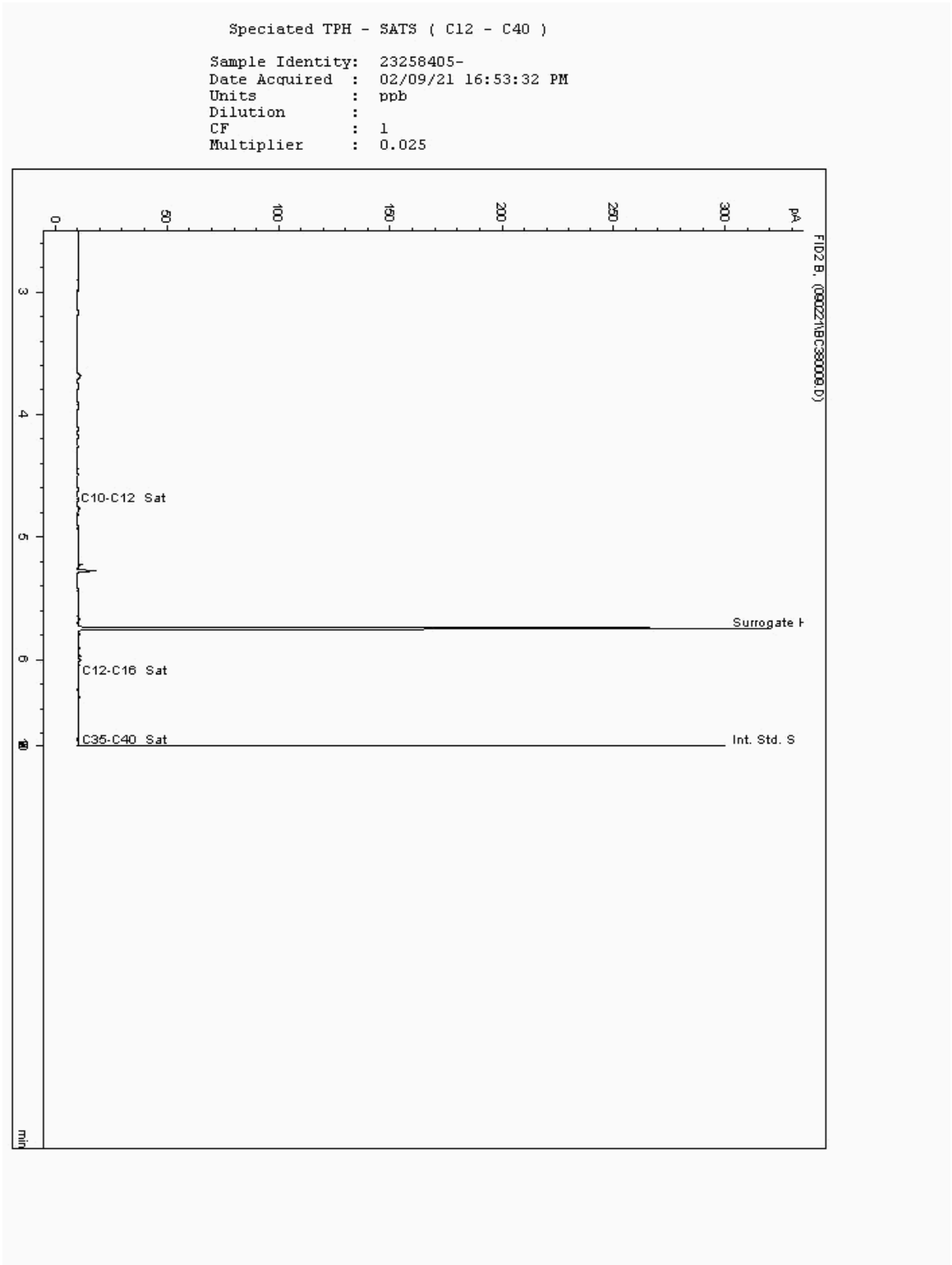


CERTIFICATE OF ANALYSIS

SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24872696 **Sample ID :** BH03 **Depth :** 0.00 - 0.00



CERTIFICATE OF ANALYSIS

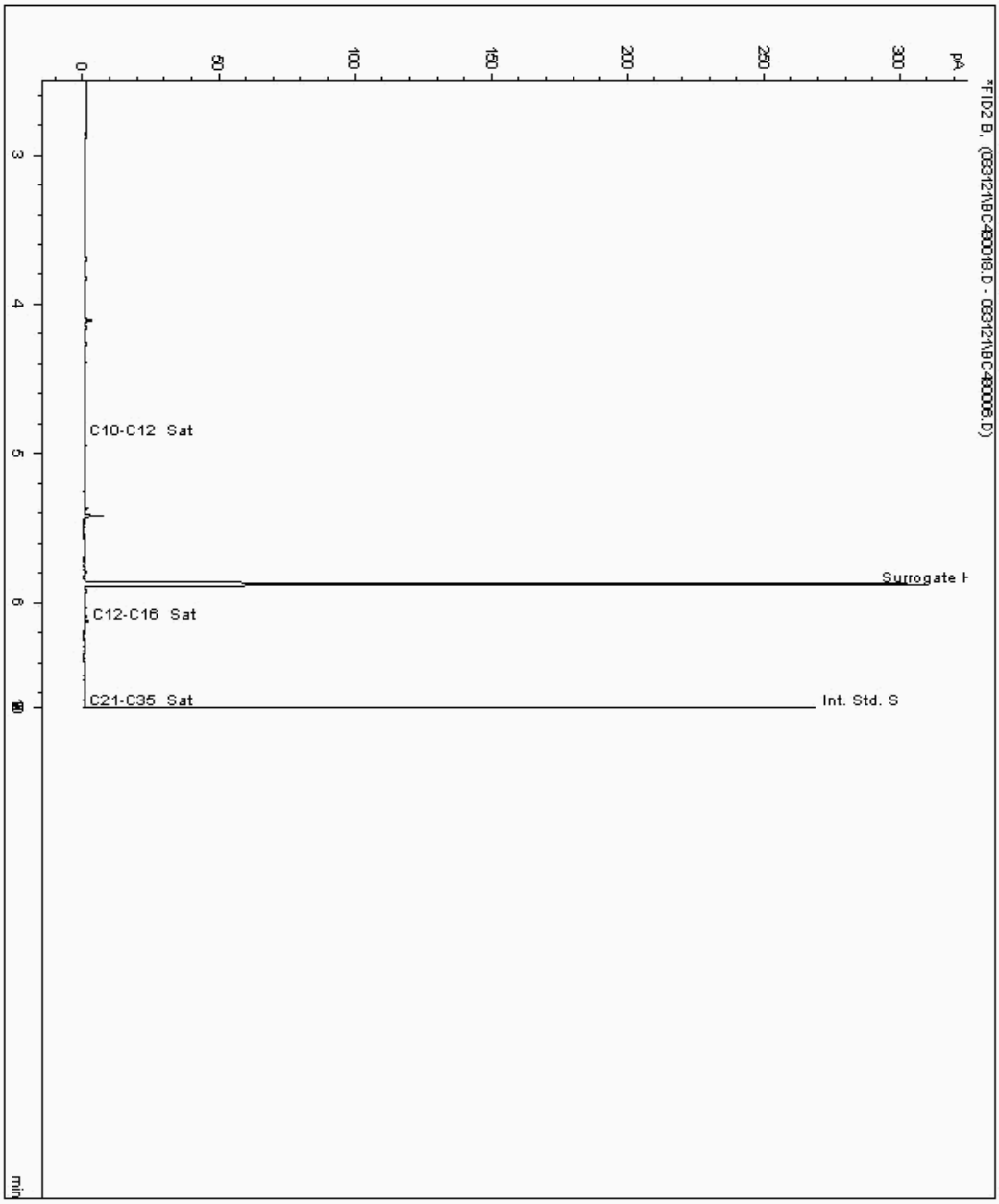
SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24872709 **Depth :** 0.00 - 0.00
Sample ID : BH02

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23258430-
Date Acquired : 01/09/2021 00:04:20 PM
Units : ppb
Dilution : SE BH02[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

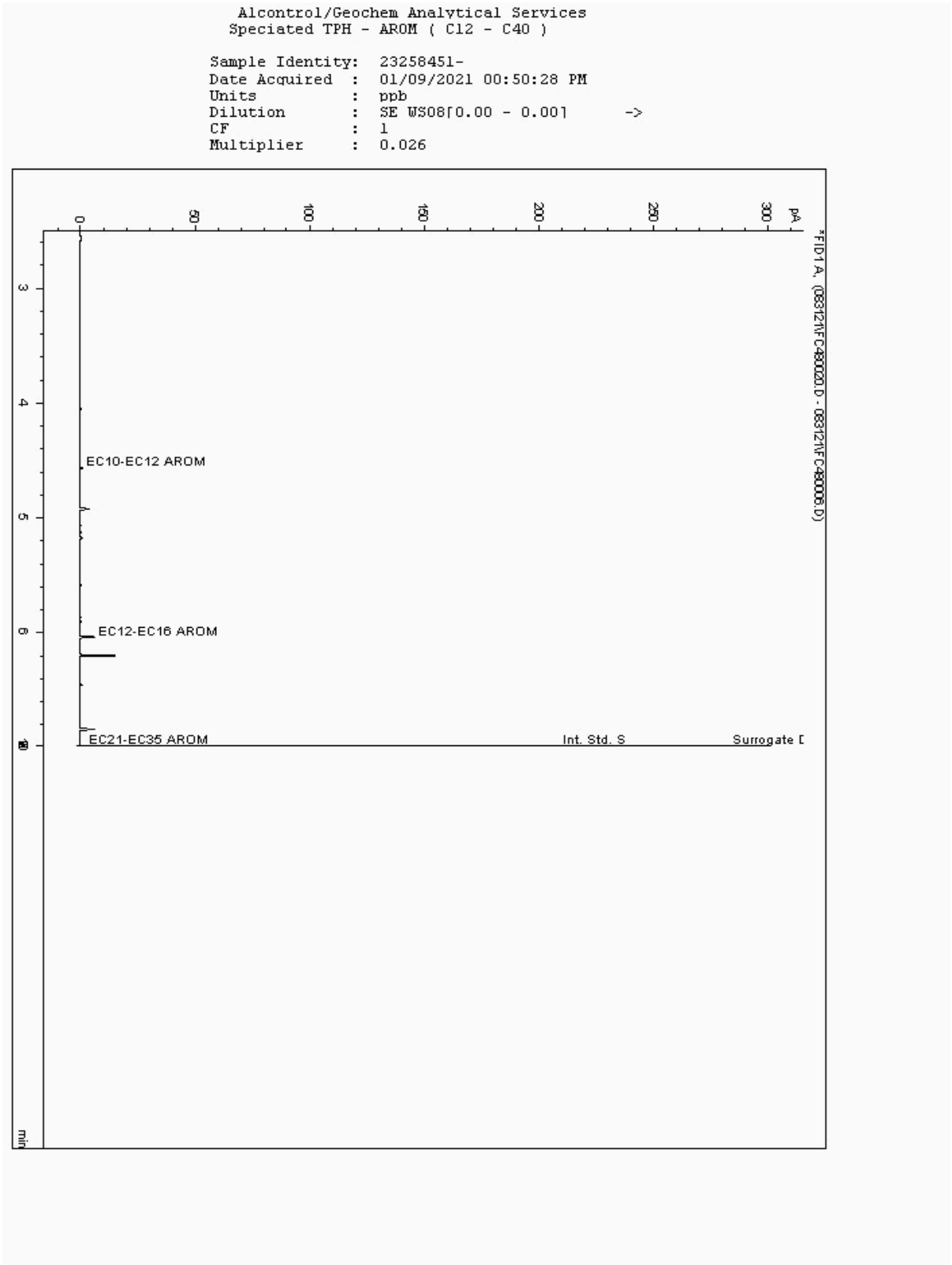


CERTIFICATE OF ANALYSIS

SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24872656 **Sample ID :** WS08 **Depth :** 0.00 - 0.00

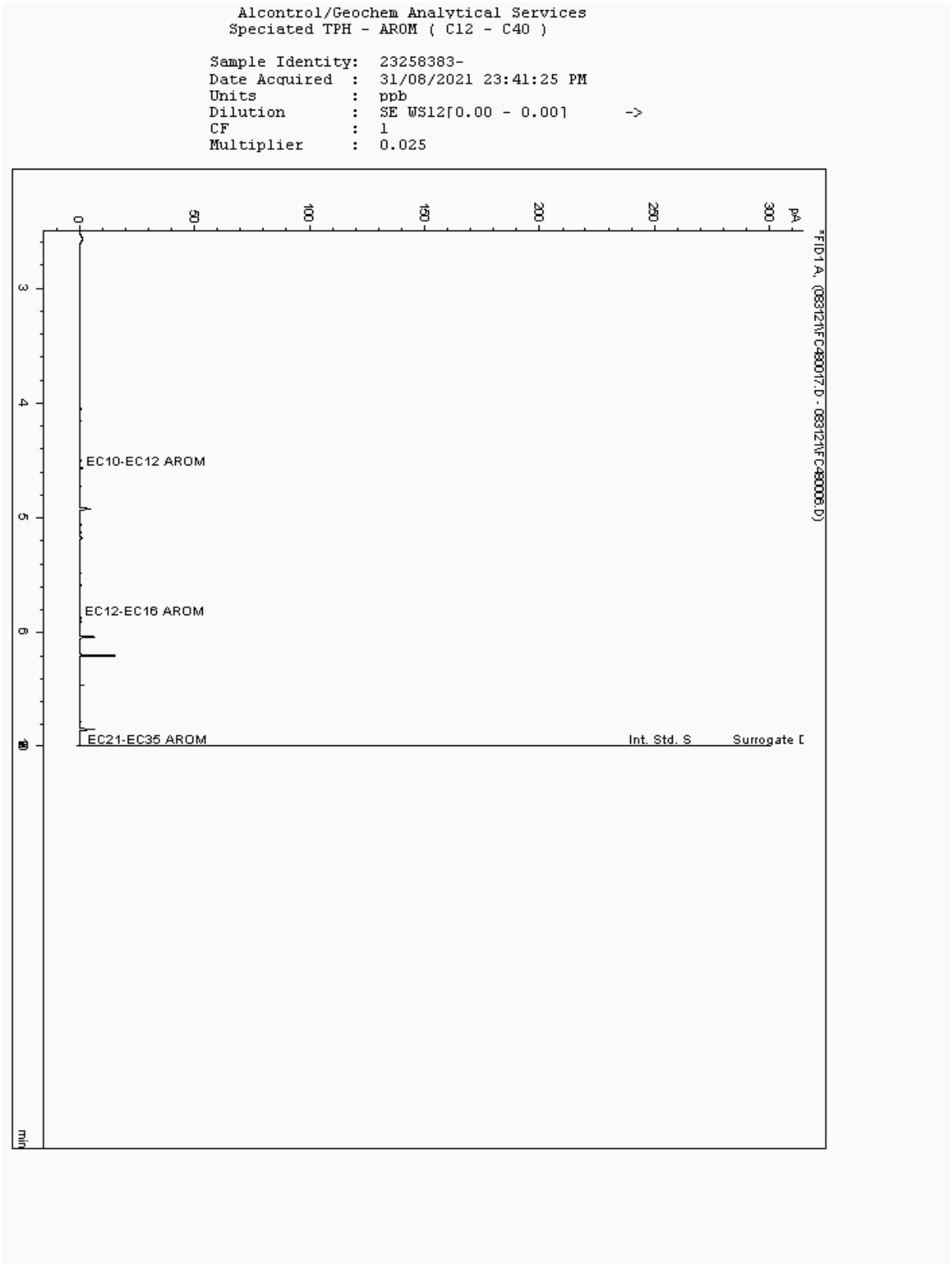


CERTIFICATE OF ANALYSIS

SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24872666 **Sample ID :** WS12 **Depth :** 0.00 - 0.00



CERTIFICATE OF ANALYSIS

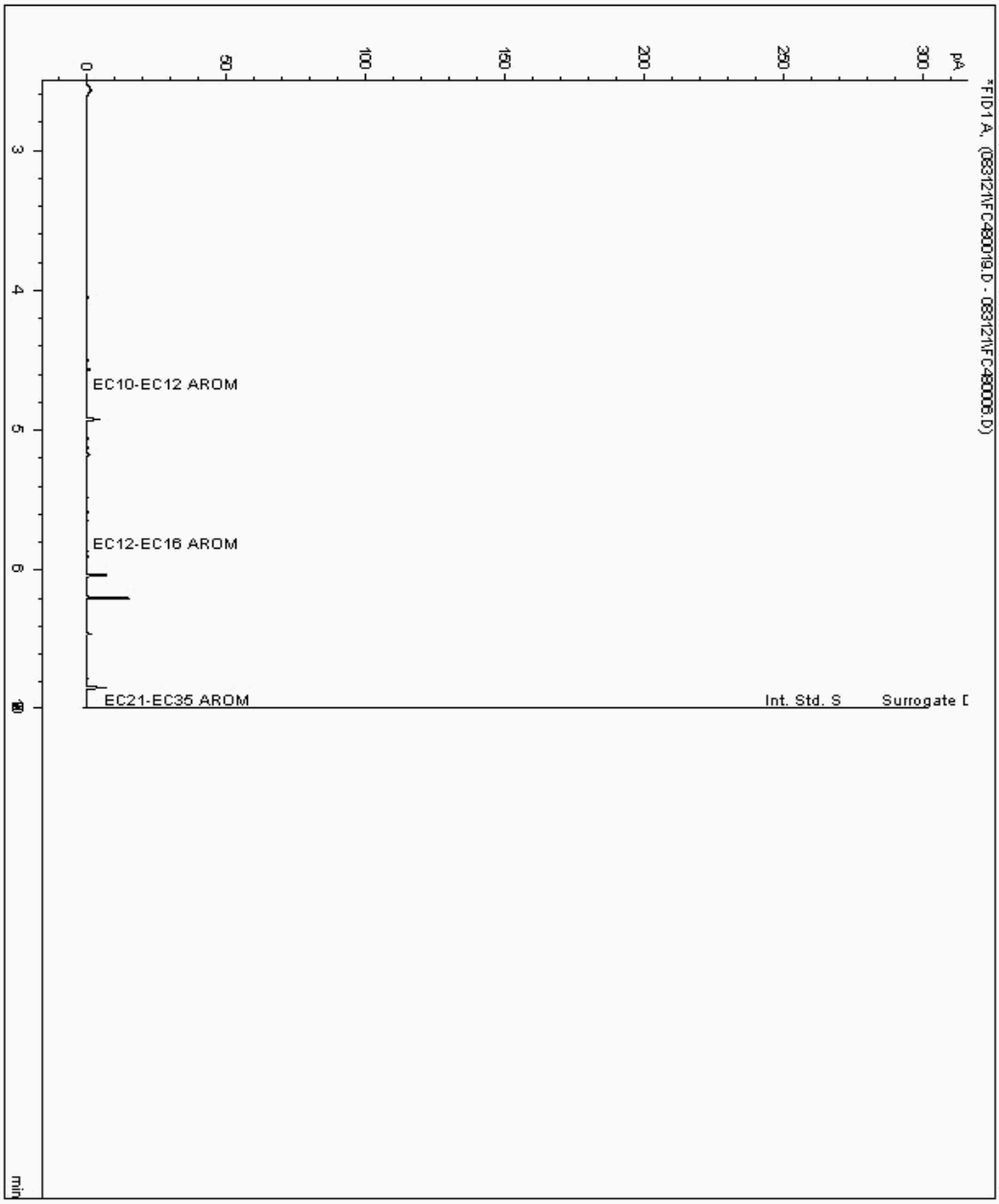
SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24872680 **Depth :** 0.00 - 0.00
Sample ID : BH01

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 23258365-
Date Acquired : 01/09/2021 00:27:30 PM
Units : ppb
Dilution : SE BH01[0.00 - 0.00] ->
CF : 1
Multiplier : 0.027



CERTIFICATE OF ANALYSIS

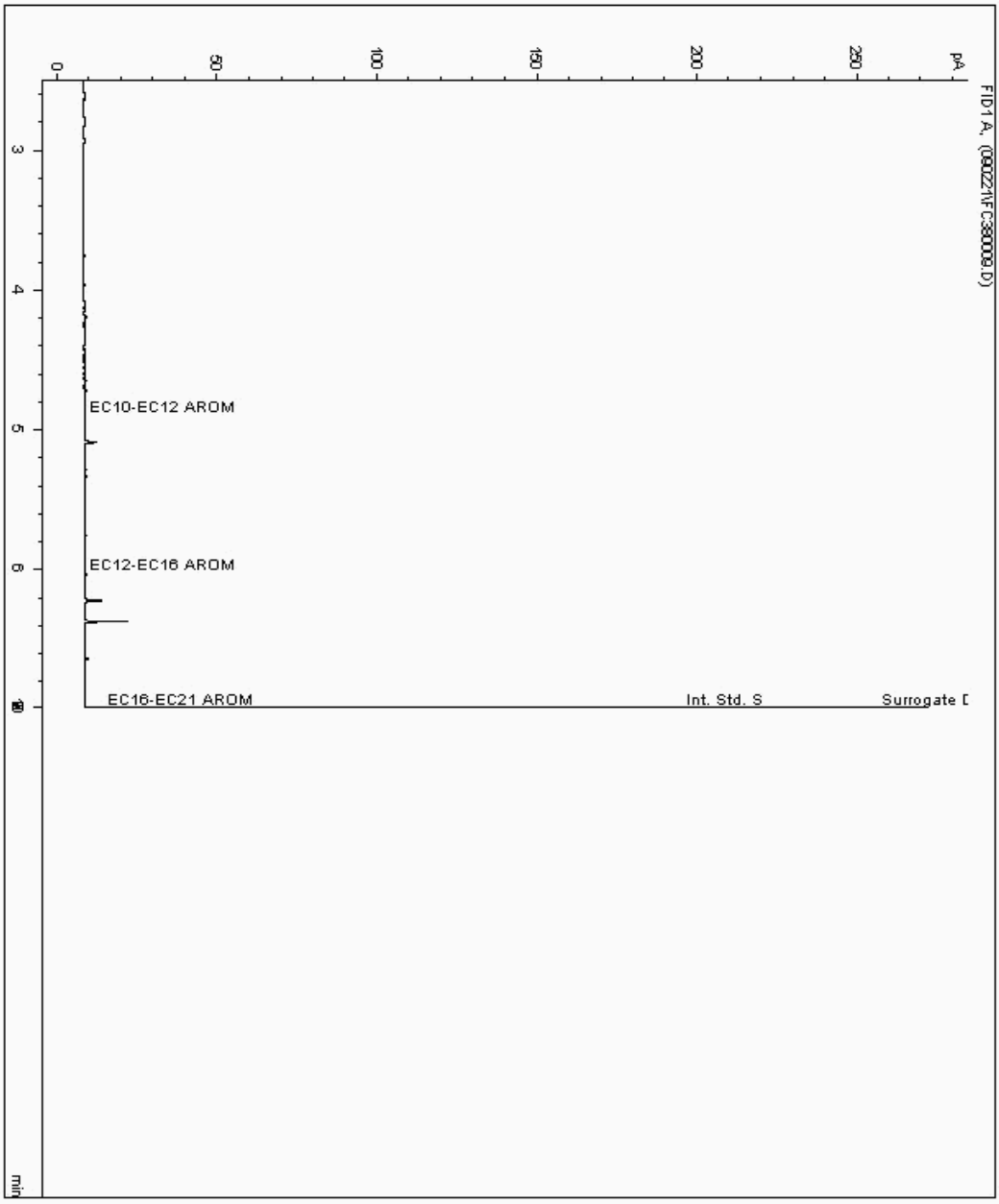
SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24872696 **Sample ID :** BH03 **Depth :** 0.00 - 0.00

Speciated TPH - AROM (C12 - C40)

Sample Identity: 23258406-
Date Acquired : 02/09/21 16:53:32 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

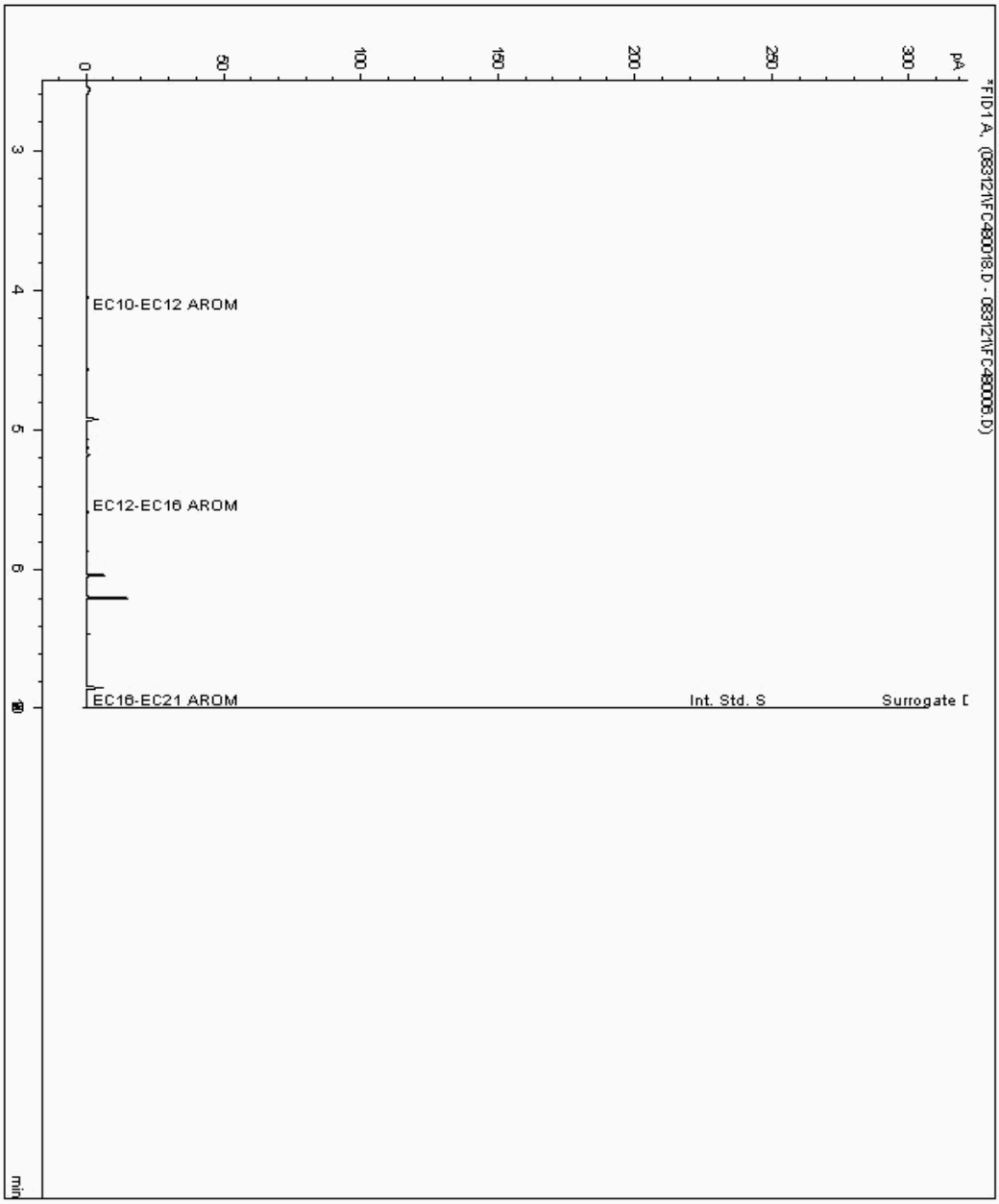
SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24872709 **Depth :** 0.00 - 0.00
Sample ID : BH02

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 23258431-
Date Acquired : 01/09/2021 00:04:20 PM
Units : ppb
Dilution : SE BH02[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

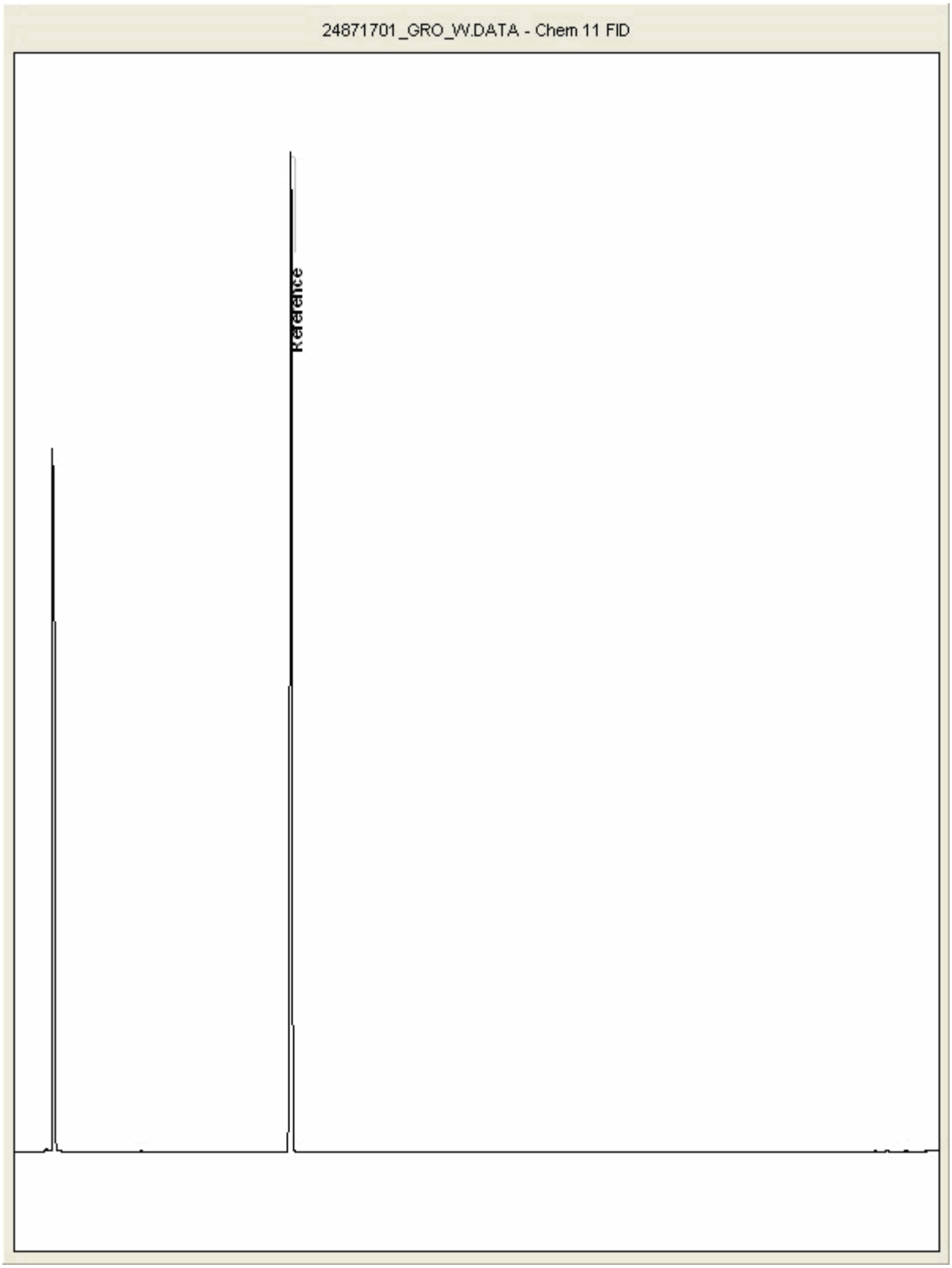
SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 24871701
Sample ID : BH01

Depth : 0.00 - 0.00



CERTIFICATE OF ANALYSIS

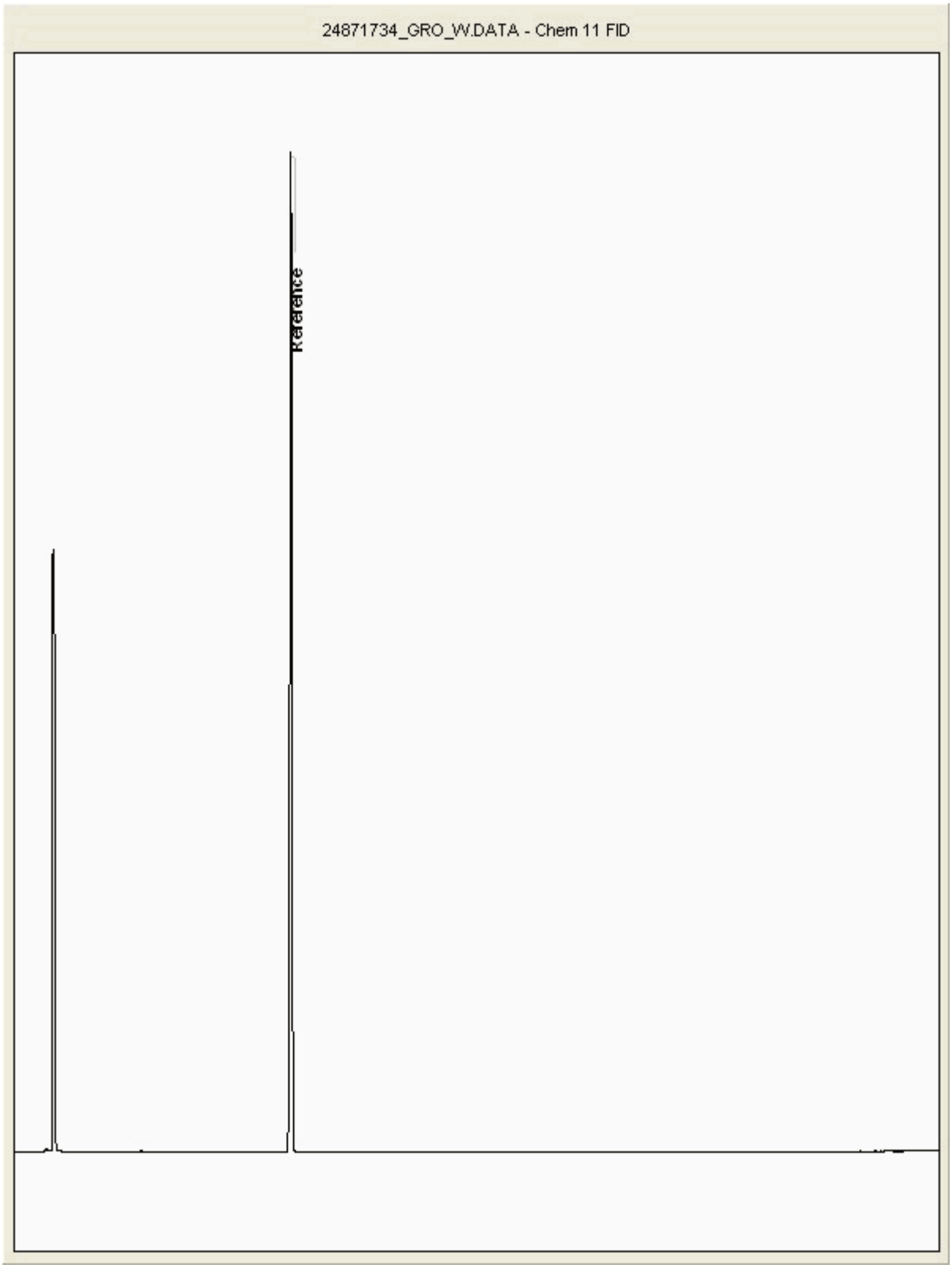
SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 24871734
Sample ID : BH02

Depth : 0.00 - 0.00



CERTIFICATE OF ANALYSIS

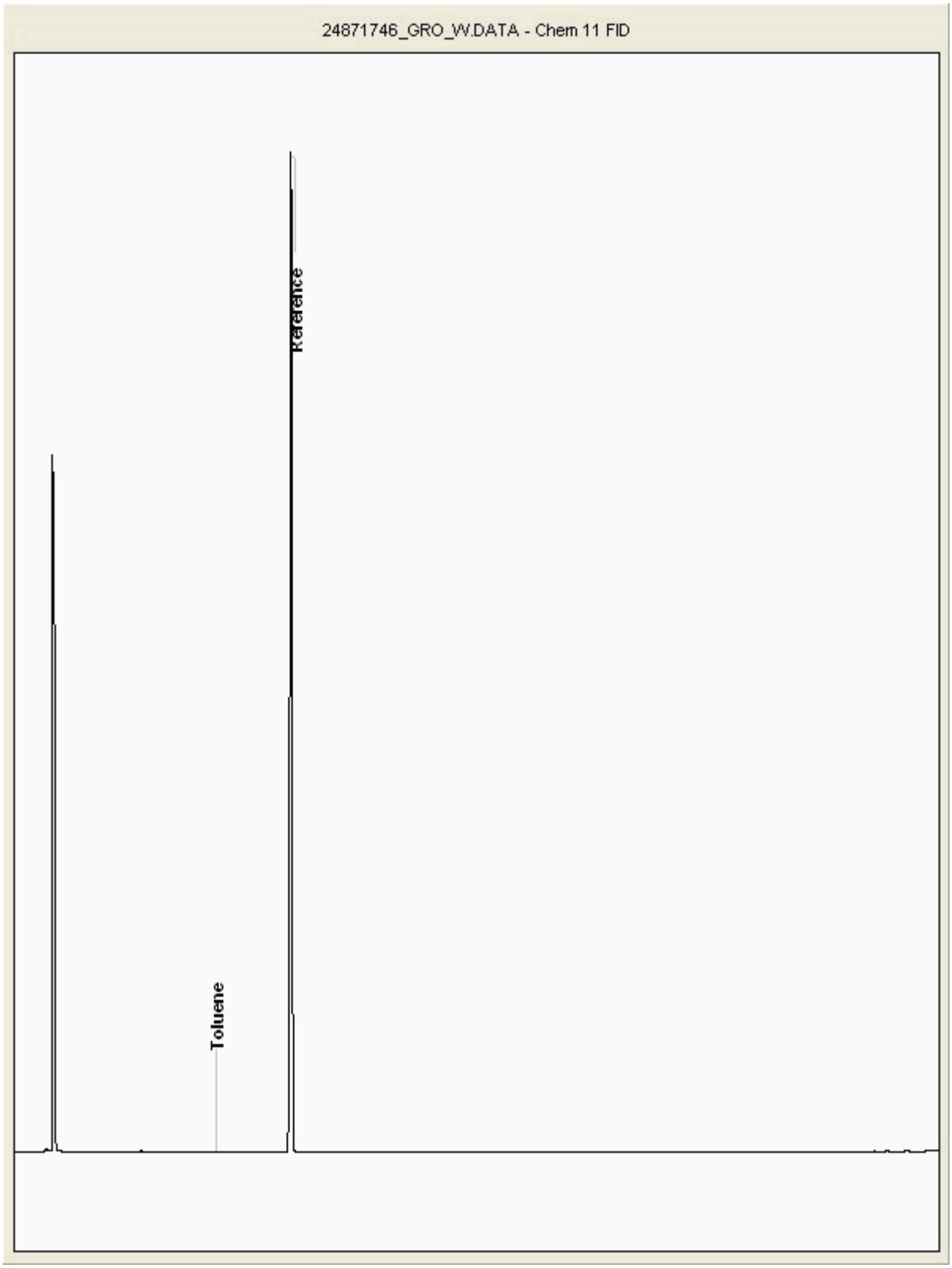
SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 24871746
Sample ID : WS08

Depth : 0.00 - 0.00



CERTIFICATE OF ANALYSIS

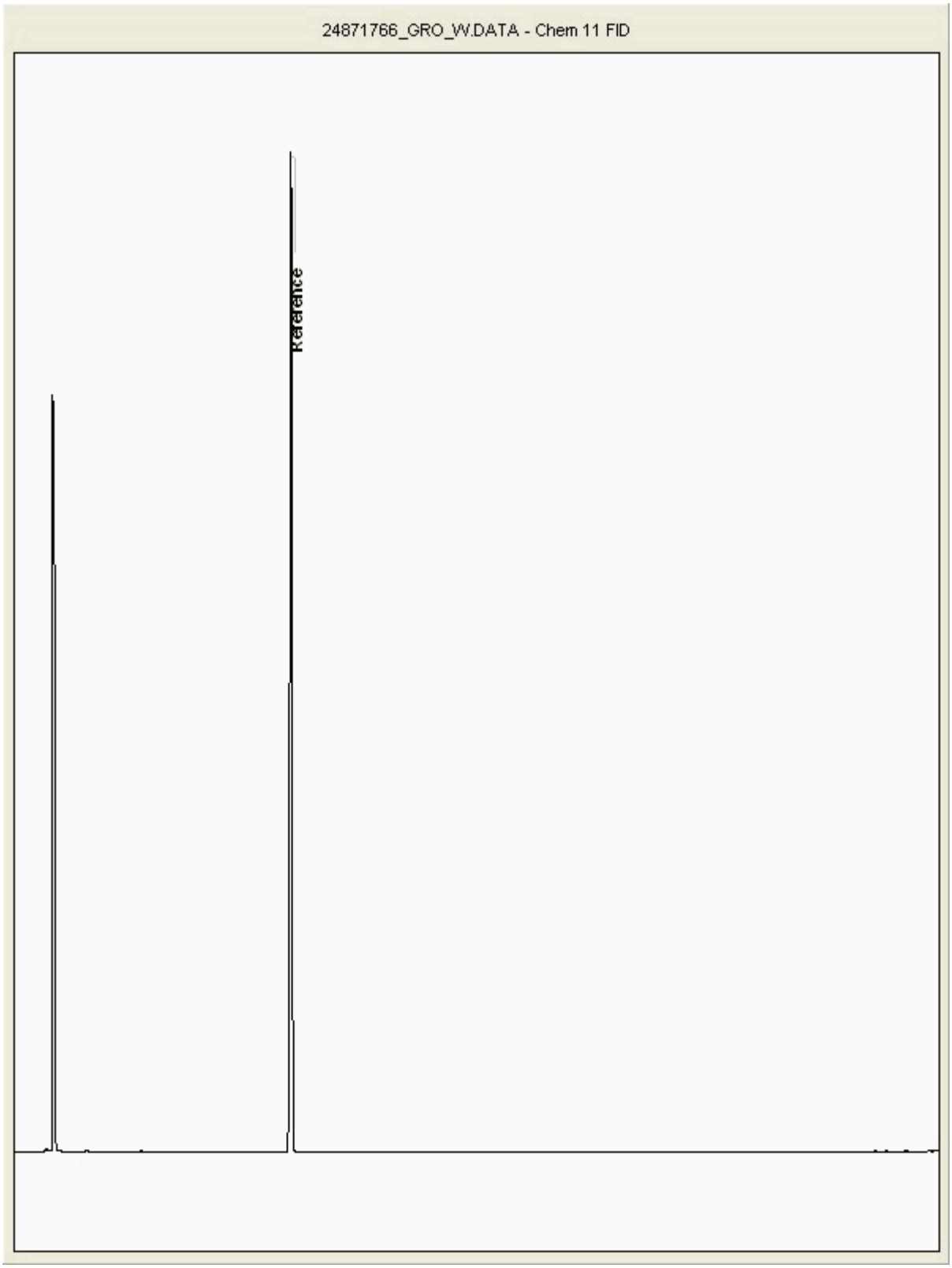
SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 24871766
Sample ID : WS12

Depth : 0.00 - 0.00



CERTIFICATE OF ANALYSIS

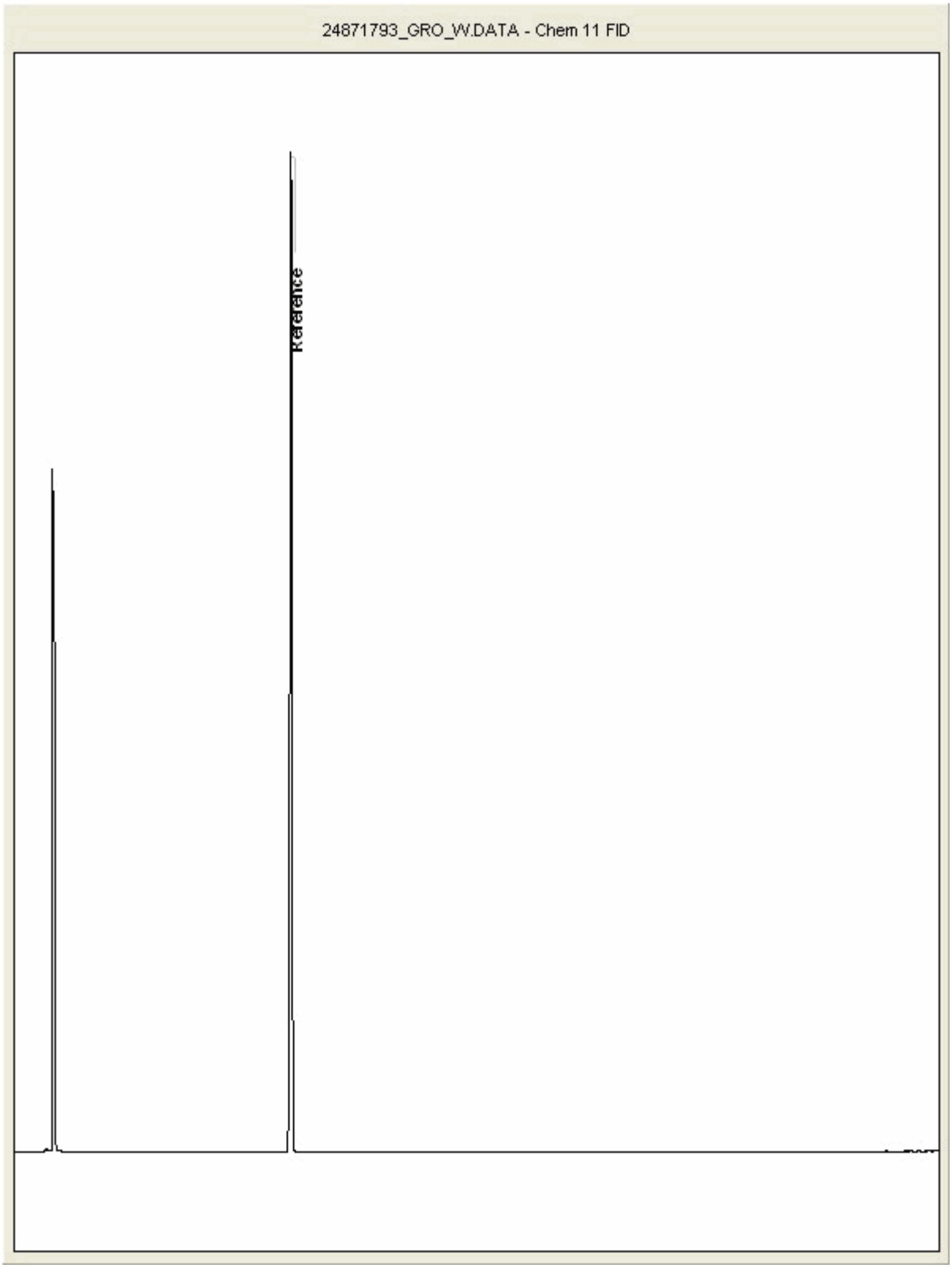
SDG:	210825-101	**Client Reference:**	784-B026948	**Report Number:**	611872
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 24871793
Sample ID : BH03

Depth : 0.00 - 0.00



Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	01 October 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210826-45
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	615526
Order Number:	7001649

We received 12 samples on Thursday August 26, 2021 and 12 of these samples were scheduled for analysis which was completed on Tuesday September 07, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.

Approved By:

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24871193	BH14	ES1	0.00 - 0.00	24/08/2021
24871163	BH15	ES1	0.00 - 0.00	23/08/2021
24871172	BH16	ES1	0.00 - 0.00	24/08/2021
24871277	BH17	ES1	0.00 - 0.00	24/08/2021
24871181	BH18	ES1	0.00 - 0.00	24/08/2021
24871236	BH19	ES1	0.00 - 0.00	23/08/2021
24871250	BH21	ES1	0.00 - 0.00	23/08/2021
24871258	BH22	ES1	0.00 - 0.00	23/08/2021
24871207	WS48	ES1	0.00 - 0.00	24/08/2021
24871216	WS50	ES1	0.00 - 0.00	24/08/2021
24871225	WS54	ES1	0.00 - 0.00	24/08/2021
24871269	WS66	ES1	0.00 - 0.00	23/08/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
			24871193	BH14	ES1	0.00 - 0.00	0.5l glass bottle (ALE227)	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Filtered (ALE204)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
			24871163	BH15	ES1	0.00 - 0.00	0.5l glass bottle (ALE227)	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Filtered (ALE204)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
			24871172	BH16	ES1	0.00 - 0.00	0.5l glass bottle (ALE227)	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Filtered (ALE204)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
			24871277	BH17	ES1	0.00 - 0.00	0.5l glass bottle (ALE227)	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 4						X																		
Ammonium Low	All	NDPs: 0 Tests: 12			X						X						X								X	
Anions by Kone (w)	All	NDPs: 0 Tests: 12		X						X						X								X		
BOD True Total	All	NDPs: 0 Tests: 4		X																						
COD Unfiltered	All	NDPs: 0 Tests: 4	X																							
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 12					X							X							X						
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 12				X							X							X						
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 12	X						X						X								X			
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 13	X						X						X								X			
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 13	X						X						X								X			
GRO by GC-FID (W)	All	NDPs: 0 Tests: 12						X						X							X					
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 12		X						X						X								X		
Mercury Dissolved	All	NDPs: 0 Tests: 12				X							X							X						
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 12	X						X						X								X			
Pesticides (Suite I) by GCMS	All	NDPs: 0 Tests: 4							X																	

24871250	BH21	ES1	0.00 - 0.00	HNO3 Filtered (ALE204)	GW							X						X		
				H2SO4 (ALE244)	GW		X													
				500ml Plastic (ALE208)	GW			X						X	X		X			X
				0.5l glass bottle (ALE227)	GW	X							X						X	
24871236	BH19	ES1	0.00 - 0.00	Vial (ALE297)	GW											X				
				NaOH (ALE245)	GW						X									
				HNO3 Filtered (ALE204)	GW							X						X		
				H2SO4 (ALE244)	GW		X													
				500ml Plastic (ALE208)	GW			X									X			
				0.5l glass bottle (ALE227)	GW								X	X	X				X	
24871181	BH18	ES1	0.00 - 0.00	Vial (ALE297)	GW											X				
				NaOH (ALE245)	GW						X									
				HNO3 Filtered (ALE204)	GW							X						X		
				H2SO4 (ALE244)	GW		X													
				500ml Plastic (ALE208)	GW			X									X			
				0.5l glass bottle (ALE227)	GW								X	X	X				X	
24871277	BH17	ES1	0.00 - 0.00	Vial (ALE297)	GW											X				
				NaOH (ALE245)	GW						X									
				HNO3 Filtered (ALE204)	GW							X						X		

CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
Pesticides (Suite II) by GCMS	All	NDPs: 0 Tests: 4	24871193	BH14	ES1	0.00 - 0.00	500ml Plastic (ALE208)	GW
			24871163	BH15	ES1	0.00 - 0.00	500ml Plastic (ALE208)	GW
			24871172	BH16	ES1	0.00 - 0.00	500ml Plastic (ALE208)	GW
			24871277	BH17	ES1	0.00 - 0.00	500ml Plastic (ALE208)	GW
pH Value	All	NDPs: 0 Tests: 12	24871193	BH14	ES1	0.00 - 0.00	500ml Plastic (ALE208)	GW
			24871163	BH15	ES1	0.00 - 0.00	500ml Plastic (ALE208)	GW
			24871172	BH16	ES1	0.00 - 0.00	500ml Plastic (ALE208)	GW
			24871277	BH17	ES1	0.00 - 0.00	500ml Plastic (ALE208)	GW
Phenols by HPLC (W)	All	NDPs: 0 Tests: 12	24871193	BH14	ES1	0.00 - 0.00	H2SO4 (ALE244)	GW
			24871163	BH15	ES1	0.00 - 0.00	H2SO4 (ALE244)	GW
			24871172	BH16	ES1	0.00 - 0.00	H2SO4 (ALE244)	GW
			24871277	BH17	ES1	0.00 - 0.00	H2SO4 (ALE244)	GW
Phosphate by Kone (w)	All	NDPs: 0 Tests: 4	24871193	BH14	ES1	0.00 - 0.00	0.5l glass bottle (ALE227)	GW
			24871163	BH15	ES1	0.00 - 0.00	0.5l glass bottle (ALE227)	GW
			24871172	BH16	ES1	0.00 - 0.00	0.5l glass bottle (ALE227)	GW
			24871277	BH17	ES1	0.00 - 0.00	0.5l glass bottle (ALE227)	GW
Sulphide	All	NDPs: 0 Tests: 12	24871193	BH14	ES1	0.00 - 0.00	500ml Plastic (ALE208)	GW
			24871163	BH15	ES1	0.00 - 0.00	500ml Plastic (ALE208)	GW
			24871172	BH16	ES1	0.00 - 0.00	500ml Plastic (ALE208)	GW
			24871277	BH17	ES1	0.00 - 0.00	500ml Plastic (ALE208)	GW
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 4	24871193	BH14	ES1	0.00 - 0.00	500ml Plastic (ALE208)	GW
			24871163	BH15	ES1	0.00 - 0.00	500ml Plastic (ALE208)	GW
			24871172	BH16	ES1	0.00 - 0.00	500ml Plastic (ALE208)	GW
			24871277	BH17	ES1	0.00 - 0.00	500ml Plastic (ALE208)	GW
Total Metals by ICP-MS	All	NDPs: 0 Tests: 12	24871193	BH14	ES1	0.00 - 0.00	500ml Plastic (ALE208)	GW
			24871163	BH15	ES1	0.00 - 0.00	500ml Plastic (ALE208)	GW
			24871172	BH16	ES1	0.00 - 0.00	500ml Plastic (ALE208)	GW
			24871277	BH17	ES1	0.00 - 0.00	500ml Plastic (ALE208)	GW
TPH CWG (W)	All	NDPs: 0 Tests: 12	24871193	BH14	ES1	0.00 - 0.00	0.5l glass bottle (ALE227)	GW
			24871163	BH15	ES1	0.00 - 0.00	0.5l glass bottle (ALE227)	GW
			24871172	BH16	ES1	0.00 - 0.00	0.5l glass bottle (ALE227)	GW
			24871277	BH17	ES1	0.00 - 0.00	0.5l glass bottle (ALE227)	GW
VOC MS (W)	All	NDPs: 0 Tests: 4	24871193	BH14	ES1	0.00 - 0.00	0.5l glass bottle (ALE227)	GW
			24871163	BH15	ES1	0.00 - 0.00	0.5l glass bottle (ALE227)	GW
			24871172	BH16	ES1	0.00 - 0.00	0.5l glass bottle (ALE227)	GW
			24871277	BH17	ES1	0.00 - 0.00	0.5l glass bottle (ALE227)	GW

24871250	BH21	ES1	0.00 - 0.00	HNO3 Filtered (ALE204)	GW	
				H2SO4 (ALE244)	GW	
				500ml Plastic (ALE208)	GW	X
				0.5l glass bottle (ALE227)	GW	
24871236	BH19	ES1	0.00 - 0.00	Vial (ALE297)	GW	X
				NaOH (ALE245)	GW	
				HNO3 Filtered (ALE204)	GW	
				H2SO4 (ALE244)	GW	
				500ml Plastic (ALE208)	GW	X
				0.5l glass bottle (ALE227)	GW	X
24871181	BH18	ES1	0.00 - 0.00	Vial (ALE297)	GW	
				NaOH (ALE245)	GW	
				HNO3 Filtered (ALE204)	GW	
				H2SO4 (ALE244)	GW	X
				500ml Plastic (ALE208)	GW	X
				0.5l glass bottle (ALE227)	GW	X
24871277	BH17	ES1	0.00 - 0.00	Vial (ALE297)	GW	
				NaOH (ALE245)	GW	
				HNO3 Filtered (ALE204)	GW	

CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	24871250	24871258												24871207										24871216										24871225
			Customer Sample Reference	BH21	BH22												WS48										WS50										WS54
			AGS Reference	ES1	ES1												ES1										ES1										ES1
			Depth (m)	0.00 - 0.00	0.00 - 0.00												0.00 - 0.00										0.00 - 0.00										0.00 - 0.00
			Container	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)
			Sample Type	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 4			X																															
Ammonium Low	All	NDPs: 0 Tests: 12					X							X							X															
Anions by Kone (w)	All	NDPs: 0 Tests: 12				X						X							X																	
BOD True Total	All	NDPs: 0 Tests: 4										X							X																	
COD Unfiltered	All	NDPs: 0 Tests: 4									X							X																		X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 12	X						X						X							X														
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 12						X						X							X															
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 12			X						X							X							X											X
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 13		X	X						X							X							X											X
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 13		X	X						X							X							X											X
GRO by GC-FID (W)	All	NDPs: 0 Tests: 12		X						X							X																		X	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 12				X						X							X																	
Mercury Dissolved	All	NDPs: 0 Tests: 12							X						X							X														
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 12			X						X							X							X											X
Pesticides (Suite I) by GCMS	All	NDPs: 0 Tests: 4			X																															

	24871269				24871225			
	WS86				WS54			
	ES1				ES1			
	0.00 - 0.00				0.00 - 0.00			
	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)
	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
						X					
				X						X	
					X						X
											X
		X						X			
			X						X		
						X					
						X					
						X					
	X						X				
					X						X
			X						X		
						X					
						X					

CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
Pesticides (Suite II) by GCMS	All	NDPs: 0 Tests: 4	24871250	BH21	ES1	0.00 - 0.00	500ml Plastic (ALE208)	GW
pH Value	All	NDPs: 0 Tests: 12	24871250	BH21	ES1	0.00 - 0.00	500ml Plastic (ALE208)	GW
Phenols by HPLC (W)	All	NDPs: 0 Tests: 12	24871250	BH21	ES1	0.00 - 0.00	H2SO4 (ALE244)	GW
Phosphate by Kone (w)	All	NDPs: 0 Tests: 4	24871250	BH21	ES1	0.00 - 0.00	0.5l glass bottle (ALE227)	GW
Sulphide	All	NDPs: 0 Tests: 12	24871250	BH21	ES1	0.00 - 0.00	500ml Plastic (ALE208)	GW
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 4	24871250	BH21	ES1	0.00 - 0.00	0.5l glass bottle (ALE227)	GW
Total Metals by ICP-MS	All	NDPs: 0 Tests: 12	24871250	BH21	ES1	0.00 - 0.00	500ml Plastic (ALE208)	GW
TPH CWG (W)	All	NDPs: 0 Tests: 12	24871250	BH21	ES1	0.00 - 0.00	0.5l glass bottle (ALE227)	GW
VOC MS (W)	All	NDPs: 0 Tests: 4	24871250	BH21	ES1	0.00 - 0.00	Vial (ALE297)	GW

	24871269									
	WS86									
	ES1									
	0.00 - 0.00									
Vial (ALE297)										
NaOH (ALE245)										
HNO3 Filtered (ALE204)										
H2SO4 (ALE244)				X						
500ml Plastic (ALE208)			X		X		X		X	
0.5l glass bottle (ALE227)								X		
Vial (ALE297)										X
NaOH (ALE245)										
HNO3 Filtered (ALE204)										
H2SO4 (ALE244)		X								
500ml Plastic (ALE208)					X		X		X	
	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
	0.00 - 0.00									
	ES1									
	WS54									
	24871225									

CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH14	BH15	BH16	BH17	BH18	BH19
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	24/08/2021	23/08/2021	24/08/2021	24/08/2021	24/08/2021	23/08/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021
			SDG Ref	210826-45	210826-45	210826-45	210826-45	210826-45	210826-45
			Lab Sample No.(s)	24871193	24871163	24871172	24871277	24871181	24871236
			AGS Reference	ES1	ES1	ES1	ES1	ES1	ES1
BOD, unfiltered	<1 mg/l	TM045		4.45 #					
Carbon, Organic (diss.filt)	<3 mg/l	TM090		3.62	5.15	3.64	3.83	<3	16.2
Ammoniacal Nitrogen as N (low level)	<0.01 mg/l	TM099		0.373 #	0.086 #	0.067 #	0.015 #	0.184 #	0.975 #
Ammoniacal Nitrogen Low as NH4	<0.01 mg/l	TM099		0.48 #	0.111 #	0.0861 #	0.0193 #	0.237 #	1.25 #
Sulphide	<0.01 mg/l	TM101		<0.01 2 #	<0.01 2 #	<0.01 2 #	<0.01 2 #	0.015 2 #	<0.01 2 #
COD, unfiltered	<7 mg/l	TM107		79.6 #					
Arsenic (diss.filt)	<0.5 µg/l	TM152		1.82 #	0.632 #	3.37 #	3.52 #	1.68 #	0.882 #
Boron (diss.filt)	<10 µg/l	TM152		870 #	74.1 #	209 #	154 #	285 #	48.6 #
Cadmium (diss.filt)	<0.08 µg/l	TM152		<0.08 #	<0.08 #	<0.08 #	<0.08 #	<0.08 #	0.173 #
Chromium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Copper (diss.filt)	<0.3 µg/l	TM152		<0.3 #	1.63 #	0.492 #	0.808 #	0.302 #	4.38 #
Lead (diss.filt)	<0.2 µg/l	TM152		<0.2 #	<0.2 #	<0.2 #	<0.2 #	<0.2 #	<0.2 #
Manganese (diss.filt)	<3 µg/l	TM152		839 #	14.9 #	12.5 #	<3 #	8.15 #	2660 #
Nickel (diss.filt)	<0.4 µg/l	TM152		4.77 #	<0.4 #	1.85 #	0.59 #	1.31 #	4.74 #
Phosphorus (diss.filt)	<10 µg/l	TM152		<10 #					
Selenium (diss.filt)	<1 µg/l	TM152		<1 #	18.8 #	1.85 #	<1 #	1.75 #	<1 #
Vanadium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	1.9 #	6.09 #	1.86 #	<1 #
Zinc (diss.filt)	<1 µg/l	TM152		1.04 #	<1 #	1.66 #	1.15 #	4.49 #	5.35 #
Calcium (Dis.Filt)	<0.2 mg/l	TM152		563 #	191 #	540 #	255 #	511 #	98.2 #
Iron (Dis.Filt)	<0.019 mg/l	TM152		0.0545 #	<0.019 #	<0.019 #	<0.019 #	<0.019 #	0.149 #
Hardness, Total as CaCO3 unfiltered	<0.35 mg/l	TM152		3860 2	1560 2	1650 2	857 2	1650 2	336 2
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #
Sulphate	<2 mg/l	TM184		1850 #	914 #	1160 #	413 #	1240 #	23.4 #
Phosphate (Ortho as P)	<0.02 mg/l	TM184		<0.02 #					
Nitrate as NO3	<0.3 mg/l	TM184		4.17	19.3	32.4	85	22.1	1.08
Cyanide, Total	<0.05 mg/l	TM227		<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
Cyanide, Free	<0.05 mg/l	TM227		<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.03 #	<0.03 #	<0.03 #	<0.03 #	<0.03 #	<0.03 #
pH	<1 pH Units	TM256		7.5 #	7.91 #	7.42 #	7.68 #	7.56 #	6.88 #
Phenol	<0.002 mg/l	TM259		<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 #
Cresols	<0.006 mg/l	TM259		<0.006 #	<0.006 #	<0.006 #	<0.006 #	<0.006 #	<0.006 #
Xylenols	<0.008 mg/l	TM259		<0.008 #	<0.008 #	<0.008 #	<0.008 #	<0.008 #	<0.008 #

CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH14	BH15	BH16	BH17	BH18	BH19
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	24/08/2021	23/08/2021	24/08/2021	24/08/2021	24/08/2021	23/08/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021
			SDG Ref	210826-45	210826-45	210826-45	210826-45	210826-45	210826-45
			Lab Sample No.(s)	24871193	24871163	24871172	24871277	24871181	24871236
			AGS Reference	ES1	ES1	ES1	ES1	ES1	ES1
Phenols, Total Detected monohydric	<0.016	mg/l TM259		<0.016 #	<0.016 #	<0.016 #	<0.016 #	<0.016 #	<0.016 #
Trifluralin	<0.01	µg/l TM343			<0.01				
alpha-HCH	<0.01	µg/l TM343			<0.01				
gamma-HCH (Lindane)	<0.01	µg/l TM343			<0.01				
Heptachlor	<0.01	µg/l TM343			<0.01				
Aldrin	<0.01	µg/l TM343			<0.01				
beta-HCH	<0.01	µg/l TM343			<0.01				
Isodrin	<0.01	µg/l TM343			<0.01				
delta-HCH	<0.01	µg/l TM343			<0.01				
Heptachlor epoxide	<0.01	µg/l TM343			<0.01				
o,p'-DDE	<0.01	µg/l TM343			<0.01				
Endosulphan I	<0.01	µg/l TM343			<0.01				
trans-Chlordane	<0.01	µg/l TM343			<0.01				
cis-Chlordane	<0.01	µg/l TM343			<0.01				
p,p'-DDE	<0.01	µg/l TM343			<0.01				
Dieldrin	<0.01	µg/l TM343			<0.01				
o,p'-DDD (TDE)	<0.01	µg/l TM343			<0.01				
Endrin	<0.01	µg/l TM343			<0.01				
o,p'-DDT	<0.01	µg/l TM343			<0.01				
p,p'-DDD (TDE)	<0.01	µg/l TM343			<0.01				
Endosulphan II	<0.02	µg/l TM343			<0.02				
p,p'-DDT	<0.01	µg/l TM343			<0.02				
o,p'-Methoxychlor	<0.01	µg/l TM343			<0.02				
p,p'-Methoxychlor	<0.01	µg/l TM343			<0.02				
Endosulphan Sulphate	<0.02	µg/l TM343			<0.02				
Permethrin I	<0.01	µg/l TM343			<0.01				
Permethrin II	<0.01	µg/l TM343			<0.01				
1,3,5-Trichlorobenzene	<0.01	µg/l TM344			<0.1				
Hexachlorobutadiene	<0.01	µg/l TM344			<0.1				
1,2,4-Trichlorobenzene	<0.01	µg/l TM344			<0.1				
1,2,3-Trichlorobenzene	<0.01	µg/l TM344			<0.1				
Dichlorvos	<0.01	µg/l TM344			<0.1				

CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH14	BH15	BH16	BH17	BH18	BH19
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	24/08/2021	23/08/2021	24/08/2021	24/08/2021	24/08/2021	23/08/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021
			SDG Ref	210826-45	210826-45	210826-45	210826-45	210826-45	210826-45
			Lab Sample No.(s)	24871193	24871163	24871172	24871277	24871181	24871236
			AGS Reference	ES1	ES1	ES1	ES1	ES1	ES1
Dichlobenil	<0.01 µg/l	TM344		<0.1					
Mevinphos	<0.01 µg/l	TM344		<0.1					
Tecnazene	<0.01 µg/l	TM344		<0.1					
Hexachlorobenzene	<0.01 µg/l	TM344		<0.1					
Demeton-S-methyl	<0.01 µg/l	TM344		<0.1					
Phorate	<0.01 µg/l	TM344		<0.1					
Diazinon	<0.01 µg/l	TM344		<0.1					
Triallate	<0.01 µg/l	TM344		<0.1					
Atrazine	<0.01 µg/l	TM344		<0.1					
Simazine	<0.01 µg/l	TM344		<0.1					
Disulfoton	<0.01 µg/l	TM344		<0.1					
Propetamphos	<0.01 µg/l	TM344		<0.1					
Chlorpyriphos-methyl	<0.01 µg/l	TM344		<0.1					
Dimethoate	<0.01 µg/l	TM344		<0.1					
Pirimiphos-methyl	<0.01 µg/l	TM344		<0.1					
Chlorpyriphos	<0.01 µg/l	TM344		<0.1					
Methyl Parathion	<0.01 µg/l	TM344		<0.1					
Malathion	<0.01 µg/l	TM344		<0.1					
Fenthion	<0.01 µg/l	TM344		<0.1					
Fenitrothion	<0.01 µg/l	TM344		<0.1					
Triadimefon	<0.01 µg/l	TM344		<0.1					
Pendimethalin	<0.01 µg/l	TM344		<0.1					
Parathion	<0.01 µg/l	TM344		<0.1					
Chlorfenvinphos	<0.01 µg/l	TM344		<0.1					
trans-Chlordane	<0.01 µg/l	TM344		<0.1					
cis-Chlordane	<0.01 µg/l	TM344		<0.1					
Ethion	<0.01 µg/l	TM344		<0.1					
Carbophenothion	<0.01 µg/l	TM344		<0.1					
Triazophos	<0.01 µg/l	TM344		<0.1					
Phosalone	<0.01 µg/l	TM344		<0.1					
Azinphos methyl	<0.02 µg/l	TM344		<0.2					
Azinphos ethyl	<0.02 µg/l	TM344		<0.2					

CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH14	BH15	BH16	BH17	BH18	BH19
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	24/08/2021	23/08/2021	24/08/2021	24/08/2021	24/08/2021	23/08/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021
			SDG Ref	210826-45	210826-45	210826-45	210826-45	210826-45	210826-45
			Lab Sample No.(s)	24871193	24871163	24871172	24871277	24871181	24871236
			AGS Reference	ES1	ES1	ES1	ES1	ES1	ES1
Dinitro-o-cresol	<0.1 µg/l	TM411			<1				
Clopyralid	<0.04 µg/l	TM411			<0.4				
MCPA	<0.05 µg/l	TM411			<0.5				
Mecoprop	<0.04 µg/l	TM411			<0.4				
Dicamba	<0.04 µg/l	TM411			<0.4				
MCPB	<0.05 µg/l	TM411			<0.5				
2,4-DB	<0.1 µg/l	TM411			<1				
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411			<0.5				
Dichlorprop	<0.1 µg/l	TM411			<1				
Triclopyr	<0.05 µg/l	TM411			<0.5				
Fenoprop (Silvex)	<0.1 µg/l	TM411			<1				
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411			<0.5				
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411			<0.5				
Bromoxynil	<0.04 µg/l	TM411			<0.4				
Benazolin	<0.04 µg/l	TM411			<0.4				
Ioxynil	<0.05 µg/l	TM411			<0.5				
Pentachlorophenol	<0.04 µg/l	TM411			<0.4				
Fluoroxypyr	<0.1 µg/l	TM411			<1				

CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH21	BH22	WS48	WS50	WS54	WS66
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	23/08/2021	23/08/2021	24/08/2021	24/08/2021	24/08/2021	23/08/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021
			SDG Ref	210826-45	210826-45	210826-45	210826-45	210826-45	210826-45
			Lab Sample No.(s)	24871250	24871258	24871207	24871216	24871225	24871269
			AGS Reference	ES1	ES1	ES1	ES1	ES1	ES1
BOD, unfiltered	<1 mg/l	TM045				7.81 #	<1 #	<1 #	
Carbon, Organic (diss.filt)	<3 mg/l	TM090		5.94	6.57	12.6	13	13.3	10.9
Ammoniacal Nitrogen as N (low level)	<0.01 mg/l	TM099		0.022 #	0.019 #	0.249 #	0.229 #	0.215 #	0.198 #
Ammoniacal Nitrogen Low as NH4	<0.01 mg/l	TM099		0.0283 #	0.0244 #	0.32 #	0.294 #	0.276 #	0.255 #
Sulphide	<0.01 mg/l	TM101		<0.01 2 #	<0.01 2 #	<0.01 2 #	<0.01 2 #	0.0228 2 #	<0.01 2 #
COD, unfiltered	<7 mg/l	TM107				950 #	40.5 #	34.2 #	
Arsenic (diss.filt)	<0.5 µg/l	TM152		<0.5 #	0.502 #	5.52 #	3.03 #	3.08 #	1.96 #
Boron (diss.filt)	<10 µg/l	TM152		44.6 #	42.3 #	232 #	213 #	214 #	226 #
Cadmium (diss.filt)	<0.08 µg/l	TM152		<0.08 #	<0.08 #	1.58 #	3.94 #	4.07 #	3.98 #
Chromium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Copper (diss.filt)	<0.3 µg/l	TM152		1.37 #	1.21 #	1.64 #	1.32 #	1.34 #	2.83 #
Lead (diss.filt)	<0.2 µg/l	TM152		<0.2 #	<0.2 #	<0.2 #	<0.2 #	<0.2 #	<0.2 #
Manganese (diss.filt)	<3 µg/l	TM152		<3 #	<3 #	1840 #	1350 #	1340 #	1380 #
Nickel (diss.filt)	<0.4 µg/l	TM152		0.416 #	<0.4 #	33.3 #	40.3 #	40.9 #	42.3 #
Phosphorus (diss.filt)	<10 µg/l	TM152				38.1 #	139 #	158 #	
Selenium (diss.filt)	<1 µg/l	TM152		3.68 #	3.81 #	<1 #	<1 #	<1 #	<1 #
Vanadium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Zinc (diss.filt)	<1 µg/l	TM152		1.1 #	<1 #	120 #	206 #	213 #	214 #
Calcium (Dis.Filt)	<0.2 mg/l	TM152		90.6 #	93.7 #	247 #	208 #	210 #	215 #
Iron (Dis.Filt)	<0.019 mg/l	TM152		<0.019 #	<0.019 #	4.06 #	6.55 #	6.67 #	0.339 #
Hardness, Total as CaCO3 unfiltered	<0.35 mg/l	TM152		265 2	278 2	1220 2	674 2	673 2	1140 2
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #
Sulphate	<2 mg/l	TM184		94.6 #	89.8 #	418 #	310 #	331 #	502 #
Phosphate (Ortho as P)	<0.02 mg/l	TM184				<0.02 #	<0.02 #	<0.02 #	
Nitrate as NO3	<0.3 mg/l	TM184		42.2	43.4	0.378	<0.3	<0.3	74.3
Cyanide, Total	<0.05 mg/l	TM227		<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
Cyanide, Free	<0.05 mg/l	TM227		<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.03 #	<0.03 #	<0.03 #	<0.03 #	<0.03 #	<0.03 #
pH	<1 pH Units	TM256		7.73 #	7.54 #	6.94 #	6.18 #	6.24 #	7.4 #
Phenol	<0.002 mg/l	TM259		<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 #
Cresols	<0.006 mg/l	TM259		<0.006 #	<0.006 #	<0.006 #	<0.006 #	<0.006 #	<0.006 #
Xylenols	<0.008 mg/l	TM259		<0.008 #	<0.008 #	<0.008 #	<0.008 #	<0.008 #	<0.008 #

CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH21	BH22	WS48	WS50	WS54	WS66
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	23/08/2021	23/08/2021	24/08/2021	24/08/2021	24/08/2021	23/08/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021
			SDG Ref	210826-45	210826-45	210826-45	210826-45	210826-45	210826-45
			Lab Sample No.(s)	24871250	24871258	24871207	24871216	24871225	24871269
			AGS Reference	ES1	ES1	ES1	ES1	ES1	ES1
Phenols, Total Detected monohydric	<0.016 mg/l	TM259		<0.016 #	<0.016 #	<0.016 #	<0.016 #	<0.016 #	<0.016 #
Trifluralin	<0.01 µg/l	TM343		<0.01	<0.01				<0.05
alpha-HCH	<0.01 µg/l	TM343		<0.01	<0.01				<0.05
gamma-HCH (Lindane)	<0.01 µg/l	TM343		<0.01	<0.01				<0.05
Heptachlor	<0.01 µg/l	TM343		<0.01	<0.01				<0.05
Aldrin	<0.01 µg/l	TM343		<0.01	<0.01				<0.05
beta-HCH	<0.01 µg/l	TM343		<0.01	<0.01				<0.05
Isodrin	<0.01 µg/l	TM343		<0.01	<0.01				<0.05
delta-HCH	<0.01 µg/l	TM343		<0.01	<0.01				<0.05
Heptachlor epoxide	<0.01 µg/l	TM343		<0.01	<0.01				<0.05
o,p'-DDE	<0.01 µg/l	TM343		<0.01	<0.01				<0.05
Endosulphan I	<0.01 µg/l	TM343		<0.01	<0.01				<0.05
trans-Chlordane	<0.01 µg/l	TM343		<0.01	<0.01				<0.05
cis-Chlordane	<0.01 µg/l	TM343		<0.01	<0.01				<0.05
p,p'-DDE	<0.01 µg/l	TM343		<0.01	<0.01				<0.05
Dieldrin	<0.01 µg/l	TM343		<0.01	<0.01				<0.05
o,p'-DDD (TDE)	<0.01 µg/l	TM343		<0.01	<0.01				<0.05
Endrin	<0.01 µg/l	TM343		<0.02	<0.01				<0.05
o,p'-DDT	<0.01 µg/l	TM343		<0.02	<0.01				<0.05
p,p'-DDD (TDE)	<0.01 µg/l	TM343		<0.01	<0.01				<0.05
Endosulphan II	<0.02 µg/l	TM343		<0.02	<0.02				<0.1
p,p'-DDT	<0.01 µg/l	TM343		<0.02	<0.02				<0.1
o,p'-Methoxychlor	<0.01 µg/l	TM343		<0.02	<0.02				<0.05
p,p'-Methoxychlor	<0.01 µg/l	TM343		<0.02	<0.02				<0.05
Endosulphan Sulphate	<0.02 µg/l	TM343		<0.04	<0.02				<0.1
Permethrin I	<0.01 µg/l	TM343		<0.01	<0.01				<0.05
Permethrin II	<0.01 µg/l	TM343		<0.01	<0.01				<0.05
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344		<0.02	<0.1				<0.1
Hexachlorobutadiene	<0.01 µg/l	TM344		<0.02	<0.1				<0.1
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344		<0.02	<0.1				<0.1
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344		<0.01	<0.1				<0.1
Dichlorvos	<0.01 µg/l	TM344		<0.01	<0.1				<0.1

CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH21	BH22	WS48	WS50	WS54	WS66
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	23/08/2021	23/08/2021	24/08/2021	24/08/2021	24/08/2021	23/08/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021
			SDG Ref	210826-45	210826-45	210826-45	210826-45	210826-45	210826-45
			Lab Sample No.(s)	24871250	24871258	24871207	24871216	24871225	24871269
			AGS Reference	ES1	ES1	ES1	ES1	ES1	ES1
Dichlobenil	<0.01 µg/l	TM344		<0.01	<0.1				<0.1
Mevinphos	<0.01 µg/l	TM344		<0.01	<0.1				<0.1
Tecnazene	<0.01 µg/l	TM344		<0.01	<0.1				<0.1
Hexachlorobenzene	<0.01 µg/l	TM344		<0.02	<0.1				<0.1
Demeton-S-methyl	<0.01 µg/l	TM344		<0.01	<0.1				<0.1
Phorate	<0.01 µg/l	TM344		<0.01	<0.1				<0.1
Diazinon	<0.01 µg/l	TM344		<0.01	<0.1				<0.1
Triallate	<0.01 µg/l	TM344		<0.01	<0.1				<0.1
Atrazine	<0.01 µg/l	TM344		<0.01	<0.1				<0.1
Simazine	<0.01 µg/l	TM344		0.0577	<0.1				<0.1
Disulfoton	<0.01 µg/l	TM344		<0.01	<0.1				<0.1
Propetamphos	<0.01 µg/l	TM344		<0.14	<0.1				<0.1
Chlorpyriphos-methyl	<0.01 µg/l	TM344		<0.01	<0.1				<0.1
Dimethoate	<0.01 µg/l	TM344		<0.01	<0.1				<0.1
Pirimiphos-methyl	<0.01 µg/l	TM344		<0.01	<0.1				<0.1
Chlorpyriphos	<0.01 µg/l	TM344		<0.01	<0.1				<0.1
Methyl Parathion	<0.01 µg/l	TM344		<0.01	<0.1				<0.1
Malathion	<0.01 µg/l	TM344		<0.01	<0.1				<0.1
Fenthion	<0.01 µg/l	TM344		<0.01	<0.1				<0.1
Fenitrothion	<0.01 µg/l	TM344		<0.01	<0.1				<0.1
Triadimefon	<0.01 µg/l	TM344		<0.01	<0.1				<0.1
Pendimethalin	<0.01 µg/l	TM344		<0.01	<0.1				<0.1
Parathion	<0.01 µg/l	TM344		<0.01	<0.1				<0.1
Chlorfenvinphos	<0.01 µg/l	TM344		<0.01	<0.1				<0.1
trans-Chlordane	<0.01 µg/l	TM344		<0.01	<0.1				<0.1
cis-Chlordane	<0.01 µg/l	TM344		<0.01	<0.1				<0.1
Ethion	<0.01 µg/l	TM344		<0.01	<0.1				<0.1
Carbophenothion	<0.01 µg/l	TM344		<0.01	<0.1				<0.1
Triazophos	<0.01 µg/l	TM344		<0.01	<0.1				<0.1
Phosalone	<0.01 µg/l	TM344		<0.01	<0.1				<0.1
Azinphos methyl	<0.02 µg/l	TM344		<0.04	<0.2				<0.2
Azinphos ethyl	<0.02 µg/l	TM344		<0.02	<0.2				<0.2

CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH21	BH22	WS48	WS50	WS54	WS66
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	23/08/2021	23/08/2021	24/08/2021	24/08/2021	24/08/2021	23/08/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021
			SDG Ref	210826-45	210826-45	210826-45	210826-45	210826-45	210826-45
			Lab Sample No.(s)	24871250	24871258	24871207	24871216	24871225	24871269
			AGS Reference	ES1	ES1	ES1	ES1	ES1	ES1
Dinitro-o-cresol	<0.1 µg/l	TM411		<0.5	<1				<1
Clopyralid	<0.04 µg/l	TM411		<0.2	<0.4				<0.4
MCPA	<0.05 µg/l	TM411		<0.25	<0.5				<0.5
Mecoprop	<0.04 µg/l	TM411		<0.2	<0.4				<0.4
Dicamba	<0.04 µg/l	TM411		<0.2	<0.4				<0.4
MCPB	<0.05 µg/l	TM411		<0.25	<0.5				<0.5
2,4-DB	<0.1 µg/l	TM411		<0.5	<1				<1
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411		<0.25	<0.5				<0.5
Dichlorprop	<0.1 µg/l	TM411		<0.5	<1				<1
Triclopyr	<0.05 µg/l	TM411		<0.25	<0.5				<0.5
Fenoprop (Silvex)	<0.1 µg/l	TM411		<0.5	<1				<1
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411		<0.25	<0.5				<0.5
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411		<0.25	<0.5				<0.5
Bromoxynil	<0.04 µg/l	TM411		<0.2	<0.4				<0.4
Benazolin	<0.04 µg/l	TM411		<0.2	<0.4				<0.4
Ioxynil	<0.05 µg/l	TM411		<0.25	<0.5				<0.5
Pentachlorophenol	<0.04 µg/l	TM411		<0.2	<0.4				<0.4
Fluoroxypyr	<0.1 µg/l	TM411		<0.5	<1				<1

CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

PAH Spec MS - Aqueous (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH14	BH15	BH16	BH17	BH18	BH19
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	24/08/2021	23/08/2021	24/08/2021	24/08/2021	24/08/2021	23/08/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021
			SDG Ref	210826-45	210826-45	210826-45	210826-45	210826-45	210826-45
			Lab Sample No.(s)	24871193	24871163	24871172	24871277	24871181	24871236
			AGS Reference	ES1	ES1	ES1	ES1	ES1	ES1
Naphthalene (aq)	<0.01 µg/l	TM178		<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #
Acenaphthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Acenaphthylene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Fluoranthene (aq)	<0.005 µg/l	TM178		0.0354 #	0.0565 #	0.0741 #	<0.005 #	<0.005 #	<0.005 #
Anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	0.00612 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Phenanthrene (aq)	<0.005 µg/l	TM178		0.0155 #	0.016 #	0.0185 #	<0.005 #	<0.005 #	<0.005 #
Fluorene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Chrysene (aq)	<0.005 µg/l	TM178		0.0223 #	0.0396 #	0.0439 #	<0.005 #	<0.005 #	<0.005 #
Pyrene (aq)	<0.005 µg/l	TM178		0.0401 #	0.0572 #	0.0688 #	<0.005 #	<0.005 #	0.0126 #
Benzo(a)anthracene (aq)	<0.005 µg/l	TM178		0.0267 #	0.0402 #	0.0389 #	<0.005 #	<0.005 #	<0.005 #
Benzo(b)fluoranthene (aq)	<0.005 µg/l	TM178		0.0312 #	0.0771 #	0.0631 #	<0.005 #	<0.005 #	<0.005 #
Benzo(k)fluoranthene (aq)	<0.005 µg/l	TM178		0.014 #	0.0337 #	0.028 #	<0.005 #	<0.005 #	<0.005 #
Benzo(a)pyrene (aq)	<0.002 µg/l	TM178		0.0241 #	0.0599 #	0.0467 #	<0.002 #	<0.002 #	<0.002 #
Dibenzo(a,h)anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	0.0101 #	<0.005 #	<0.005 #	<0.005 #
Benzo(g,h,i)perylene (aq)	<0.005 µg/l	TM178		0.0287 #	0.0434 #	0.0428 #	<0.005 #	<0.005 #	<0.005 #
Indeno(1,2,3-cd)pyrene (aq)	<0.005 µg/l	TM178		0.0222 #	0.0551 #	0.0395 #	<0.005 #	<0.005 #	<0.005 #
PAH, Total Detected USEPA 16 (aq)	<0.082 µg/l	TM178		0.26 #	0.485 #	0.474 #	<0.082 #	<0.082 #	<0.082 #

CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

PAH Spec MS - Aqueous (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH21	BH22	WS48	WS50	WS54	WS66
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	23/08/2021	23/08/2021	24/08/2021	24/08/2021	24/08/2021	23/08/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021
			SDG Ref	210826-45	210826-45	210826-45	210826-45	210826-45	210826-45
			Lab Sample No.(s)	24871250	24871258	24871207	24871216	24871225	24871269
			AGS Reference	ES1	ES1	ES1	ES1	ES1	ES1
Naphthalene (aq)	<0.01 µg/l	TM178		<0.01 #	<0.01 #	0.0801 #	<0.01 #	<0.01 #	<0.01 #
Acenaphthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	0.15 #	<0.005 #	<0.005 #	<0.005 #
Acenaphthylene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	1.18 #	<0.005 #	<0.005 #	<0.005 #
Fluoranthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	15.7 #	0.0479 #	0.0226 #	0.0392 #
Anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	1.44 #	0.00631 #	<0.005 #	<0.005 #
Phenanthrene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	3.24 #	0.0216 #	0.0135 #	<0.005 #
Fluorene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	0.287 #	<0.005 #	<0.005 #	<0.005 #
Chrysene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	8.61 #	0.0424 #	<0.005 #	0.0103 #
Pyrene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	18.8 #	0.0615 #	0.0181 #	0.0793 #
Benzo(a)anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	8.71 #	0.0419 #	<0.005 #	0.0169 #
Benzo(b)fluoranthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	16.5 #	0.0473 #	<0.005 #	0.0268 #
Benzo(k)fluoranthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	5.96 #	0.0186 #	<0.005 #	0.00661 #
Benzo(a)pyrene (aq)	<0.002 µg/l	TM178		<0.002 #	<0.002 #	12.2 #	0.0333 #	<0.002 #	0.0263 #
Dibenzo(a,h)anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	1.61 #	<0.005 #	<0.005 #	<0.005 #
Benzo(g,h,i)perylene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	8.74 #	0.0379 #	<0.005 #	0.0193 #
Indeno(1,2,3-cd)pyrene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	9.21 #	0.0234 #	<0.005 #	<0.005 #
PAH, Total Detected USEPA 16 (aq)	<0.082 µg/l	TM178		<0.082 #	<0.082 #	112 #	0.382 #	<0.082 #	0.225 #

CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

SVOC MS (W) - Aqueous

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH19	WS48	WS50	WS54		
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)		
			Date Sampled	23/08/2021	24/08/2021	24/08/2021	24/08/2021		
			Sampled Time	.	.	.	.		
			Date Received	26/08/2021	26/08/2021	26/08/2021	26/08/2021		
			SDG Ref	210826-45	210826-45	210826-45	210826-45		
			Lab Sample No.(s)	24871236	24871207	24871216	24871225		
			AGS Reference	ES1	ES1	ES1	ES1		
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
2,4-Dichlorophenol (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
2,4-Dimethylphenol (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
2-Chloronaphthalene (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
2-Chlorophenol (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
2-Methylnaphthalene (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
2-Methylphenol (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
2-Nitroaniline (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
2-Nitrophenol (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
3-Nitroaniline (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
4-Bromophenylphenylether (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
4-Chloroaniline (aq)	<1 µg/l	TM176		<4	<4	<1	<1		
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
4-Methylphenol (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
4-Nitroaniline (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
4-Nitrophenol (aq)	<1 µg/l	TM176		<4	<4	<1	<1		
Azobenzene (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
Acenaphthylene (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
Acenaphthene (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
Anthracene (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176		<8 #	<8 #	<2 #	<2 #		
Butylbenzyl phthalate (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		

CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

SVOC MS (W) - Aqueous

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH19	WS48	WS50	WS54		
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)		
			Date Sampled	23/08/2021	24/08/2021	24/08/2021	24/08/2021		
			Sampled Time	.	.	.	.		
			Date Received	26/08/2021	26/08/2021	26/08/2021	26/08/2021		
			SDG Ref	210826-45	210826-45	210826-45	210826-45		
			Lab Sample No.(s)	24871236	24871207	24871216	24871225		
			AGS Reference	ES1	ES1	ES1	ES1		
Benzo(a)anthracene (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
Benzo(a)pyrene (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
Carbazole (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
Chrysene (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
Dibenzofuran (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
n-Dibutyl phthalate (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
Diethyl phthalate (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
Dimethyl phthalate (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
n-Dioctyl phthalate (aq)	<5 µg/l	TM176		<20 #	<20 #	<5 #	<5 #		
Fluoranthene (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
Fluorene (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
Hexachlorobenzene (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
Hexachlorobutadiene (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
Pentachlorophenol (aq)	<1 µg/l	TM176		<4	<4	<1	<1		
Phenol (aq)	<1 µg/l	TM176		<4	<4	<1	<1		
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
Hexachloroethane (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
Nitrobenzene (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
Naphthalene (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
Isophorone (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176		<4	<4	<1	<1		
Phenanthrene (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176		<4 #	<4 #	<1 #	<1 #		
Pyrene (aq)	<1 µg/l	TM176		<4 #	4.18 #	<1 #	<1 #		

CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

TPH CWG (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH14	BH15	BH16	BH17	BH18	BH19
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	24/08/2021	23/08/2021	24/08/2021	24/08/2021	24/08/2021	23/08/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021
			SDG Ref	210826-45	210826-45	210826-45	210826-45	210826-45	210826-45
			Lab Sample No.(s)	24871193	24871163	24871172	24871277	24871181	24871236
			AGS Reference	ES1	ES1	ES1	ES1	ES1	ES1
GRO Surrogate % recovery**	%	TM245		97	94	92	90	91	87
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #	<50 #	<50 #	<50 #	<50 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	36 #
Benzene	<7 µg/l	TM245		<7 #	<7 #	<7 #	<7 #	<7 #	<7 #
Toluene	<4 µg/l	TM245		<4 #	<4 #	<4 #	<4 #	<4 #	<4 #
Ethylbenzene	<5 µg/l	TM245		<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
m,p-Xylene	<8 µg/l	TM245		<8 #	<8 #	<8 #	<8 #	<8 #	<8 #
o-Xylene	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Sum of detected Xylenes	<11 µg/l	TM245		<11	<11	<11	<11	<11	<11
Sum of detected BTEX	<28 µg/l	TM245		<28	<28	<28	<28	<28	<28
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		146	<10	<10	<10	<10	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		146	<10	<10	<10	<10	<10
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		146	<10	<10	<10	12	<10
Aliphatics >C16-C35 Aqueous	<10 µg/l	TM174		146	<10	<10	<10	<10	<10

CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

TPH CWG (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH21	BH22	WS48	WS50	WS54	WS66
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	23/08/2021	23/08/2021	24/08/2021	24/08/2021	24/08/2021	23/08/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021
			SDG Ref	210826-45	210826-45	210826-45	210826-45	210826-45	210826-45
			Lab Sample No.(s)	24871250	24871258	24871207	24871216	24871225	24871269
			AGS Reference	ES1	ES1	ES1	ES1	ES1	ES1
GRO Surrogate % recovery**	%	TM245		90	101	90	79	90	93
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #	192 #	<50 #	<50 #	232 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Benzene	<7 µg/l	TM245		<7 #	<7 #	<7 #	<7 #	<7 #	<7 #
Toluene	<4 µg/l	TM245		<4 #	<4 #	<4 #	<4 #	<4 #	<4 #
Ethylbenzene	<5 µg/l	TM245		<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
m,p-Xylene	<8 µg/l	TM245		<8 #	<8 #	<8 #	<8 #	<8 #	<8 #
o-Xylene	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Sum of detected Xylenes	<11 µg/l	TM245		<11	<11	<11	<11	<11	<11
Sum of detected BTEX	<28 µg/l	TM245		<28	<28	<28	<28	<28	<28
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	54	<10	<10	56
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	55	<10	<10	75
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	102	<10	<10	22
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	293	<10	<10	120
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	<10	3070	<10	<10	1790
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	<10	3470	<10	<10	1930
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	38	<10	<10	38
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	37	<10	<10	50
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	<10	<20	<10	<10	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	<10	154	<10	<10	18
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	<10	497	<10	<10	159
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	<10	651	<10	<10	177
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		<10	<10	4310	<10	<10	2340
Aliphatics >C16-C35 Aqueous	<10 µg/l	TM174		<10	<10	3370	<10	<10	1910

CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH19	WS48	WS50	WS54		
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)		
			Date Sampled	23/08/2021	24/08/2021	24/08/2021	24/08/2021		
			Sampled Time	.	.	.	.		
			Date Received	26/08/2021	26/08/2021	26/08/2021	26/08/2021		
			SDG Ref	210826-45	210826-45	210826-45	210826-45		
			Lab Sample No.(s)	24871236	24871207	24871216	24871225		
			AGS Reference	ES1	ES1	ES1	ES1		
Dibromofluoromethane**	%	TM208		111	114	113	119		
Toluene-d8**	%	TM208		101	99.9	101	100		
4-Bromofluorobenzene**	%	TM208		97.8	97.4	97.1	97		
Dichlorodifluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Chloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Vinyl chloride	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Bromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Chloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Trichlorofluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,1-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Carbon disulphide	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Dichloromethane	<3 µg/l	TM208		<3 #	<3 #	<3 #	<3 #		
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208		33.3 #	<1 #	<1 #	<1 #		
trans-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,1-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
cis-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
2,2-Dichloropropane	<1 µg/l	TM208		<1	<1	<1	<1		
Bromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Chloroform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,1,1-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,1-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Carbontetrachloride	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,2-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Benzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Trichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,2-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Dibromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Bromodichloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
cis-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Toluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
trans-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,1,2-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		

CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH19	WS48	WS50	WS54		
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)		
			Date Sampled	23/08/2021	24/08/2021	24/08/2021	24/08/2021		
			Sampled Time	.	.	.	.		
			Date Received	26/08/2021	26/08/2021	26/08/2021	26/08/2021		
			SDG Ref	210826-45	210826-45	210826-45	210826-45		
			Lab Sample No.(s)	24871236	24871207	24871216	24871225		
			AGS Reference	ES1	ES1	ES1	ES1		
1,3-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Tetrachloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Dibromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,2-Dibromoethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Chlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Ethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
m,p-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
o-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Styrene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Bromoform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Isopropylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,2,3-Trichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Bromobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Propylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
2-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,3,5-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
4-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
tert-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,2,4-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
sec-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
4-iso-Propyltoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,4-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
n-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,2-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208		<1	<1	<1	<1		
1,2,4-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Hexachlorobutadiene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Naphthalene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		

CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH19	WS48	WS50	WS54		
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)		
			Date Sampled	23/08/2021	24/08/2021	24/08/2021	24/08/2021		
			Sampled Time	.	.	.	.		
			Date Received	26/08/2021	26/08/2021	26/08/2021	26/08/2021		
			SDG Ref	210826-45	210826-45	210826-45	210826-45		
			Lab Sample No.(s)	24871236	24871207	24871216	24871225		
			AGS Reference	ES1	ES1	ES1	ES1		
1,2,3-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
1,3,5-Trichlorobenzene	<1 µg/l	TM208		<1	<1	<1	<1		

Table of Results - Appendix

Method No	Reference	Description
TM045	MEWAM BOD5 2nd Ed.HMSO 1988 / Method 5210B, AWWA/APHA, 20th Ed., 1999; SCA Blue Book 130	Determination of BOD5 (ATU) Filtered by Oxygen Meter on liquids
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM107	ISO 6060-1989	Determination of Chemical Oxygen Demand using COD Dr Lange Kit
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM343	EPA 8270D - Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of Selected Pesticides (Suite I) in Liquids by GCMS
TM344	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite II) by GCMS
TM411	Acid_Herbs_GCMS	Acid Herbs in Water by GCMS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Test Completion Dates

Lab Sample No(s)	24871193	24871163	24871172	24871277	24871181	24871236	24871250	24871258	24871207	24871216
Customer Sample Ref.	BH14	BH15	BH16	BH17	BH18	BH19	BH21	BH22	WS48	WS50
AGS Ref.	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Acid Herbicides by GCMS		06-Sep-2021					06-Sep-2021	06-Sep-2021		
Ammonium Low	27-Aug-2021	03-Sep-2021	03-Sep-2021	27-Aug-2021	03-Sep-2021	27-Aug-2021	27-Aug-2021	03-Sep-2021	27-Aug-2021	27-Aug-2021
Anions by Kone (w)	03-Sep-2021	02-Sep-2021	02-Sep-2021	03-Sep-2021	02-Sep-2021	02-Sep-2021	03-Sep-2021	02-Sep-2021	03-Sep-2021	02-Sep-2021
BOD True Total	01-Sep-2021								01-Sep-2021	01-Sep-2021
COD Unfiltered	30-Aug-2021								31-Aug-2021	31-Aug-2021
Cyanide Comp/Free/Total/Thiocyanate	01-Sep-2021	02-Sep-2021	02-Sep-2021	01-Sep-2021	02-Sep-2021	02-Sep-2021	01-Sep-2021	02-Sep-2021	01-Sep-2021	01-Sep-2021
Dissolved Metals by ICP-MS	31-Aug-2021	31-Aug-2021	31-Aug-2021	31-Aug-2021	31-Aug-2021	31-Aug-2021	31-Aug-2021	31-Aug-2021	31-Aug-2021	31-Aug-2021
Dissolved Organic/Inorganic Carbon	03-Sep-2021	03-Sep-2021	03-Sep-2021	04-Sep-2021	03-Sep-2021	04-Sep-2021	04-Sep-2021	03-Sep-2021	04-Sep-2021	04-Sep-2021
EPH CWG (Aliphatic) Aqueous GC (W)	03-Sep-2021	03-Sep-2021	04-Sep-2021	03-Sep-2021	05-Sep-2021	03-Sep-2021	07-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021
EPH CWG (Aromatic) Aqueous GC (W)	03-Sep-2021	03-Sep-2021	04-Sep-2021	03-Sep-2021	05-Sep-2021	03-Sep-2021	07-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021
GRO by GC-FID (W)	27-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021
Hexavalent Chromium (w)	02-Sep-2021	02-Sep-2021	02-Sep-2021	02-Sep-2021	02-Sep-2021	02-Sep-2021	02-Sep-2021	02-Sep-2021	02-Sep-2021	02-Sep-2021
Mercury Dissolved	31-Aug-2021	02-Sep-2021	02-Sep-2021	31-Aug-2021	02-Sep-2021	31-Aug-2021	31-Aug-2021	02-Sep-2021	31-Aug-2021	03-Sep-2021
Nitrite by Kone (w)	01-Sep-2021	01-Sep-2021	01-Sep-2021	01-Sep-2021	01-Sep-2021	01-Sep-2021	01-Sep-2021	01-Sep-2021	01-Sep-2021	01-Sep-2021
PAH Spec MS - Aqueous (W)	02-Sep-2021	03-Sep-2021	02-Sep-2021	03-Sep-2021	03-Sep-2021	02-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021
Pesticides (Suite I) by GCMS		02-Sep-2021					07-Sep-2021	02-Sep-2021		
Pesticides (Suite II) by GCMS		03-Sep-2021					31-Aug-2021	03-Sep-2021		
pH Value	27-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021	27-Aug-2021
Phenols by HPLC (W)	31-Aug-2021	31-Aug-2021	31-Aug-2021	31-Aug-2021	31-Aug-2021	31-Aug-2021	31-Aug-2021	31-Aug-2021	27-Aug-2021	27-Aug-2021
Phosphate by Kone (w)	01-Sep-2021								01-Sep-2021	01-Sep-2021
Sulphide	03-Sep-2021	03-Sep-2021	03-Sep-2021	01-Sep-2021	03-Sep-2021	03-Sep-2021	01-Sep-2021	03-Sep-2021	01-Sep-2021	01-Sep-2021
SVOC MS (W) - Aqueous						02-Sep-2021			02-Sep-2021	02-Sep-2021
Total Metals by ICP-MS	27-Aug-2021	01-Sep-2021	31-Aug-2021	31-Aug-2021	31-Aug-2021	01-Sep-2021	31-Aug-2021	01-Sep-2021	31-Aug-2021	27-Aug-2021
TPH CWG (W)	03-Sep-2021	03-Sep-2021	04-Sep-2021	03-Sep-2021	05-Sep-2021	03-Sep-2021	06-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021
VOC MS (W)						31-Aug-2021			31-Aug-2021	31-Aug-2021

Lab Sample No(s)	24871225	24871269
Customer Sample Ref.	WS54	WS66
AGS Ref.	ES1	ES1
Depth	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water
Acid Herbicides by GCMS		06-Sep-2021
Ammonium Low	27-Aug-2021	27-Aug-2021
Anions by Kone (w)	03-Sep-2021	03-Sep-2021
BOD True Total	01-Sep-2021	
COD Unfiltered	30-Aug-2021	
Cyanide Comp/Free/Total/Thiocyanate	01-Sep-2021	01-Sep-2021
Dissolved Metals by ICP-MS	31-Aug-2021	31-Aug-2021
Dissolved Organic/Inorganic Carbon	04-Sep-2021	03-Sep-2021
EPH CWG (Aliphatic) Aqueous GC (W)	03-Sep-2021	03-Sep-2021
EPH CWG (Aromatic) Aqueous GC (W)	03-Sep-2021	03-Sep-2021
GRO by GC-FID (W)	27-Aug-2021	27-Aug-2021
Hexavalent Chromium (w)	02-Sep-2021	02-Sep-2021
Mercury Dissolved	03-Sep-2021	31-Aug-2021
Nitrite by Kone (w)	01-Sep-2021	01-Sep-2021
PAH Spec MS - Aqueous (W)	02-Sep-2021	02-Sep-2021
Pesticides (Suite I) by GCMS		31-Aug-2021
Pesticides (Suite II) by GCMS		03-Sep-2021
pH Value	27-Aug-2021	27-Aug-2021
Phenols by HPLC (W)	31-Aug-2021	31-Aug-2021
Phosphate by Kone (w)	01-Sep-2021	
Sulphide	03-Sep-2021	03-Sep-2021
SVOC MS (W) - Aqueous	02-Sep-2021	
Total Metals by ICP-MS	27-Aug-2021	31-Aug-2021
TPH CWG (W)	03-Sep-2021	03-Sep-2021
VOC MS (W)	31-Aug-2021	

ASSOCIATED AQC DATA

Acid Herbicides by GCMS

Component	Method Code	QC 2423
2,3,6-TBA (Raw)	TM411	**103.27** 72.24 : 118.28
2,4,5-T (Raw)	TM411	**87.17** 66.88 : 130.00
2,4-D (Raw)	TM411	**99.85** 68.29 : 133.58
2,4-DB (Raw)	TM411	**108.3** 57.23 : 133.50
Benazolin (Raw)	TM411	**108.16** 78.76 : 146.78
Bromoxynil (Raw)	TM411	**106.07** 77.69 : 118.97
Clopyralid (Raw)	TM411	**90.18** 64.11 : 124.08
Dicamba (Raw)	TM411	**104.77** 77.45 : 123.02
Dichloroprop (Raw)	TM411	**99.14** 74.86 : 126.35
DNOC (Raw)	TM411	**92.65** 65.53 : 129.07
Fenoprop (Raw)	TM411	**103.15** 74.33 : 126.19
Fluroxypyr (Raw)	TM411	**107.17** 80.51 : 140.78
Ioxynil (Raw)	TM411	**83.04** 42.19 : 122.44
MCPA (Raw)	TM411	**97.41** 79.83 : 124.11
MCPB (Raw)	TM411	**100.3** 33.12 : 147.97
Mecoprop (Raw)	TM411	**107.71** 80.77 : 125.74
Pentachlorophenol (Raw)	TM411	**105.82** 76.67 : 131.12
Triclopyr (Raw)	TM411	**104.8** 69.64 : 132.21

Ammonium Low

Component	Method Code	QC 2442	QC 2498	QC 2465	QC 2494	QC 2411
Ammoniacal Nitrogen as N	TM099	**98.0** 88.02 : 104.70	**96.8** 94.00 : 106.00	**98.4** 94.00 : 106.00	**98.4** 94.00 : 106.00	**101.2** 94.00 : 106.00

Anions by Kone (w)

Anions by Kone (w)

Component	Method Code	QC 2406	QC 2483
Sulphate (soluble)	TM184	**101.2** 91.99 : 109.30	**94.8** 91.99 : 109.30
TON as NO3	TM184	**98.5** 90.35 : 108.35	**102.0** 90.35 : 108.35

BOD True Total

Component	Method Code	QC 2418	QC 2421	QC 2423
BOD	TM045	**81.16** 72.19 : 121.74	**81.64** 72.19 : 121.74	**80.68** 72.19 : 121.74

COD Unfiltered

Component	Method Code	QC 2403	QC 2405	QC 2407
COD	TM107	**99.05** 97.45 : 103.77	**99.62** 97.45 : 103.77	**99.05** 97.45 : 103.77

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2497	QC 2415
Free Cyanide (W)	TM227	**83.75** 90.67 : 122.67	**79.75** 90.67 : 122.67
Thiocyanate (W)	TM227	**111.0** 92.25 : 117.75	**109.0** 92.25 : 117.75
Total Cyanide (W)	TM227	**109.0** 96.25 : 112.75	**107.0** 96.25 : 112.75

Dissolved Metals by ICP-MS

Component	Method Code	QC 2446	QC 2405	QC 2483	QC 2441	QC 2436
Aluminium	TM152	**101.33** 90.98 : 111.82	**102.67** 90.98 : 111.82	**102.67** 90.98 : 111.82	**102.67** 90.78 : 110.89	**102.33** 90.98 : 111.82
Antimony	TM152	**104.33** 90.44 : 113.04	**101.5** 90.44 : 113.04	**102.17** 90.44 : 113.04	**100.17** 77.22 : 119.42	**101.67** 90.44 : 113.04
Arsenic	TM152	**105.17** 88.00 : 112.00	**103.33** 88.00 : 112.00	**102.67** 88.00 : 112.00	**100.67** 86.77 : 107.67	**102.17** 88.00 : 112.00
Barium	TM152	**103.17** 90.20 : 111.19	**97.17** 90.20 : 111.19	**97.17** 90.20 : 111.19	**103.33** 87.86 : 110.23	**95.83** 90.20 : 111.19
Beryllium	TM152	**98.0** 87.77 : 113.97	**103.17** 87.77 : 113.97	**102.83** 87.77 : 113.97	**105.17** 86.19 : 112.98	**102.0** 87.77 : 113.97
Bismuth	TM152	**103.17** 91.90 : 112.20	**106.83** 91.90 : 112.20	**106.83** 91.90 : 112.20	**102.5** 84.06 : 106.46	**106.33** 91.90 : 112.20
Borate	TM152	**98.15** 88.00 : 112.00	**104.32** 88.00 : 112.00	**103.09** 88.00 : 112.00	**106.79** 88.00 : 112.00	**102.47** 88.00 : 112.00
Boron	TM152	**98.0** 96.48 : 114.93	**104.67** 96.48 : 114.93	**103.0** 96.48 : 114.93	**106.67** 83.92 : 114.90	**102.67** 96.48 : 114.93

Dissolved Metals by ICP-MS

		QC 2446	QC 2405	QC 2483	QC 2441	QC 2436
Cadmium	TM152	**105.0** 96.43 : 110.53	**105.33** 96.43 : 110.53	**104.33** 96.43 : 110.53	**103.33** 88.89 : 106.69	**103.67** 96.43 : 110.53
Calcium	TM152	**104.67** 93.36 : 108.97	**105.33** 93.36 : 108.97	**104.67** 93.36 : 108.97	**105.33** 80.24 : 117.95	**104.67** 93.36 : 108.97
Chromium	TM152	**100.67** 91.84 : 108.67	**102.83** 91.84 : 108.67	**101.0** 91.84 : 108.67	**101.17** 83.22 : 110.16	**101.0** 91.84 : 108.67
Cobalt	TM152	**102.5** 88.00 : 112.00	**103.0** 88.00 : 112.00	**101.33** 88.00 : 112.00	**100.33** 82.49 : 112.36	**103.17** 88.00 : 112.00
Copper	TM152	**103.33** 92.47 : 118.11	**104.33** 92.47 : 118.11	**102.83** 92.47 : 118.11	**100.67** 83.14 : 113.00	**103.67** 92.47 : 118.11
Iron	TM152	**103.33** 93.23 : 106.27	**104.67** 93.23 : 106.27	**102.0** 93.23 : 106.27	**101.33** 88.40 : 109.24	**102.67** 93.23 : 106.27
Lead	TM152	**99.67** 88.00 : 112.00	**106.0** 88.00 : 112.00	**105.83** 88.00 : 112.00	**102.67** 83.71 : 109.58	**105.5** 88.00 : 112.00
Lithium	TM152	**95.33** 91.62 : 113.12	**101.67** 91.62 : 113.12	**101.33** 91.62 : 113.12	**105.0** 84.50 : 114.28	**100.83** 91.62 : 113.12
Magnesium	TM152	**96.0** 87.77 : 110.48	**100.67** 87.77 : 110.48	**100.0** 87.77 : 110.48	**100.0** 87.56 : 114.57	**100.67** 87.77 : 110.48
Manganese	TM152	**102.83** 95.03 : 110.58	**103.67** 95.03 : 110.58	**102.5** 95.03 : 110.58	**102.33** 90.01 : 108.72	**102.33** 95.03 : 110.58
Molybdenum	TM152	**102.17** 88.00 : 112.00	**103.67** 88.00 : 112.00	**102.67** 88.00 : 112.00	**101.67** 85.53 : 107.42	**102.0** 88.00 : 112.00
Nickel	TM152	**103.83** 88.00 : 112.00	**104.5** 88.00 : 112.00	**102.33** 88.00 : 112.00	**100.67** 88.05 : 106.42	**103.83** 88.00 : 112.00
Phosphorus	TM152	**102.33** 91.54 : 107.12	**101.67** 91.54 : 107.12	**100.5** 91.54 : 107.12	**101.17** 82.76 : 107.72	**100.5** 91.54 : 107.12
Potassium	TM152	**105.33** 92.16 : 109.93	**103.33** 92.16 : 109.93	**102.67** 92.16 : 109.93	**103.33** 88.45 : 106.42	**103.33** 92.16 : 109.93
Selenium	TM152	**108.33** 91.58 : 115.98	**102.83** 91.58 : 115.98	**103.5** 91.58 : 115.98	**101.5** 85.61 : 111.03	**102.17** 91.58 : 115.98
Silver	TM152	**105.0** 88.80 : 122.30	**105.67** 88.80 : 122.30	**105.17** 88.80 : 122.30	**103.17** 88.48 : 110.48	**104.0** 88.80 : 122.30
Sodium	TM152	**96.0** 89.47 : 109.62	**100.0** 89.47 : 109.62	**100.0** 89.47 : 109.62	**101.33** 88.32 : 106.30	**100.67** 89.47 : 109.62
Strontium	TM152	**106.67** 88.00 : 112.00	**104.0** 88.00 : 112.00	**103.67** 88.00 : 112.00	**103.67** 83.77 : 107.87	**102.33** 88.00 : 112.00
Tellurium	TM152	**112.83** 93.32 : 114.66	**105.67** 93.32 : 114.66	**105.5** 93.32 : 114.66	**104.83** 82.83 : 104.73	**104.67** 93.32 : 114.66
Thallium	TM152	**100.83** 88.00 : 112.00	**104.33** 88.00 : 112.00	**104.17** 88.00 : 112.00	**101.17** 77.47 : 113.87	**103.83** 88.00 : 112.00
Tin	TM152	**103.33** 92.63 : 109.70	**102.17** 92.63 : 109.70	**101.83** 92.63 : 109.70	**100.5** 87.36 : 109.55	**101.0** 92.63 : 109.70
Titanium	TM152	**101.17** 95.58 : 111.68	**98.83** 95.58 : 111.68	**102.0** 95.58 : 111.68	**102.83** 87.29 : 108.31	**100.67** 95.58 : 111.68
Tungsten	TM152	**105.5** 81.32 : 124.72	**106.0** 81.32 : 124.72	**104.67** 81.32 : 124.72	**102.67** 68.27 : 122.97	**104.5** 81.32 : 124.72
Uranium	TM152	**100.67** 88.00 : 112.00	**104.0** 88.00 : 112.00	**103.67** 88.00 : 112.00	**102.33** 82.46 : 105.16	**102.83** 88.00 : 112.00
Vanadium	TM152	**104.67** 88.00 : 112.00	**104.5** 88.00 : 112.00	**105.0** 88.00 : 112.00	**99.0** 88.43 : 114.30	**101.67** 88.00 : 112.00
Zinc	TM152	**104.33** 92.98 : 118.95	**104.0** 92.98 : 118.95	**103.33** 92.98 : 118.95	**101.0** 85.57 : 114.31	**104.33** 92.98 : 118.95

Dissolved Organic/Inorganic Carbon

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2430	QC 2476
Dissolved Inorganic Carbon	TM090	**100.0** 93.58 : 112.28	**104.0** 93.58 : 112.28
Dissolved Organic Carbon	TM090	**103.17** 97.80 : 107.10	**103.0** 97.80 : 107.10

EPH CWG (Aliphatic) Aqueous GC (W)

Component	Method Code	QC 2439	QC 2465	QC 2485	QC 2429	QC 2406	QC 2487
Total Aliphatics >C10-C40	TM174	**98.02** 69.79 : 134.39	**90.59** 68.59 : 134.82	**107.43** 65.58 : 141.57	**88.12** 68.59 : 134.82	**112.87** 69.79 : 134.39	**98.02** 68.59 : 134.82

EPH CWG (Aromatic) Aqueous GC (W)

Component	Method Code	QC 2446	QC 2476	QC 2491	QC 2445	QC 2426	QC 2415
Total Aromatics >EC10-EC40	TM174	**94.88** 59.92 : 128.54	**105.37** 60.75 : 129.09	**99.51** 60.75 : 129.09	**98.78** 60.75 : 129.09	**100.98** 59.92 : 128.54	**93.66** 60.75 : 129.09

GRO by GC-FID (W)

Component	Method Code	QC 2478	QC 2471
Benzene by GC	TM245	**92.5** 83.48 : 117.21	**91.0** 81.54 : 119.70
Ethylbenzene by GC	TM245	**92.0** 84.11 : 114.89	**92.0** 80.99 : 121.09
m & p Xylene by GC	TM245	**93.0** 83.73 : 116.33	**92.75** 82.77 : 123.19
MTBE GC-FID	TM245	**90.5** 84.42 : 117.50	**88.0** 80.06 : 123.27
o Xylene by GC	TM245	**92.5** 85.03 : 117.59	**92.0** 84.26 : 121.50
QC	TM245	**96.35** 60.71 : 137.65	**106.31** 67.65 : 138.14
Toluene by GC	TM245	**94.0** 84.73 : 116.85	**93.0** 82.78 : 121.99

Hexavalent Chromium (w)

Component	Method Code	QC 2434	QC 2482
Hexavalent Chromium	TM241	**103.8** 94.17 : 106.17	**105.4** 94.17 : 106.17

Mercury Dissolved

Mercury Dissolved

Component	Method Code	QC 2424	QC 2471	QC 2464	QC 2496
Mercury Dissolved (CVAF)	TM183	**102.0** 69.30 : 128.70	**99.3** 69.30 : 128.70	**95.7** 69.30 : 128.70	**97.7** 69.30 : 128.70

PAH Spec MS - Aqueous (W)

Component	Method Code	QC 2463	QC 2486	QC 2403	QC 2471
Acenaphthene by GCMS	TM178	**103.2** 90.45 : 118.63	**106.8** 97.60 : 116.80	**105.6** 97.60 : 116.80	**106.0** 97.60 : 116.80
Acenaphthylene by GCMS	TM178	**104.0** 90.13 : 116.27	**96.0** 89.20 : 113.20	**96.0** 89.20 : 113.20	**96.0** 89.20 : 113.20
Anthracene by GCMS	TM178	**101.6** 92.40 : 114.00	**102.0** 92.40 : 116.40	**99.6** 92.40 : 116.40	**98.4** 92.40 : 116.40
Benz(a)anthracene by GCMS	TM178	**103.2** 89.51 : 117.69	**95.6** 84.40 : 110.80	**95.6** 84.40 : 110.80	**95.6** 84.40 : 110.80
Benzo(a)pyrene by GCMS	TM178	**105.2** 89.43 : 118.57	**96.8** 88.40 : 110.00	**97.6** 88.40 : 110.00	**97.6** 88.40 : 110.00
Benzo(b)fluoranthene by GCMS	TM178	**100.8** 87.80 : 121.80	**94.4** 81.20 : 114.80	**92.4** 81.20 : 114.80	**92.4** 81.20 : 114.80
Benzo(ghi)perylene by GCMS	TM178	**105.6** 87.10 : 119.30	**107.2** 93.60 : 112.80	**104.4** 93.60 : 112.80	**101.2** 93.60 : 112.80
Benzo(k)fluoranthene by GCMS	TM178	**104.4** 93.23 : 123.57	**105.2** 90.40 : 119.20	**104.0** 90.40 : 119.20	**101.6** 90.40 : 119.20
Chrysene by GCMS	TM178	**104.8** 88.68 : 116.92	**104.4** 96.80 : 113.60	**103.6** 96.80 : 113.60	**100.8** 96.80 : 113.60
Dibenzo(ah)anthracene by GCMS	TM178	**100.0** 86.24 : 118.56	**104.4** 88.00 : 112.00	**98.0** 88.00 : 112.00	**100.4** 88.00 : 112.00
Fluoranthene by GCMS	TM178	**101.6** 86.04 : 121.96	**106.4** 93.49 : 118.20	**104.8** 93.49 : 118.20	**106.8** 93.49 : 118.20
Fluorene by GCMS	TM178	**104.4** 90.76 : 121.24	**104.8** 94.39 : 118.66	**105.2** 94.39 : 118.66	**105.6** 94.39 : 118.66
Indeno(123cd)pyrene by GCMS	TM178	**96.8** 88.39 : 119.61	**101.6** 90.40 : 114.40	**99.2** 90.40 : 114.40	**102.0** 90.40 : 114.40
Naphthalene by GCMS	TM178	**102.8** 89.40 : 121.80	**109.6** 94.00 : 115.60	**106.8** 94.00 : 115.60	**108.0** 94.00 : 115.60
Phenanthrene by GCMS	TM178	**104.4** 90.41 : 119.19	**102.8** 94.80 : 114.00	**100.8** 94.80 : 114.00	**101.2** 94.80 : 114.00
Pyrene by GCMS	TM178	**100.8** 91.00 : 120.20	**110.4** 96.40 : 115.60	**109.2** 96.40 : 115.60	**108.0** 96.40 : 115.60

Pesticides (Suite I) by GCMS

Component	Method Code	QC 2454	QC 2485	QC 2482
Aldrin - (Inst.)	TM343	**36.2** 59.75 : 143.00	**113.99** 59.75 : 143.00	**90.16** 59.75 : 143.00
alpha-HCH - (Inst.)	TM343	**26.4** 75.13 : 166.63	**96.73** 75.13 : 166.63	**92.03** 75.13 : 166.63
beta-HCH - (Inst.)	TM343	**25.45** 85.48 : 166.48	**98.79** 85.48 : 166.48	**93.67** 85.48 : 166.48
cis-Chlordane - (Inst.)	TM343	**21.63** 71.70 : 156.00	**93.64** 71.70 : 156.00	**92.98** 71.70 : 156.00

Pesticides (Suite I) by GCMS

		QC 2454	QC 2485	QC 2482
delta-HCH - (Inst.)	TM343	**15.99** 83.98 : 156.58	**84.45** 83.98 : 156.58	**81.01** 83.98 : 156.58
Dieldrin - (Inst.)	TM343	**57.5** 77.45 : 154.10	**110.2** 77.45 : 154.10	**103.13** 77.45 : 154.10
Endosulphan I - (Inst.)	TM343	**29.77** 91.30 : 168.70	**106.97** 91.30 : 168.70	**95.95** 91.30 : 168.70
Endosulphan II - (Inst.)	TM343	**14.02** 82.68 : 161.13	**101.09** 82.68 : 161.13	**94.67** 82.68 : 161.13
Endosulphan Sulphate - (Inst.)	TM343	**19.66** 69.65 : 165.95	**88.41** 69.65 : 165.95	**56.51** 69.65 : 165.95
Endrin - (Inst.)	TM343	**48.3** 81.33 : 178.68	**90.78** 81.33 : 178.68	**90.78** 81.33 : 178.68
gamma-HCH (Lindane) - (Inst.)	TM343	**45.11** 83.15 : 175.40	**87.5** 83.15 : 175.40	**83.18** 83.15 : 175.40
Heptachlor - (Inst.)	TM343	**25.97** 63.65 : 167.80	**94.4** 63.65 : 167.80	**95.99** 63.65 : 167.80
Heptachlor epoxide - (Inst.)	TM343	**20.46** 73.28 : 159.38	**88.76** 73.28 : 159.38	**87.61** 73.28 : 159.38
Isodrin - (Inst.)	TM343	**32.16** 58.34 : 153.81	**112.08** 58.34 : 153.81	**89.44** 58.34 : 153.81
o,p-DDD (TDE) - (Inst.)	TM343	**24.3** 66.93 : 162.03	**88.34** 66.93 : 162.03	**95.16** 66.93 : 162.03
o,p-DDE - (Inst.)	TM343	**18.48** 64.68 : 156.78	**90.83** 64.68 : 156.78	**92.38** 64.68 : 156.78
o,p-DDT - (Inst.)	TM343	**24.48** 72.20 : 170.15	**93.96** 72.20 : 170.15	**108.51** 72.20 : 170.15
o,p-Methoxychlor - (Inst.)	TM343	**19.99** 73.33 : 171.13	**91.98** 73.33 : 171.13	**104.17** 73.33 : 171.13
p,p-DDD (TDE) - (Inst.)	TM343	**16.49** 67.95 : 160.20	**86.5** 67.95 : 160.20	**90.95** 67.95 : 160.20
p,p-DDE - (Inst.)	TM343	**20.46** 67.80 : 159.45	**91.88** 67.80 : 159.45	**95.8** 67.80 : 159.45
p,p-DDT - (Inst.)	TM343	**32.11** 68.30 : 178.25	**102.07** 68.30 : 178.25	**118.73** 68.30 : 178.25
p,p-Methoxychlor - (Inst.)	TM343	**24.65** 66.94 : 176.47	**103.39** 66.94 : 176.47	**121.56** 66.94 : 176.47
Permethrin I - (Inst.)	TM343	**11.9** 63.25 : 146.35	**89.51** 63.25 : 146.35	**110.28** 63.25 : 146.35
Permethrin II - (Inst.)	TM343	**29.4** 66.00 : 151.80	**95.67** 66.00 : 151.80	**114.22** 66.00 : 151.80
trans-Chlordane - (Inst.)	TM343	**20.31** 71.68 : 165.88	**91.39** 71.68 : 165.88	**89.88** 71.68 : 165.88
Trifluralin - (Inst.)	TM343	**24.9** 64.73 : 161.48	**98.58** 64.73 : 161.48	**95.25** 64.73 : 161.48

pH Value

Component	Method Code	QC 2401	QC 2411	QC 2413	QC 2415	QC 2481	QC 2486
pH	TM256	**101.07** 99.33 : 102.54	**101.74** 99.33 : 102.54	**101.6** 99.33 : 102.54	**101.6** 99.33 : 102.54	**100.0** 99.33 : 102.54	**100.13** 99.33 : 102.54

pH Value

Component	Method Code	QC 2490
pH	TM256	**100.27** 99.33 : 102.54

Phenols by HPLC (W)

Component	Method Code	QC 2480	QC 2478	QC 2457	QC 2439
2.3.5 Trimethyl-Phenol by HPLC (W)	TM259	**97.66** 73.97 : 135.63	**95.7** 76.00 : 124.00	**95.7** 76.00 : 124.00	**93.75** 76.00 : 124.00
2-Isopropyl Phenol by HPLC (W)	TM259	**93.69** 88.30 : 124.10	**93.69** 76.00 : 124.00	**93.69** 76.00 : 124.00	**93.69** 76.00 : 124.00
Cresols by HPLC (W)	TM259	**98.68** 85.46 : 124.01	**96.71** 76.00 : 124.00	**97.37** 76.00 : 124.00	**99.34** 76.00 : 124.00
Napthol by HPLC (W)	TM259	**85.94** 75.83 : 130.17	**87.89** 76.00 : 124.00	**87.89** 76.00 : 124.00	**85.94** 76.00 : 124.00
Phenol by HPLC (W)	TM259	**94.52** 89.03 : 126.97	**90.74** 76.00 : 124.00	**92.63** 76.00 : 124.00	**92.63** 76.00 : 124.00
Xylenols by HPLC (W)	TM259	**95.57** 92.20 : 121.33	**94.62** 76.00 : 124.00	**94.94** 76.00 : 124.00	**94.3** 76.00 : 124.00

Phosphate by Kone (w)

Component	Method Code	QC 2458
Phosphate (Ortho as PO4)	TM184	**103.6** 96.40 : 109.60

Sulphide

Component	Method Code	QC 2471	QC 2415	QC 2499	QC 2423
Sulphide	TM101	**100.67** 88.90 : 112.50	**100.0** 88.90 : 112.50	**94.0** 88.90 : 112.50	**93.33** 88.90 : 112.50

SVOC MS (W) - Aqueous

Component	Method Code	QC 2451	QC 2430
4-Bromophenylphenylether	TM176	**97.6** 52.80 : 111.84	**101.6** 52.80 : 111.84
Benzo(a)anthracene	TM176	**86.4** 59.28 : 107.76	**92.8** 59.28 : 107.76
Benzo(a)pyrene	TM176	**76.64** 54.40 : 105.76	**82.4** 54.40 : 105.76
Butylbenzyl phthalate	TM176	**88.0** 51.68 : 117.92	**97.6** 51.68 : 117.92
Hexachlorobutadiene	TM176	**76.8** 48.64 : 95.68	**84.0** 48.64 : 95.68

SVOC MS (W) - Aqueous

		QC 2451	QC 2430
Naphthalene	TM176	**95.2** 63.04 : 111.04	**100.8** 63.04 : 111.04
Nitrobenzene	TM176	**88.0** 59.92 : 108.40	**93.6** 59.92 : 108.40
Phenol	TM176	**56.72** 36.88 : 72.40	**61.28** 36.88 : 72.40

Total Metals by ICP-MS

Component	Method Code	QC 2410	QC 2438	QC 2476	QC 2483	QC 2400
Aluminium	TM152	**104.33** 88.99 : 114.16	**104.67** 88.99 : 114.16	**102.67** 88.99 : 114.16	**101.33** 88.99 : 114.16	**102.67** 88.99 : 114.16
Antimony	TM152	**102.17** 93.05 : 123.32	**103.33** 93.05 : 123.32	**102.0** 93.05 : 123.32	**101.5** 93.05 : 123.32	**100.67** 93.05 : 123.32
Arsenic	TM152	**103.0** 97.95 : 112.90	**103.5** 97.95 : 112.90	**103.5** 97.95 : 112.90	**100.83** 97.95 : 112.90	**102.67** 97.95 : 112.90
Barium	TM152	**105.0** 95.11 : 116.80	**106.5** 95.11 : 116.80	**104.83** 95.11 : 116.80	**103.0** 95.11 : 116.80	**102.5** 95.11 : 116.80
Beryllium	TM152	**103.83** 96.06 : 116.39	**106.33** 96.06 : 116.39	**104.33** 96.06 : 116.39	**99.83** 96.06 : 116.39	**102.17** 96.06 : 116.39
Bismuth	TM152	**101.67** 93.21 : 113.89	**104.33** 93.21 : 113.89	**103.83** 93.21 : 113.89	**102.33** 93.21 : 113.89	**102.17** 93.21 : 113.89
Boron	TM152	**104.33** 86.68 : 117.67	**105.33** 86.68 : 117.67	**103.0** 86.68 : 117.67	**98.33** 86.68 : 117.67	**102.0** 86.68 : 117.67
Cadmium	TM152	**103.5** 96.08 : 112.92	**104.83** 96.08 : 112.92	**105.17** 96.08 : 112.92	**101.67** 96.08 : 112.92	**102.83** 96.08 : 112.92
Calcium	TM152	**106.67** 95.17 : 121.17	**108.67** 95.17 : 121.17	**106.67** 95.17 : 121.17	**107.33** 95.17 : 121.17	**109.33** 95.17 : 121.17
Chromium	TM152	**102.17** 97.65 : 111.90	**103.67** 97.65 : 111.90	**103.17** 97.65 : 111.90	**102.17** 97.65 : 111.90	**102.67** 97.65 : 111.90
Cobalt	TM152	**102.33** 96.52 : 113.04	**103.5** 96.52 : 113.04	**102.67** 96.52 : 113.04	**102.5** 96.52 : 113.04	**103.0** 96.52 : 113.04
Copper	TM152	**103.5** 97.32 : 113.53	**104.0** 97.32 : 113.53	**103.67** 97.32 : 113.53	**103.67** 97.32 : 113.53	**104.33** 97.32 : 113.53
Iron	TM152	**103.33** 96.27 : 111.69	**104.67** 96.27 : 111.69	**103.33** 96.27 : 111.69	**102.67** 96.27 : 111.69	**102.67** 96.27 : 111.69
Lead	TM152	**101.17** 96.90 : 113.51	**104.33** 96.90 : 113.51	**102.83** 96.90 : 113.51	**100.83** 96.90 : 113.51	**101.67** 96.90 : 113.51
Lithium	TM152	**103.33** 94.68 : 116.74	**105.67** 94.68 : 116.74	**103.33** 94.68 : 116.74	**98.83** 94.68 : 116.74	**102.5** 94.68 : 116.74
Magnesium	TM152	**100.67** 92.42 : 114.10	**102.0** 92.42 : 114.10	**100.0** 92.42 : 114.10	**100.0** 92.42 : 114.10	**100.67** 92.42 : 114.10
Manganese	TM152	**104.17** 97.04 : 112.45	**105.33** 97.04 : 112.45	**103.83** 97.04 : 112.45	**102.83** 97.04 : 112.45	**102.67** 97.04 : 112.45
Molybdenum	TM152	**102.17** 87.00 : 108.89	**103.83** 87.00 : 108.89	**103.33** 87.00 : 108.89	**101.5** 87.00 : 108.89	**101.5** 87.00 : 108.89
Nickel	TM152	**102.67** 97.57 : 113.15	**104.0** 97.57 : 113.15	**103.0** 97.57 : 113.15	**103.33** 97.57 : 113.15	**104.0** 97.57 : 113.15
Phosphorus	TM152	**101.33** 96.28 : 113.79	**103.0** 96.28 : 113.79	**102.5** 96.28 : 113.79	**100.33** 96.28 : 113.79	**101.67** 96.28 : 113.79
Potassium	TM152	**105.33** 96.14 : 114.83	**106.0** 96.14 : 114.83	**104.67** 96.14 : 114.83	**104.0** 96.14 : 114.83	**105.33** 96.14 : 114.83
Selenium	TM152	**105.67** 96.70 : 113.86	**103.5** 96.70 : 113.86	**104.0** 96.70 : 113.86	**101.0** 96.70 : 113.86	**100.5** 96.70 : 113.86

Total Metals by ICP-MS

		QC 2410	QC 2438	QC 2476	QC 2483	QC 2400
Silver	TM152	**104.83** 82.13 : 120.33	**106.17** 82.13 : 120.33	**104.5** 82.13 : 120.33	**103.67** 82.13 : 120.33	**104.17** 82.13 : 120.33
Sodium	TM152	**101.33** 92.77 : 115.64	**103.33** 92.77 : 115.64	**100.67** 92.77 : 115.64	**101.33** 92.77 : 115.64	**102.0** 92.77 : 115.64
Strontium	TM152	**104.0** 90.72 : 114.82	**105.67** 90.72 : 114.82	**105.67** 90.72 : 114.82	**101.67** 90.72 : 114.82	**102.33** 90.72 : 114.82
Tellurium	TM152	**106.17** 95.55 : 115.82	**108.17** 95.55 : 115.82	**106.67** 95.55 : 115.82	**102.83** 95.55 : 115.82	**103.33** 95.55 : 115.82
Thallium	TM152	**100.0** 80.92 : 114.72	**103.33** 80.92 : 114.72	**102.67** 80.92 : 114.72	**101.33** 80.92 : 114.72	**101.83** 80.92 : 114.72
Tin	TM152	**102.0** 96.04 : 111.04	**103.0** 96.04 : 111.04	**101.5** 96.04 : 111.04	**101.17** 96.04 : 111.04	**101.33** 96.04 : 111.04
Titanium	TM152	**103.17** 96.48 : 114.94	**102.5** 96.48 : 114.94	**101.67** 96.48 : 114.94	**99.17** 96.48 : 114.94	**102.0** 96.48 : 114.94
Uranium	TM152	**101.0** 95.56 : 112.07	**104.0** 95.56 : 112.07	**102.5** 95.56 : 112.07	**101.5** 95.56 : 112.07	**100.5** 95.56 : 112.07
Vanadium	TM152	**103.33** 88.43 : 114.30	**104.67** 88.43 : 114.30	**105.67** 88.43 : 114.30	**102.0** 88.43 : 114.30	**102.83** 88.43 : 114.30
Zinc	TM152	**103.67** 97.95 : 113.95	**103.67** 97.95 : 113.95	**103.0** 97.95 : 113.95	**101.33** 97.95 : 113.95	**102.33** 97.95 : 113.95

VOC MS (W)

Component	Method Code	QC 2433
1,1,1,2-Tetrachloroethane	TM208	**100.0** 87.41 : 110.84
1,1,1-Trichloroethane	TM208	**98.0** 81.01 : 112.00
1,1-Dichloroethane	TM208	**99.0** 82.09 : 116.41
1,2-Dichloroethane	TM208	**95.0** 80.28 : 123.63
2-Chlorotoluene	TM208	**97.5** 83.31 : 110.91
4-Chlorotoluene	TM208	**96.0** 84.01 : 111.46
Benzene	TM208	**98.0** 87.46 : 118.30
Bromomethane	TM208	**94.0** 76.99 : 118.39
Carbontetrachloride	TM208	**98.5** 81.73 : 114.22
Chlorobenzene	TM208	**100.0** 90.24 : 109.71
Chloroform	TM208	**96.5** 83.67 : 118.08
Chloromethane	TM208	**92.0** 70.42 : 127.06
Cis-1,2-Dichloroethene	TM208	**96.5** 83.95 : 112.60
Dichloromethane	TM208	**96.5** 81.65 : 120.83
Ethylbenzene	TM208	**96.5** 85.59 : 106.44

VOC MS (W)

		QC 2433
Hexachlorobutadiene	TM208	**84.5** 66.83 : 108.27
o-Xylene	TM208	**96.5** 78.40 : 110.68
p/m-Xylene	TM208	**96.5** 82.64 : 112.12
Tert-butyl methyl ether	TM208	**93.0** 68.23 : 127.69
Tetrachloroethene	TM208	**95.5** 81.10 : 112.63
Toluene	TM208	**97.5** 87.40 : 109.78
Trichloroethene	TM208	**97.0** 81.17 : 111.80
Vinyl Chloride	TM208	**94.5** 72.73 : 123.40

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

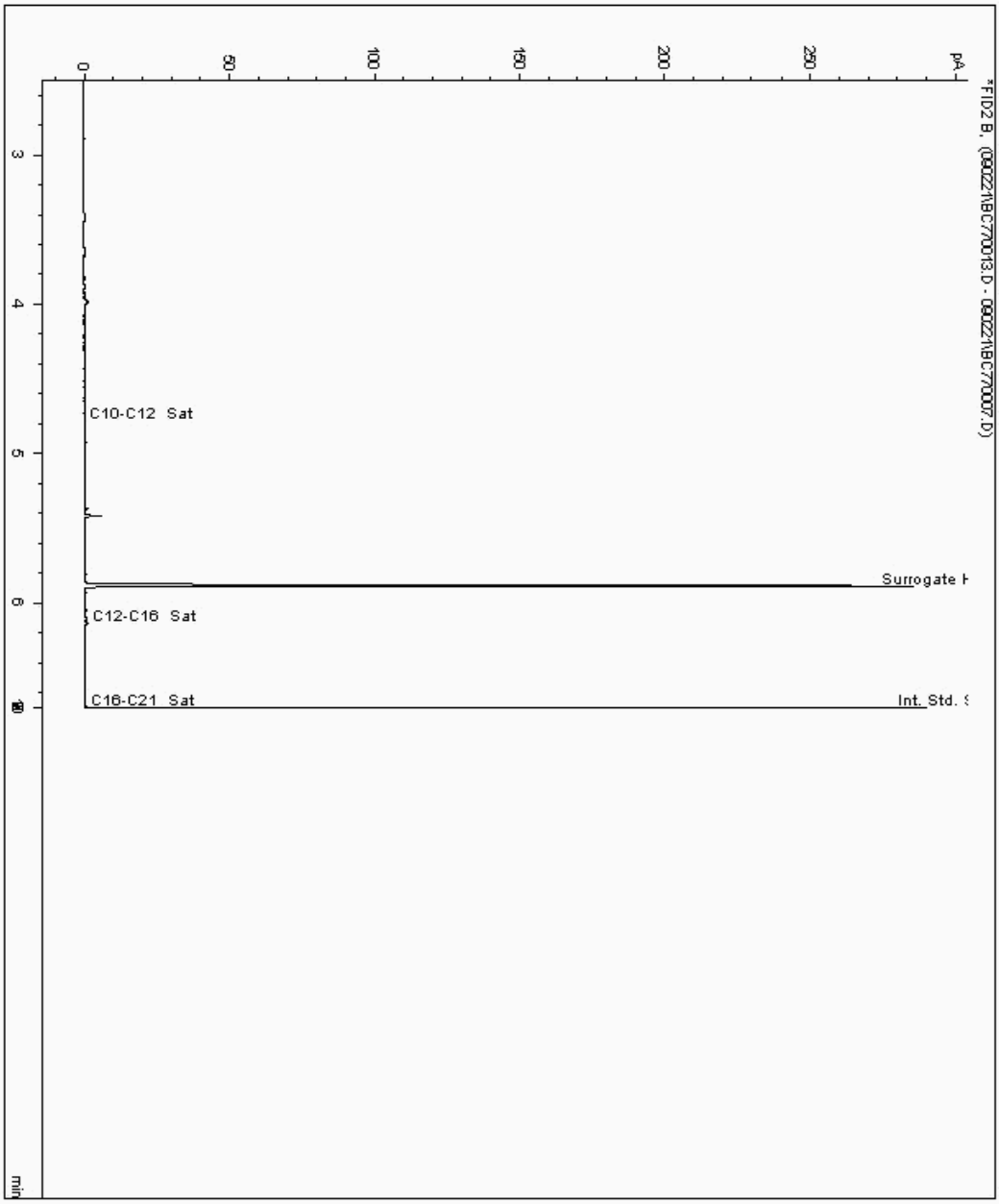
SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24873299 **Depth :** 0.00 - 0.00
Sample ID : BH17

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23260158-
Date Acquired : 9/3/2021 1:04:36 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

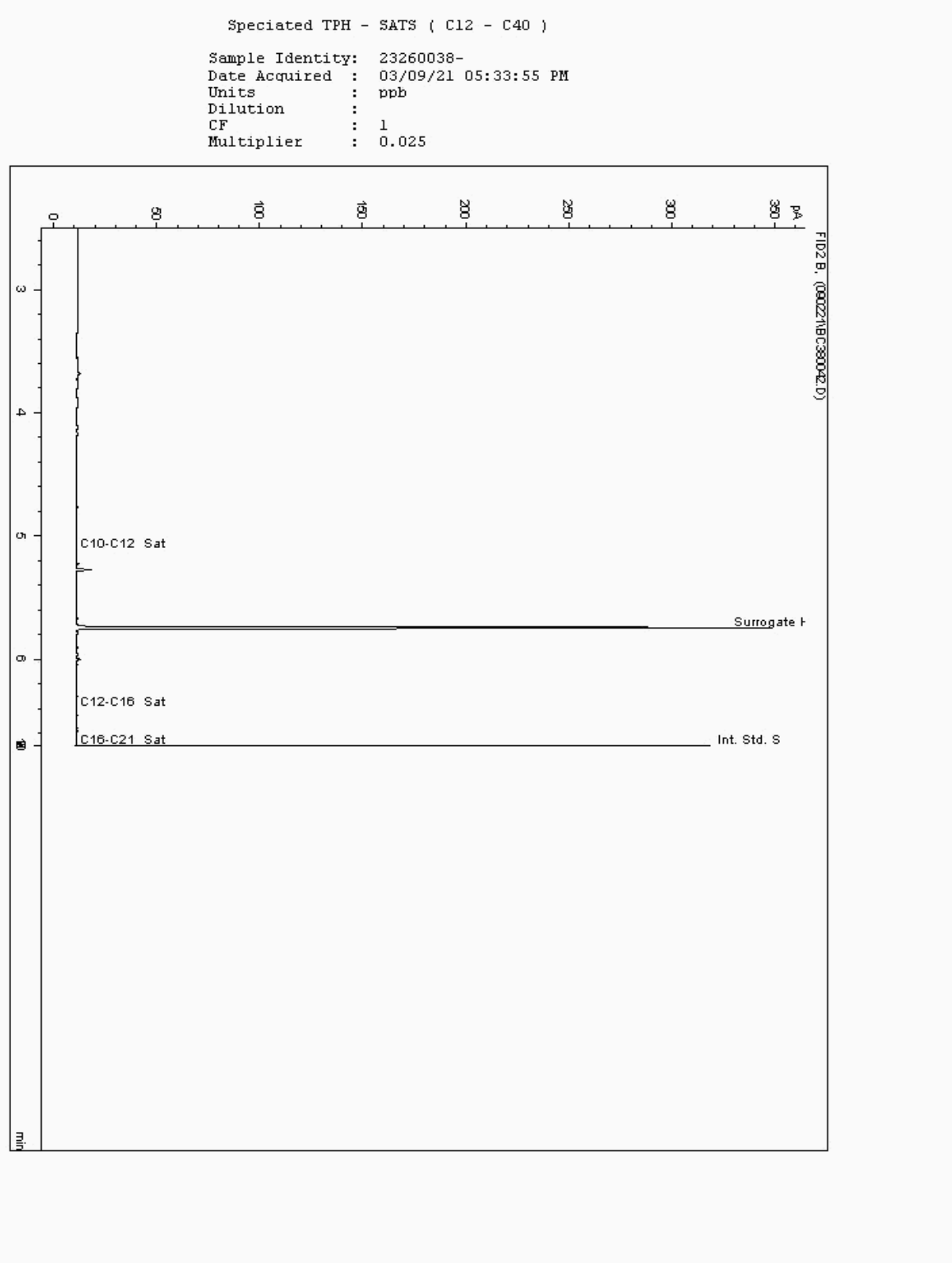


CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24873430 **Depth :** 0.00 - 0.00
Sample ID : WS54

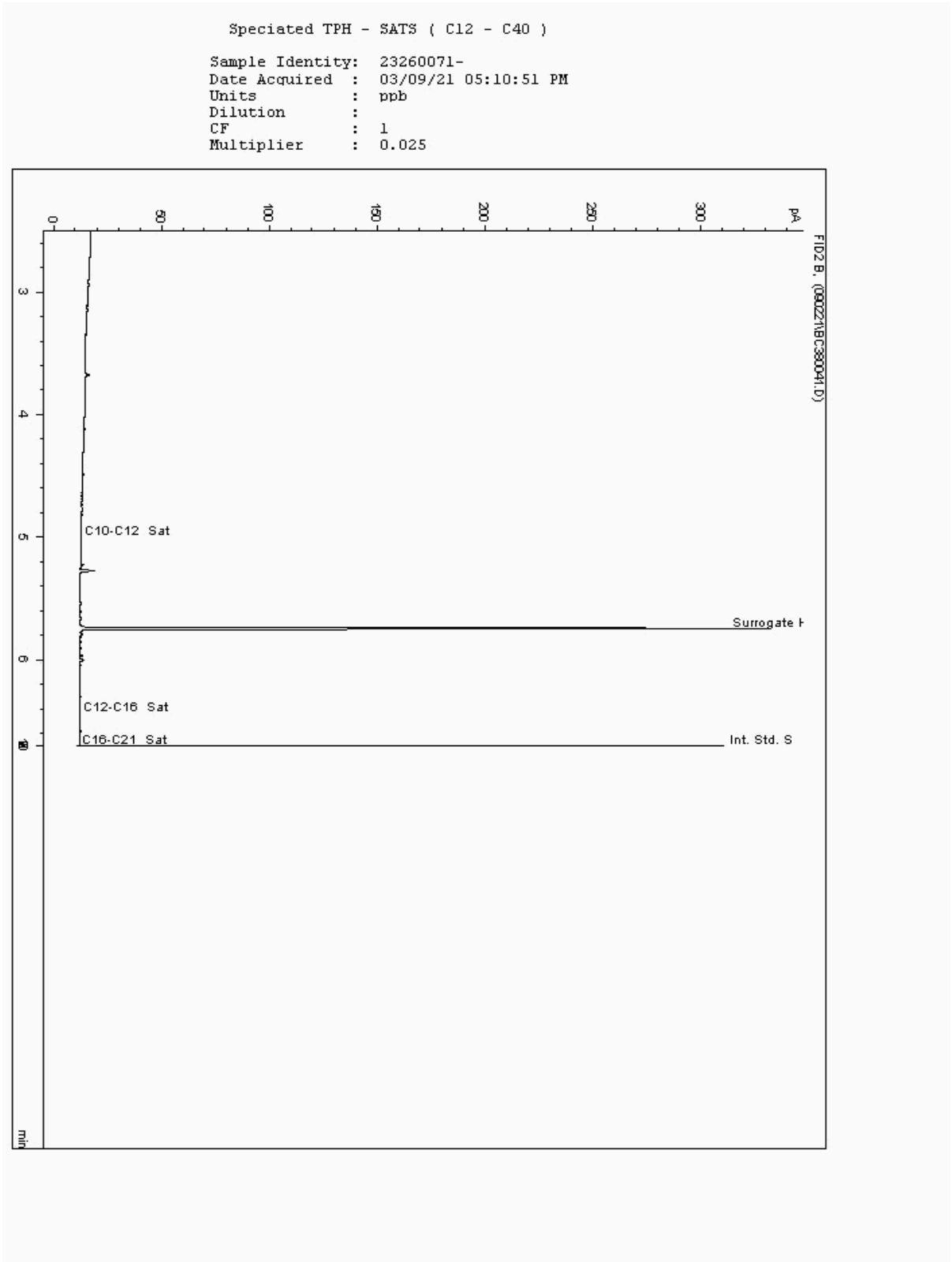


CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24873451 **Depth :** 0.00 - 0.00
Sample ID : BH19

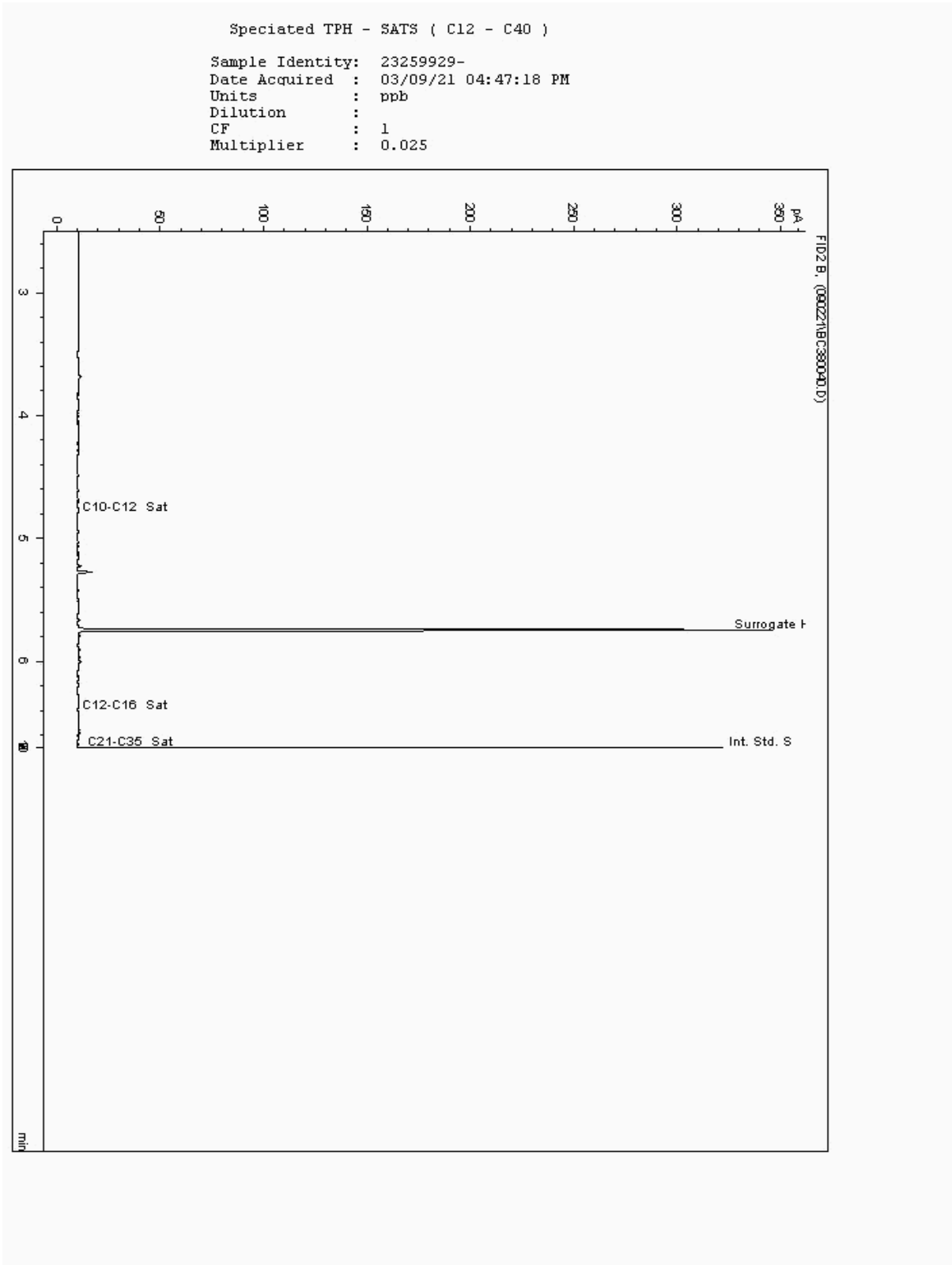


CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24873459 **Depth :** 0.00 - 0.00
Sample ID : BH14



CERTIFICATE OF ANALYSIS

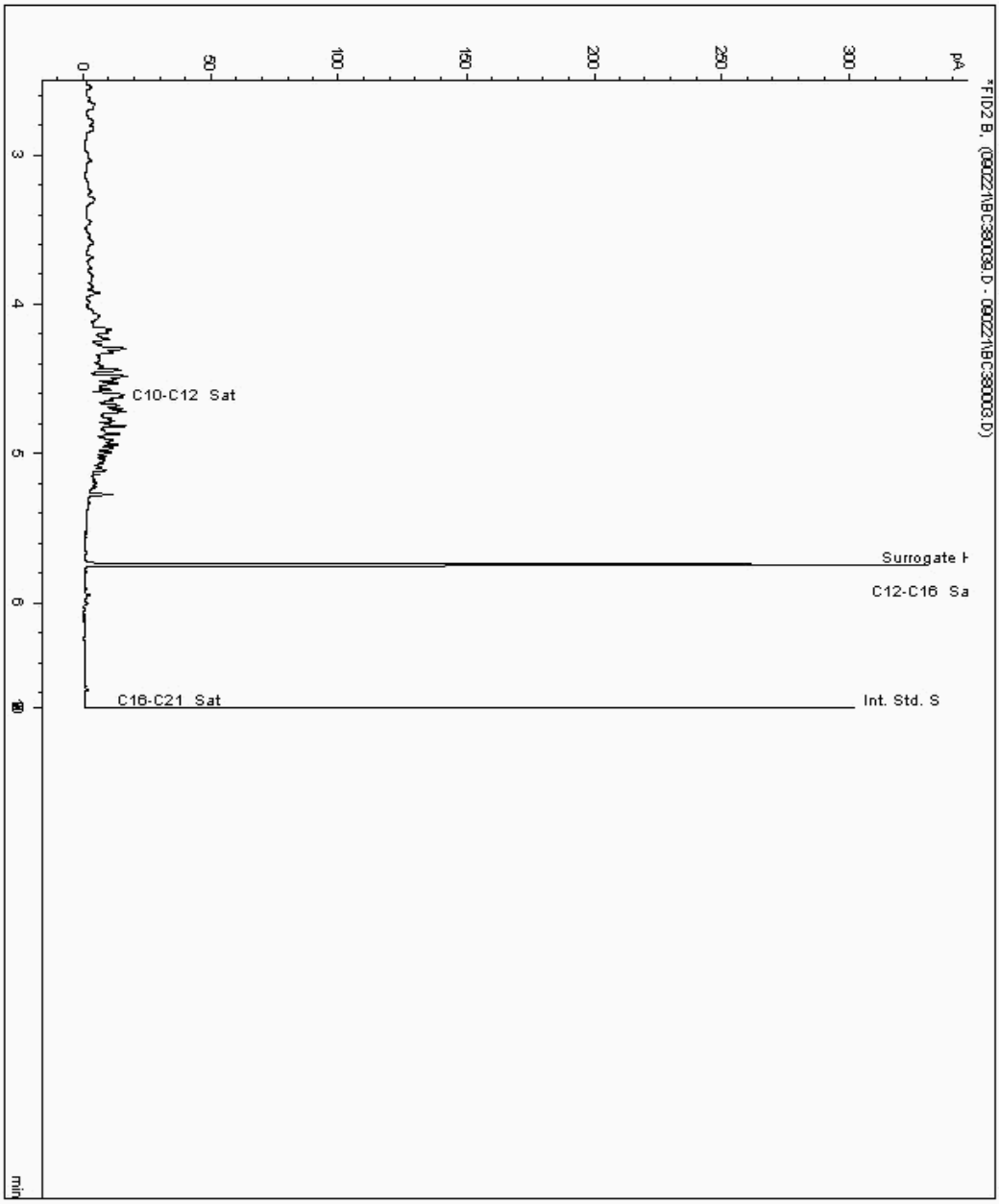
SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24873467 **Depth :** 0.00 - 0.00
Sample ID : WS66

Speciated TPH - SATS (C12 - C40)

Sample Identity: 23260137-
Date Acquired : 03/09/21 04:24:21 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

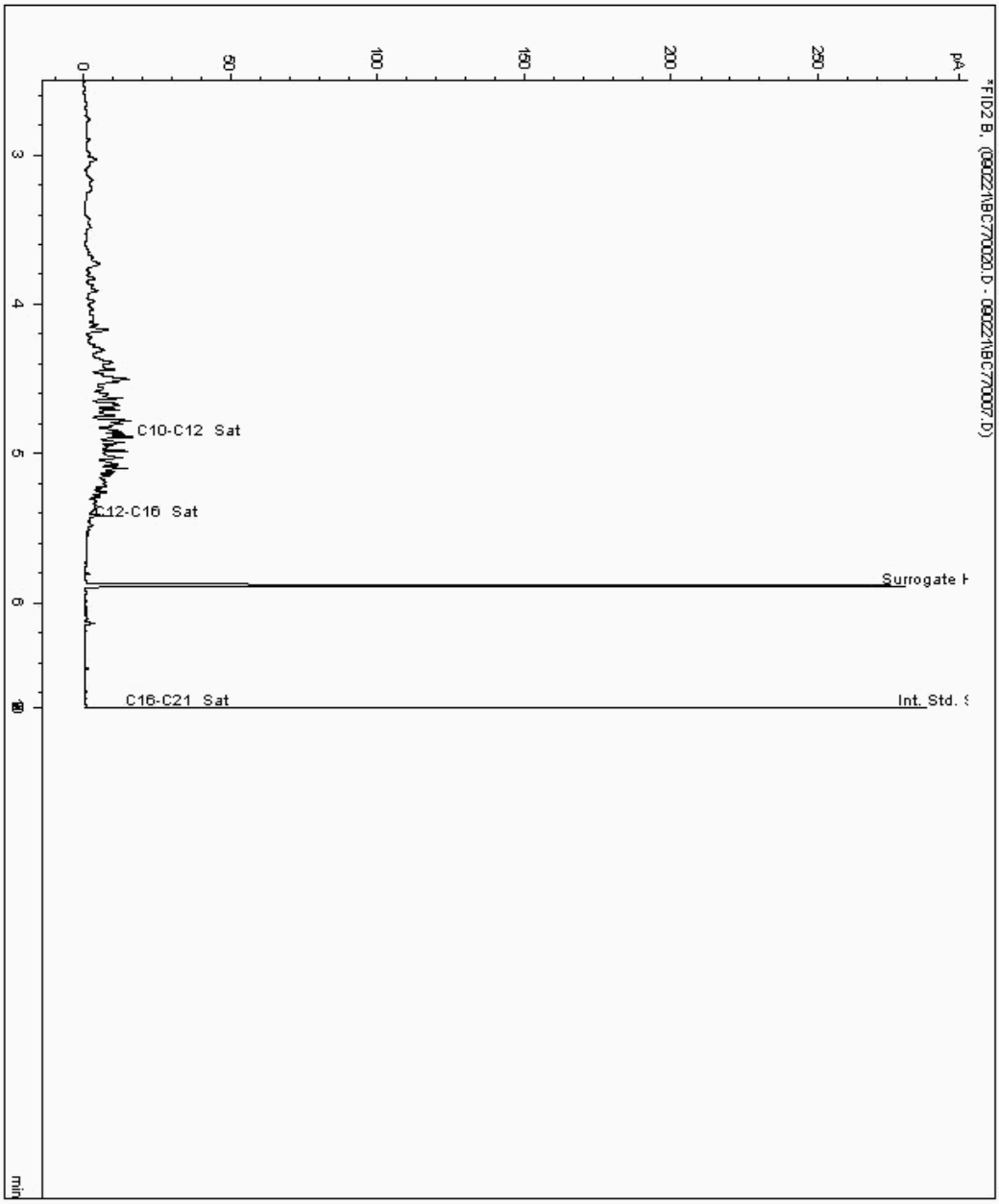
SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24873548 **Depth :** 0.00 - 0.00
Sample ID : WS48

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23259965-
Date Acquired : 9/3/2021 3:54:26 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.050



CERTIFICATE OF ANALYSIS

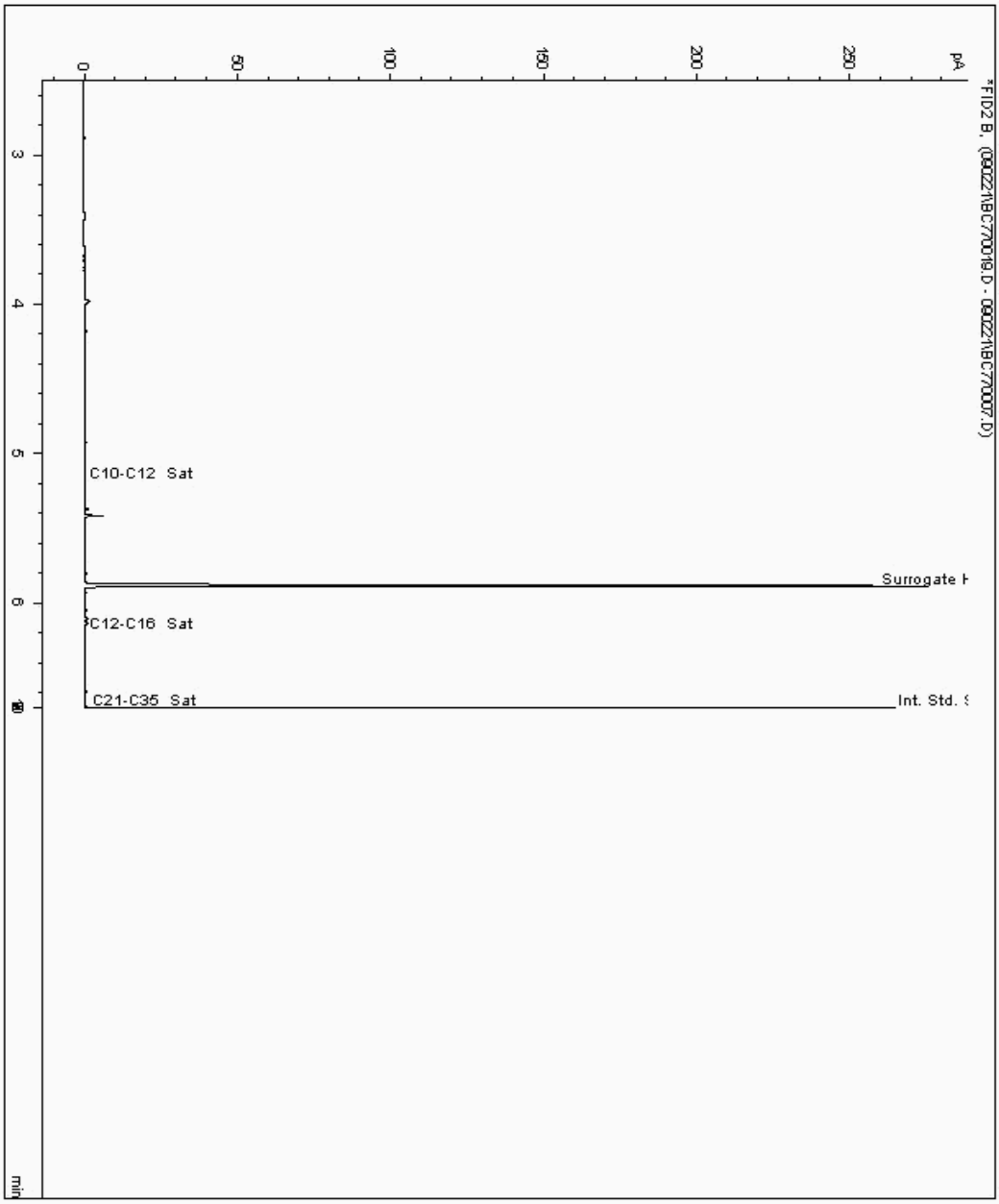
SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24873593 **Depth :** 0.00 - 0.00
Sample ID : WS50

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23259998-
Date Acquired : 9/3/2021 3:30:07 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

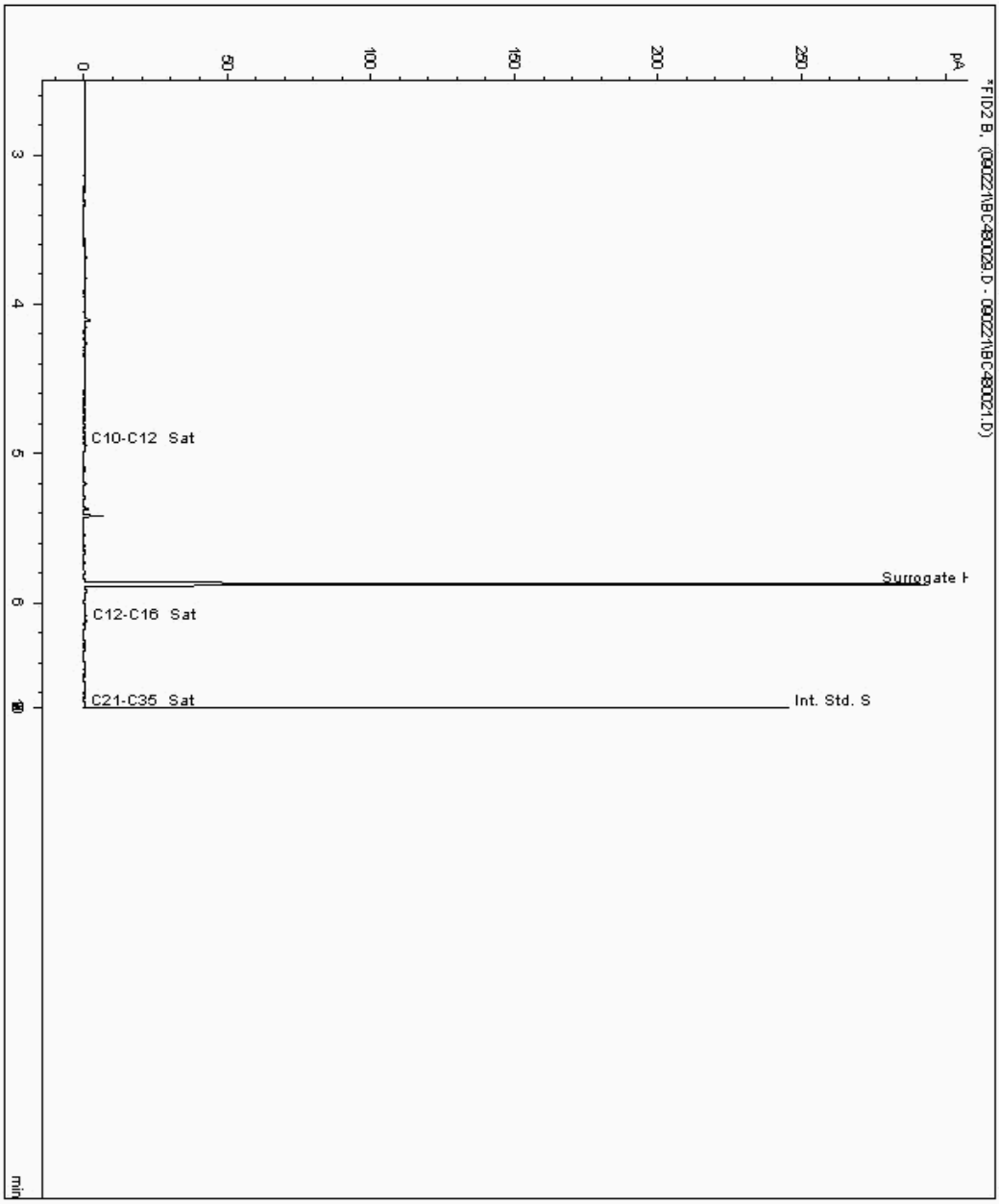
SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24882720 **Depth :** 0.00 - 0.00
Sample ID : BH16

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23259893-
Date Acquired : 03/09/2021 02:19:45 PM
Units : ppb
Dilution : SE BH16[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

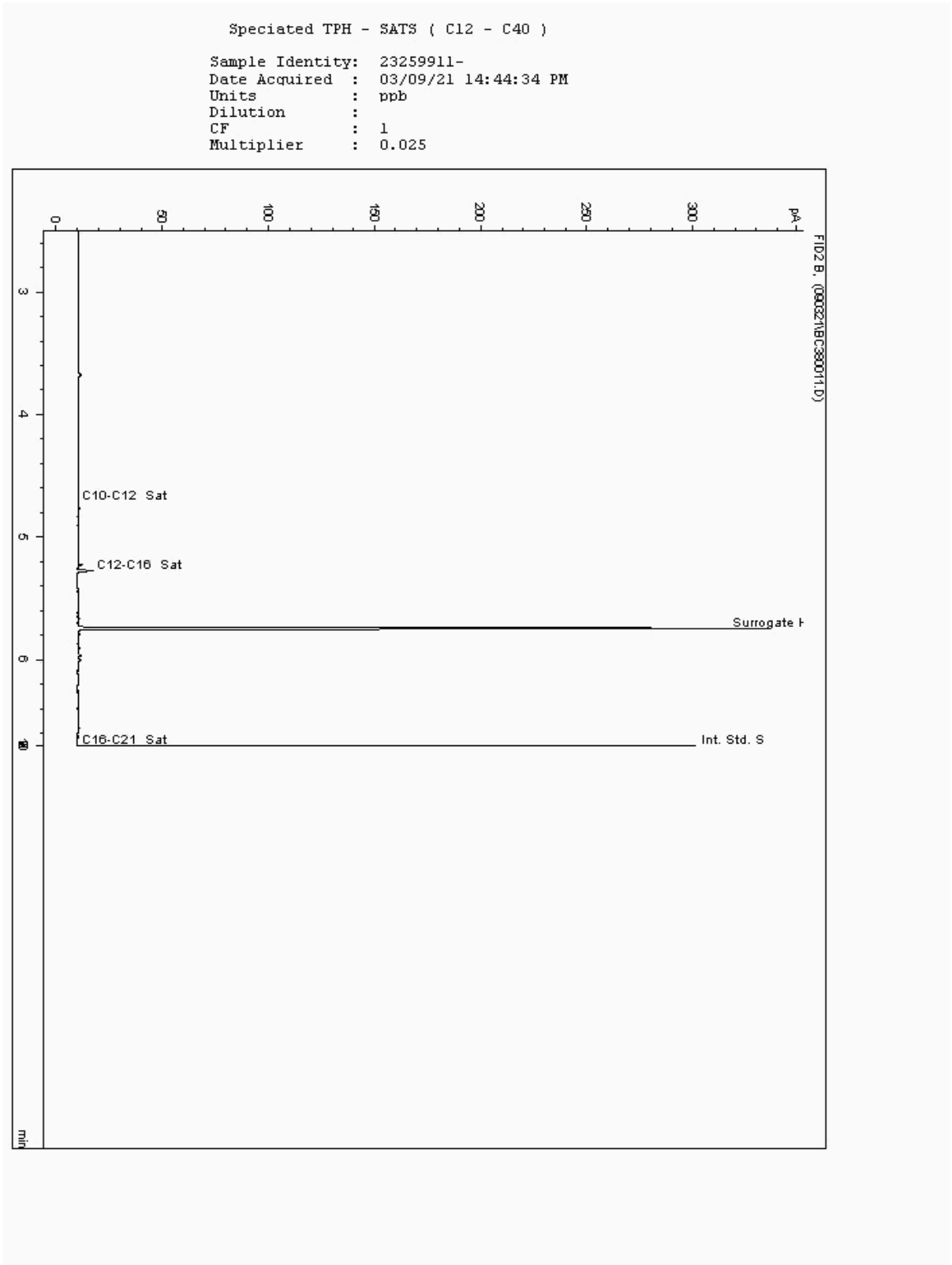


CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24882728 **Depth :** 0.00 - 0.00
Sample ID : BH18



CERTIFICATE OF ANALYSIS

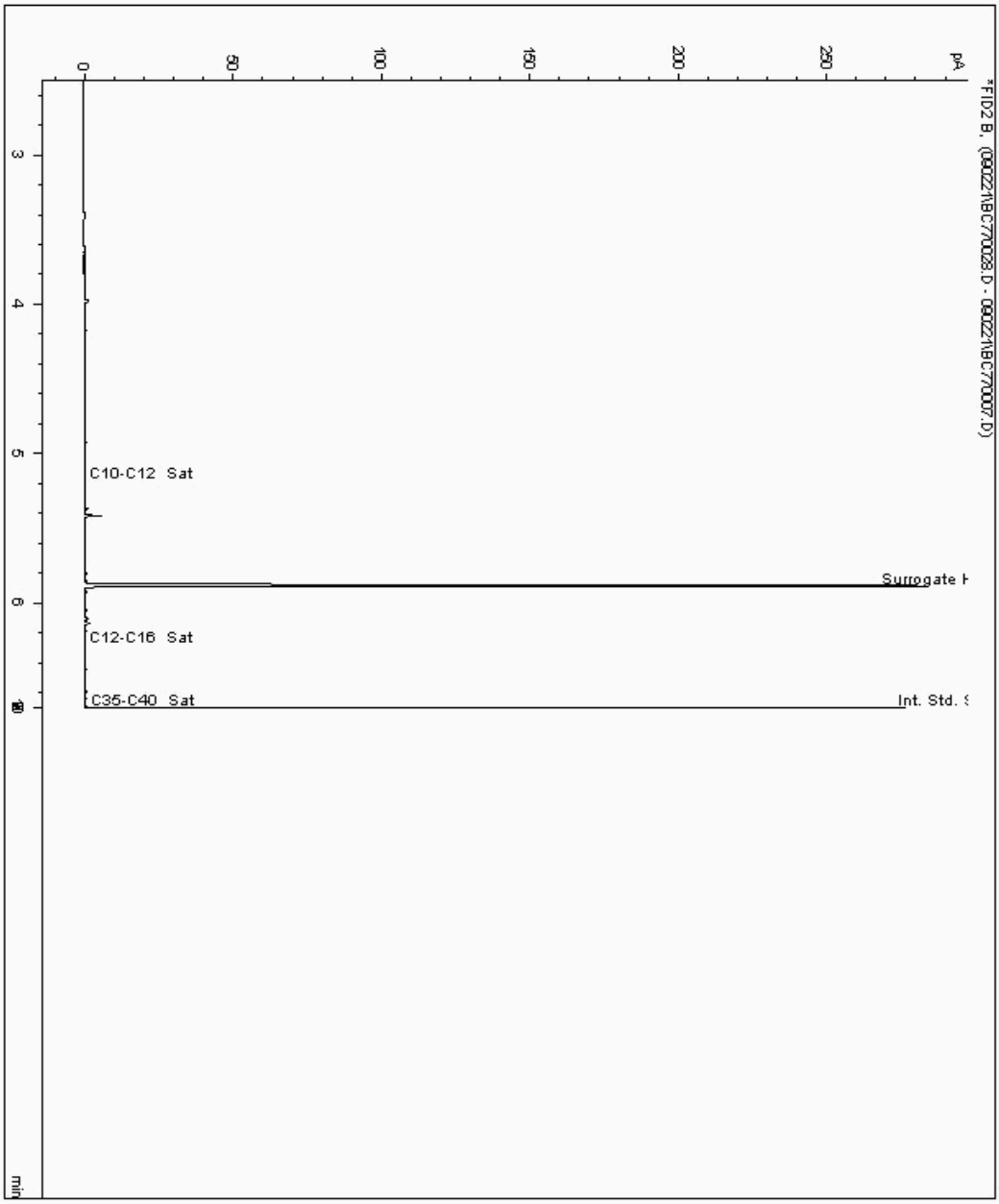
SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24883083 **Depth :** 0.00 - 0.00
Sample ID : BH22

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23260112-
Date Acquired : 9/3/2021 7:06:09 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

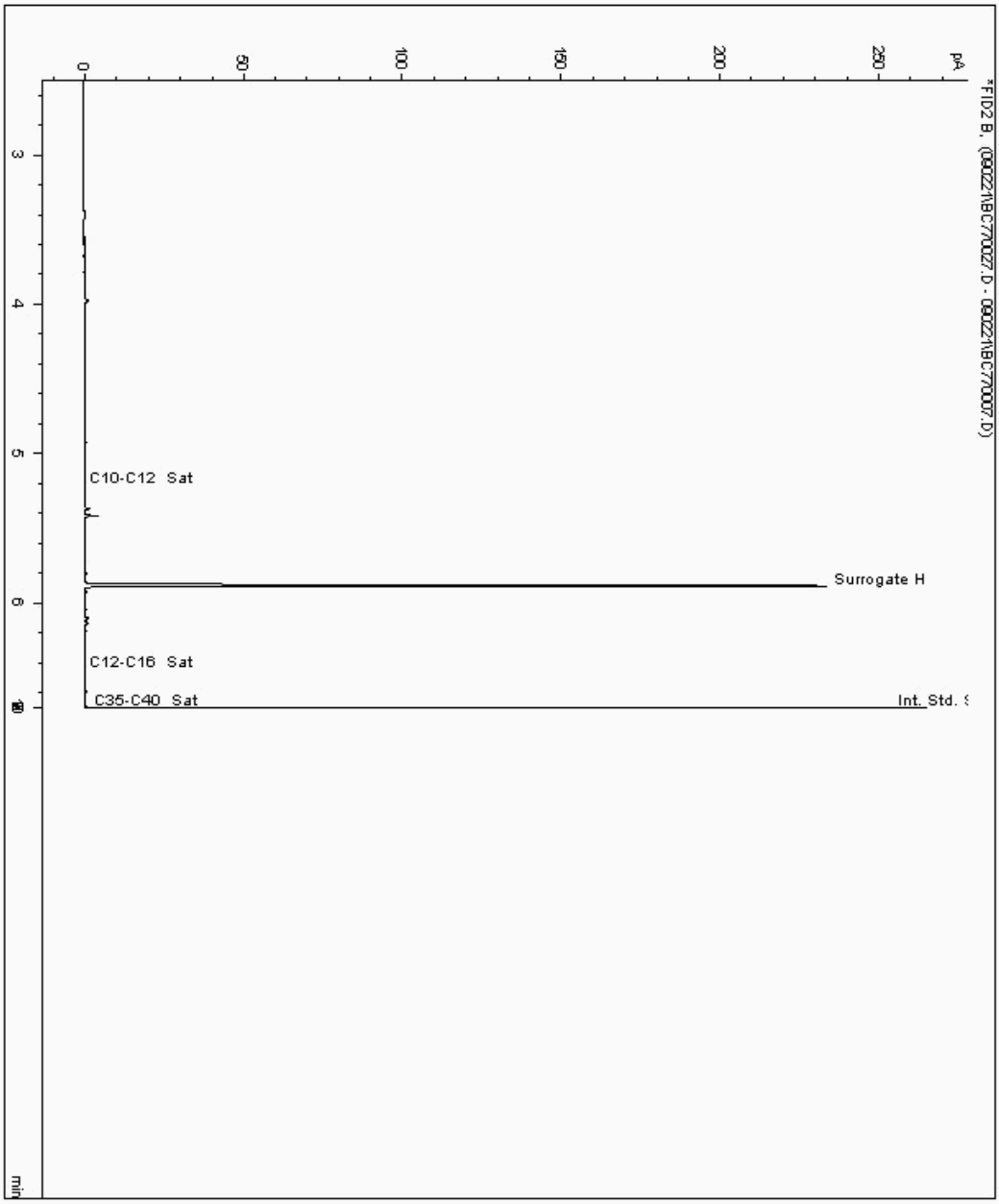
SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24883253 **Depth :** 0.00 - 0.00
Sample ID : BH15

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23259853-
Date Acquired : 9/3/2021 6:42:29 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

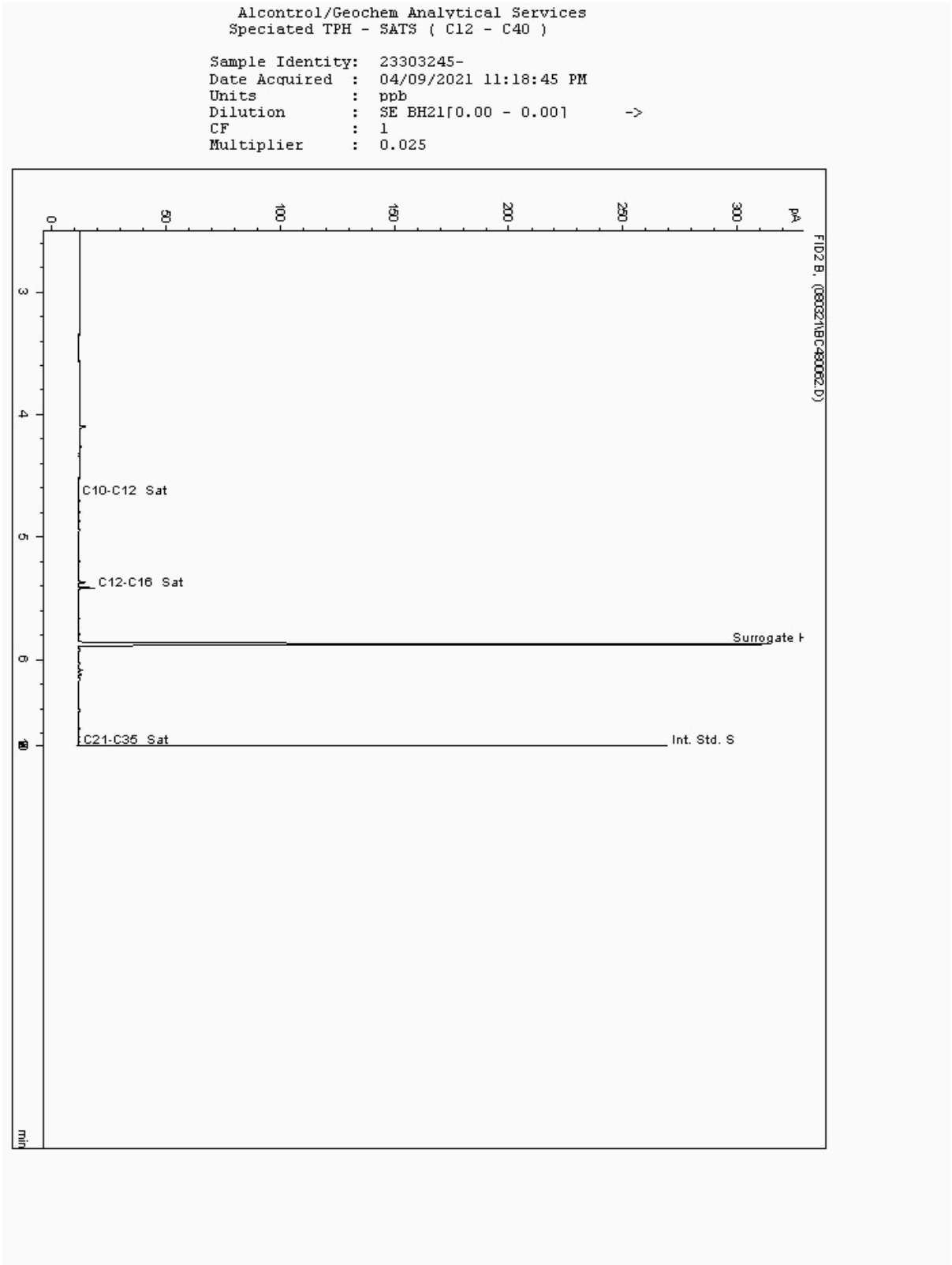


CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24919253 **Depth :** 0.00 - 0.00
Sample ID : BH21

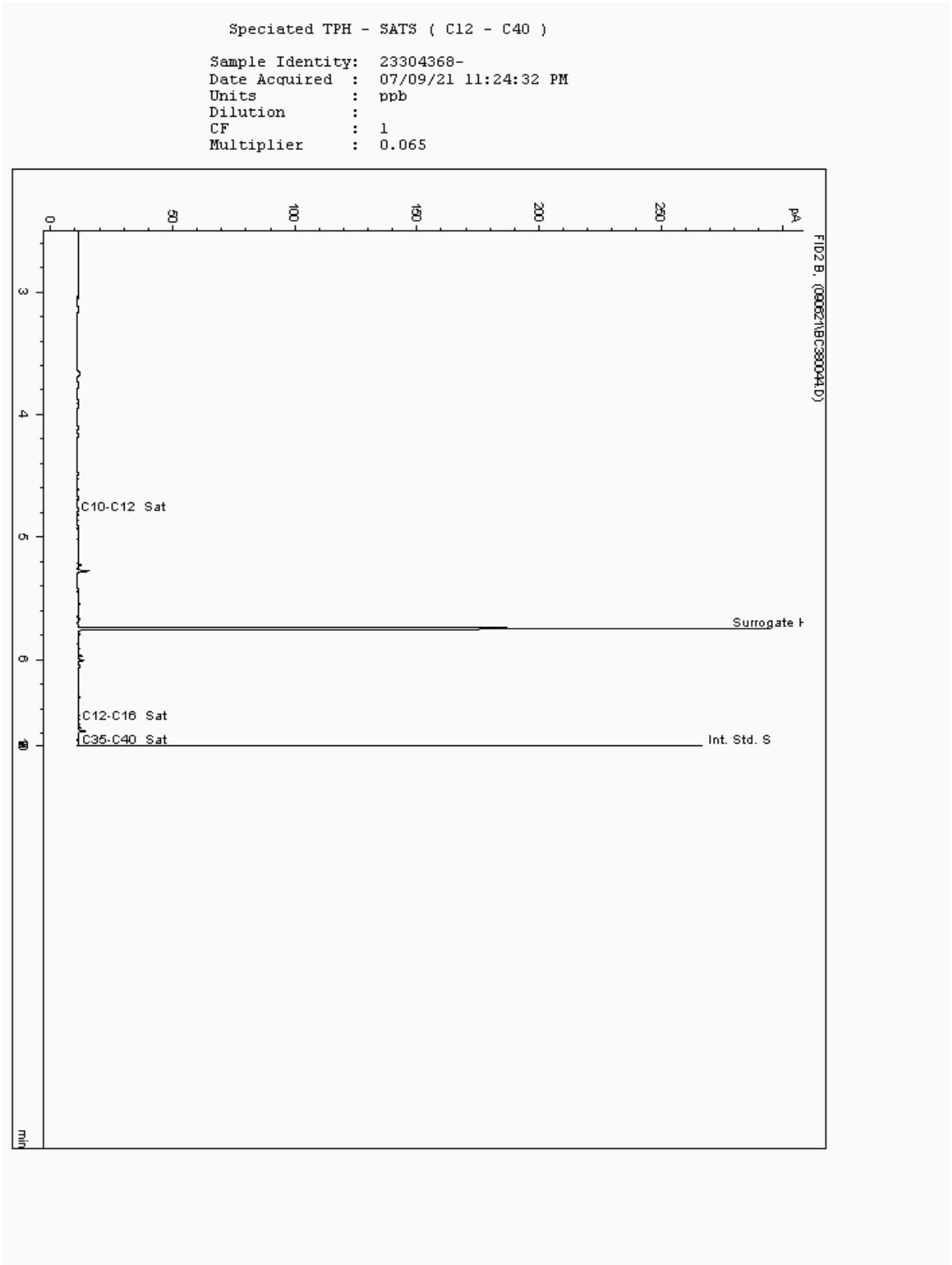


CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24930705 **Depth :** 0.00 - 0.00
Sample ID : BH21



CERTIFICATE OF ANALYSIS

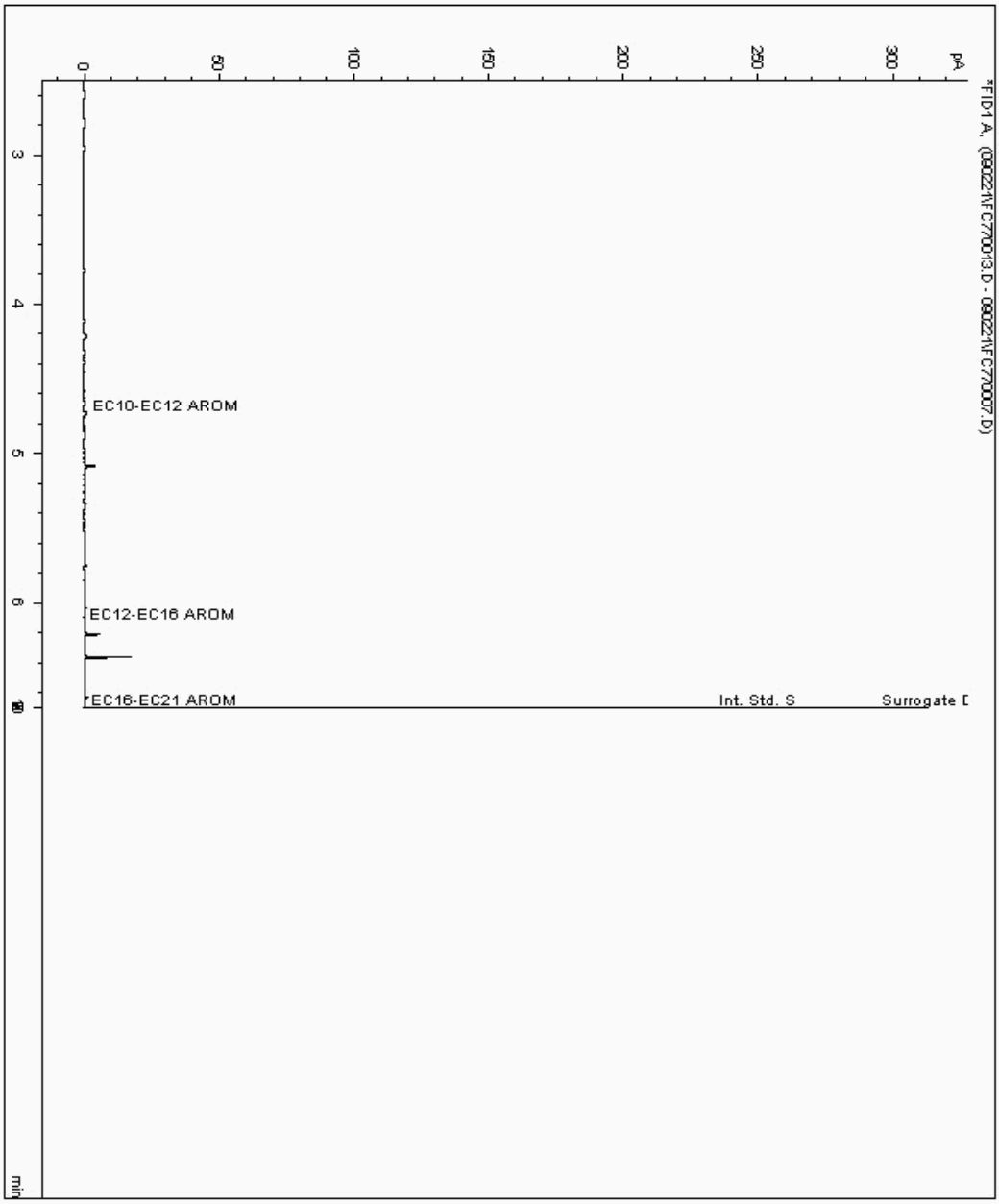
SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24873299 **Depth :** 0.00 - 0.00
Sample ID : BH17

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23260159-
Date Acquired : 9/3/2021 1:04:36 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

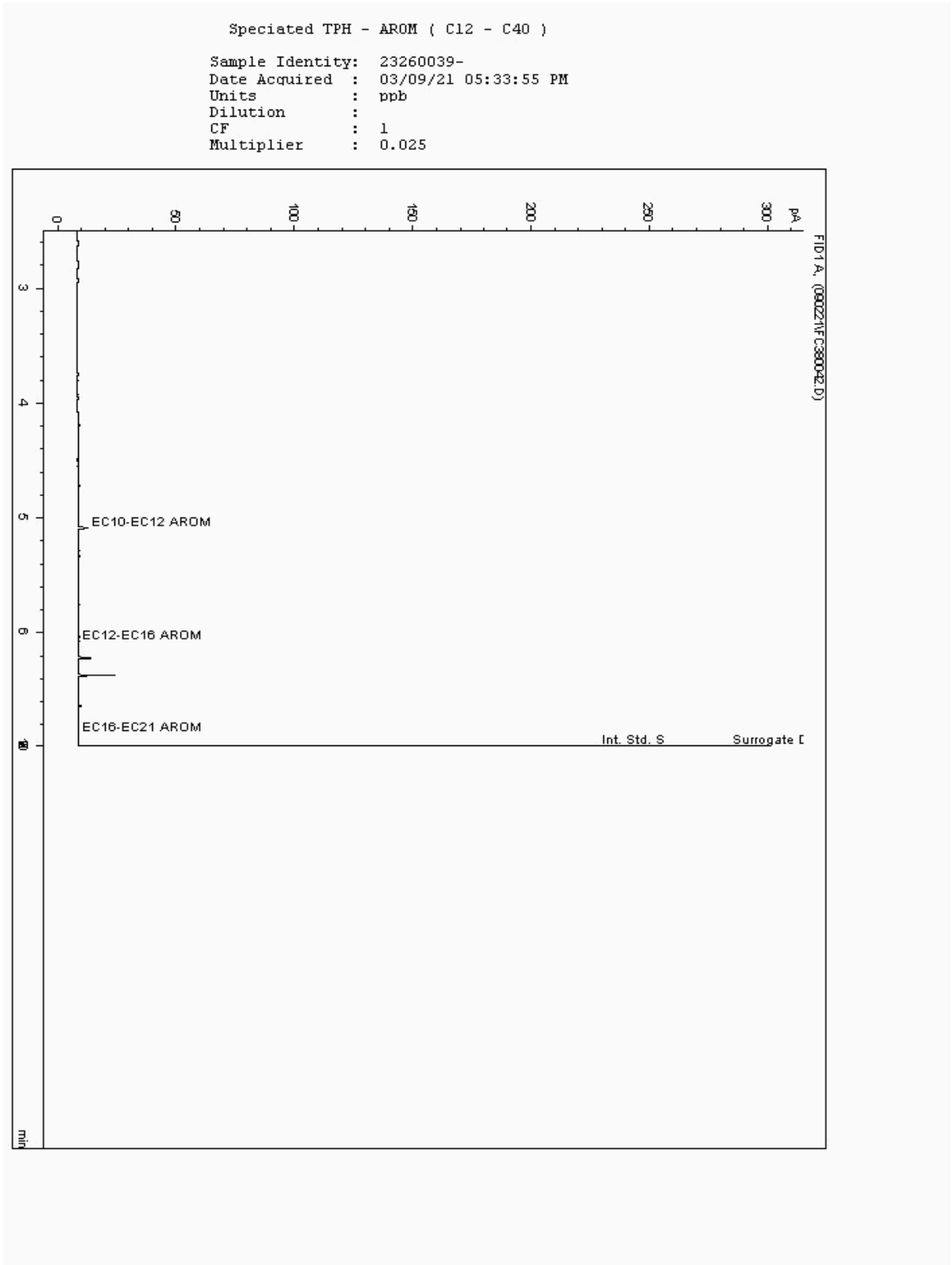


CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24873430 **Depth :** 0.00 - 0.00
Sample ID : WS54



CERTIFICATE OF ANALYSIS

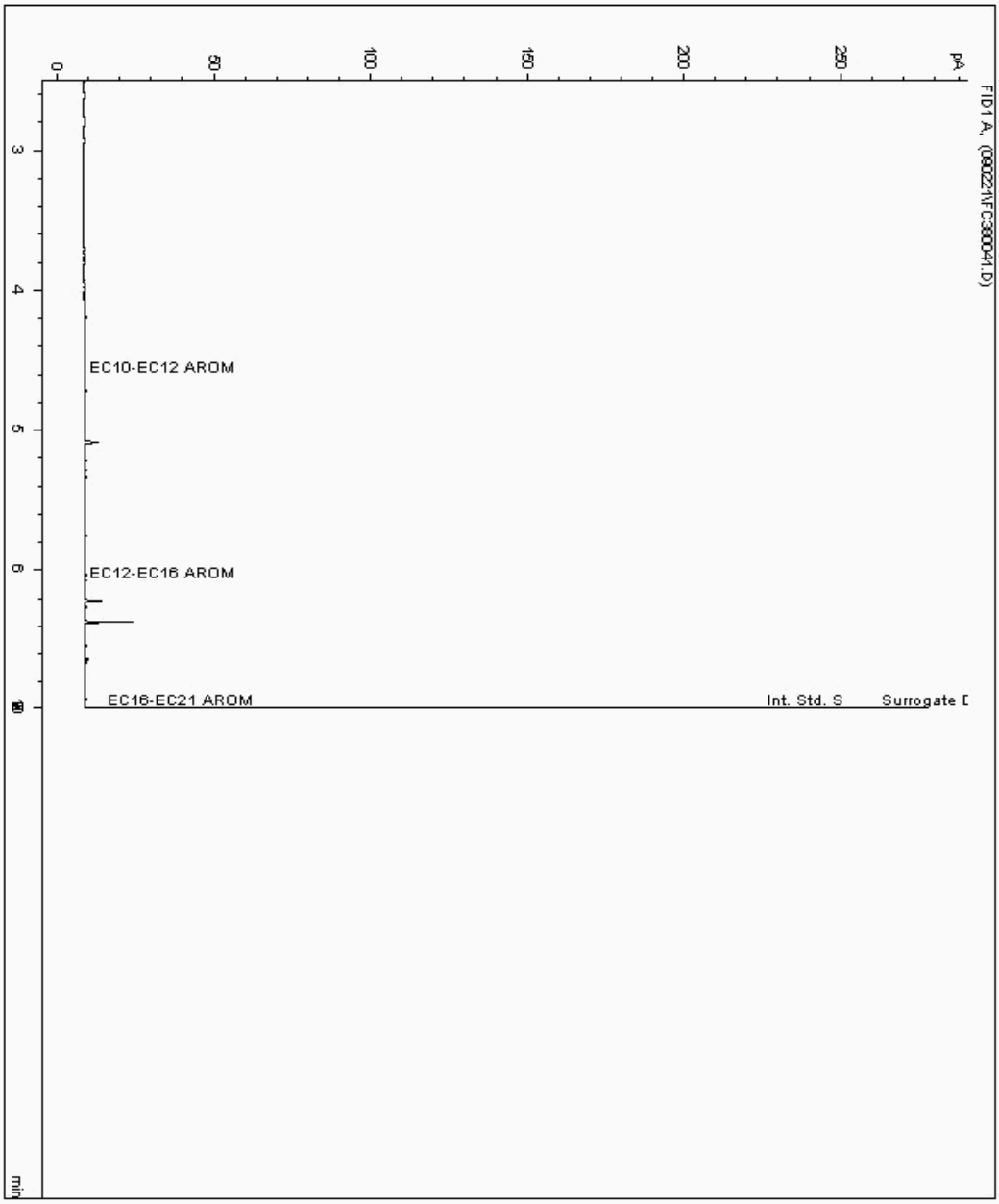
SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24873451 **Depth :** 0.00 - 0.00
Sample ID : BH19

Speciated TPH - AROM (C12 - C40)

Sample Identity: 23260072-
Date Acquired : 03/09/21 05:10:51 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

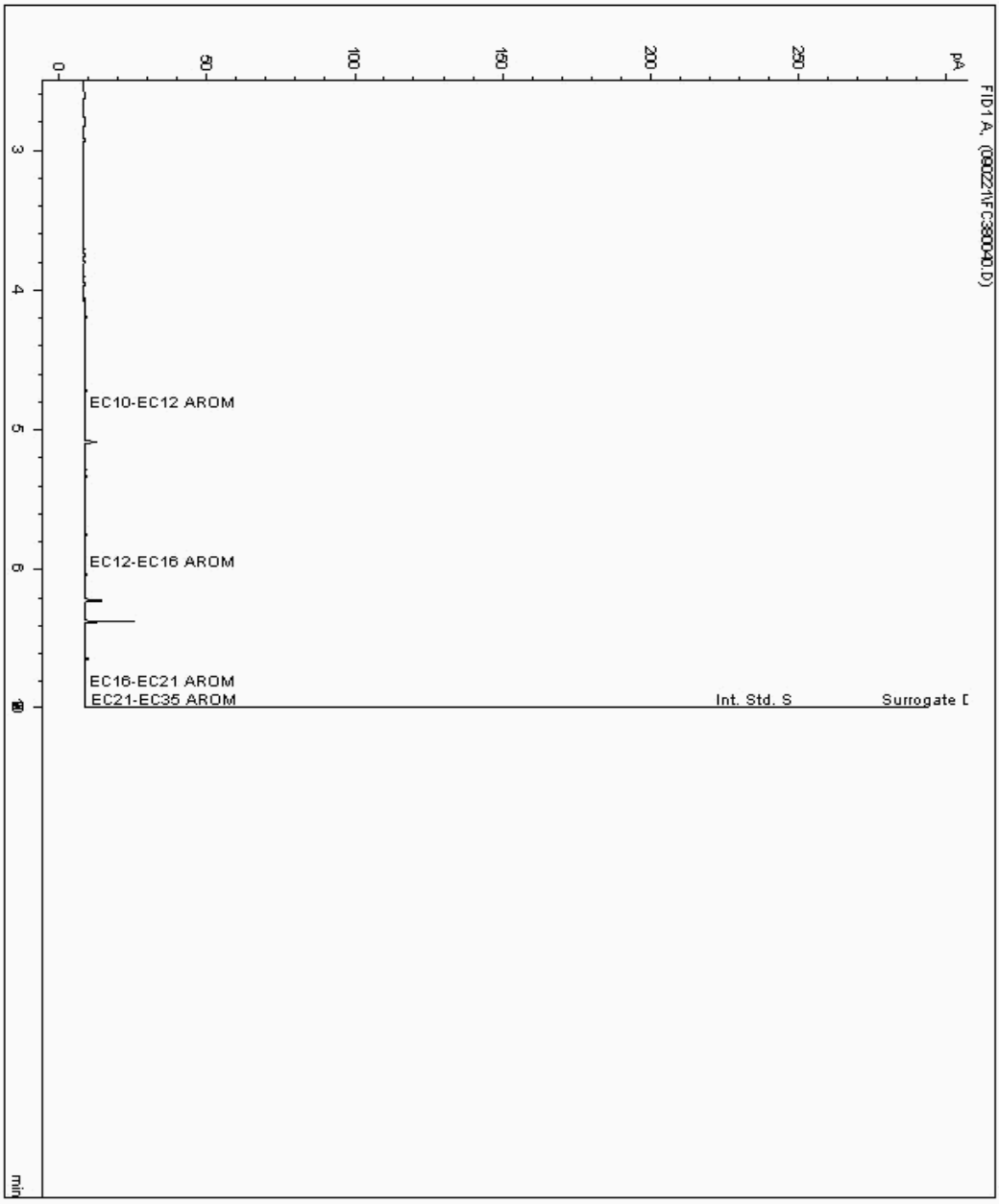
SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24873459 **Depth :** 0.00 - 0.00
Sample ID : BH14

Speciated TPH - AROM (C12 - C40)

Sample Identity: 23259930-
Date Acquired : 03/09/21 04:47:18 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

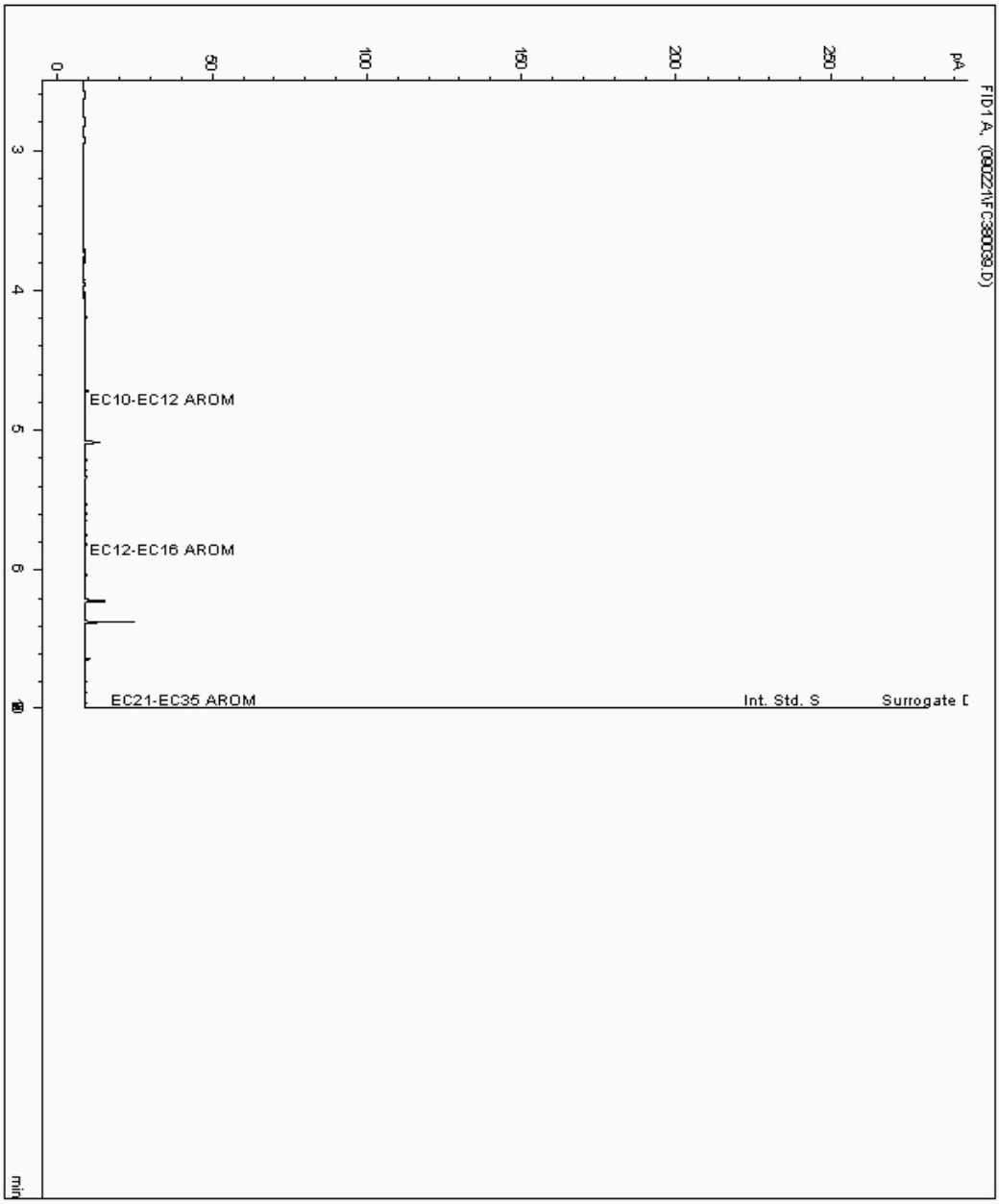
SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24873467 **Depth :** 0.00 - 0.00
Sample ID : WS66

Speciated TPH - AROM (C12 - C40)

Sample Identity: 23260138-
Date Acquired : 03/09/21 04:24:21 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

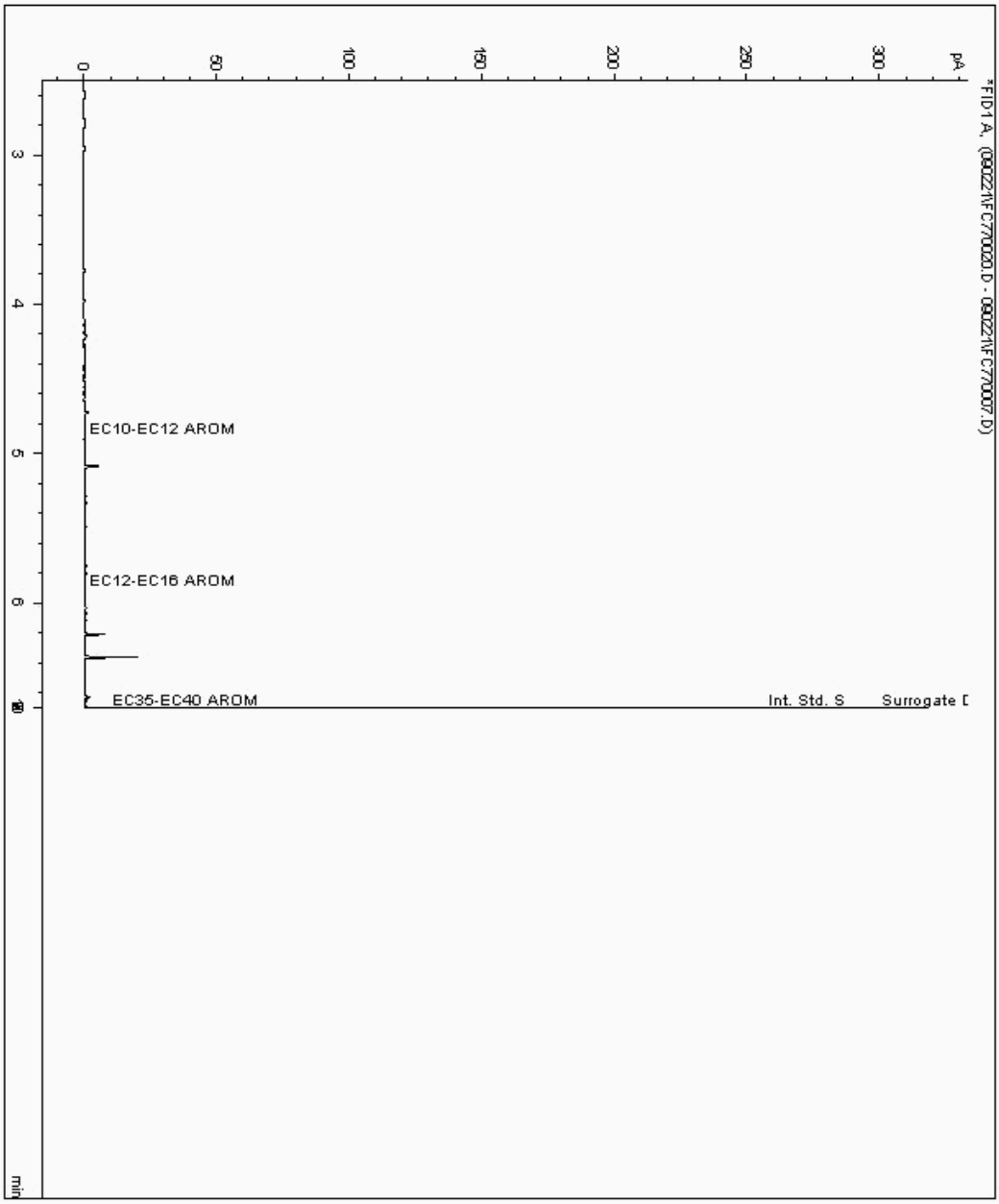
SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24873548 **Depth :** 0.00 - 0.00
Sample ID : WS48

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23259966-
Date Acquired : 9/3/2021 3:54:26 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.050



CERTIFICATE OF ANALYSIS

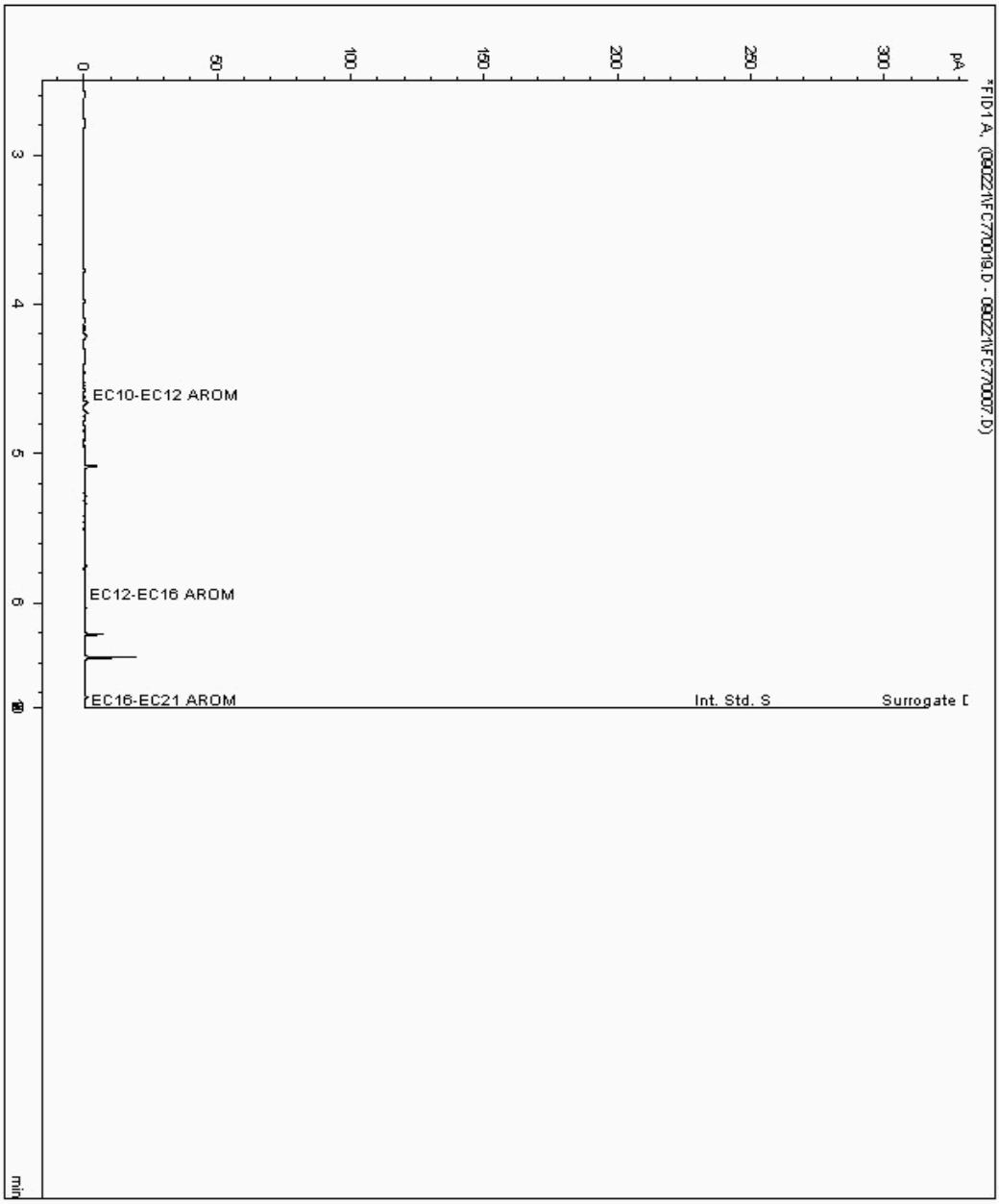
SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24873593 **Depth :** 0.00 - 0.00
Sample ID : WS50

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23259999-
Date Acquired : 9/3/2021 3:30:07 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

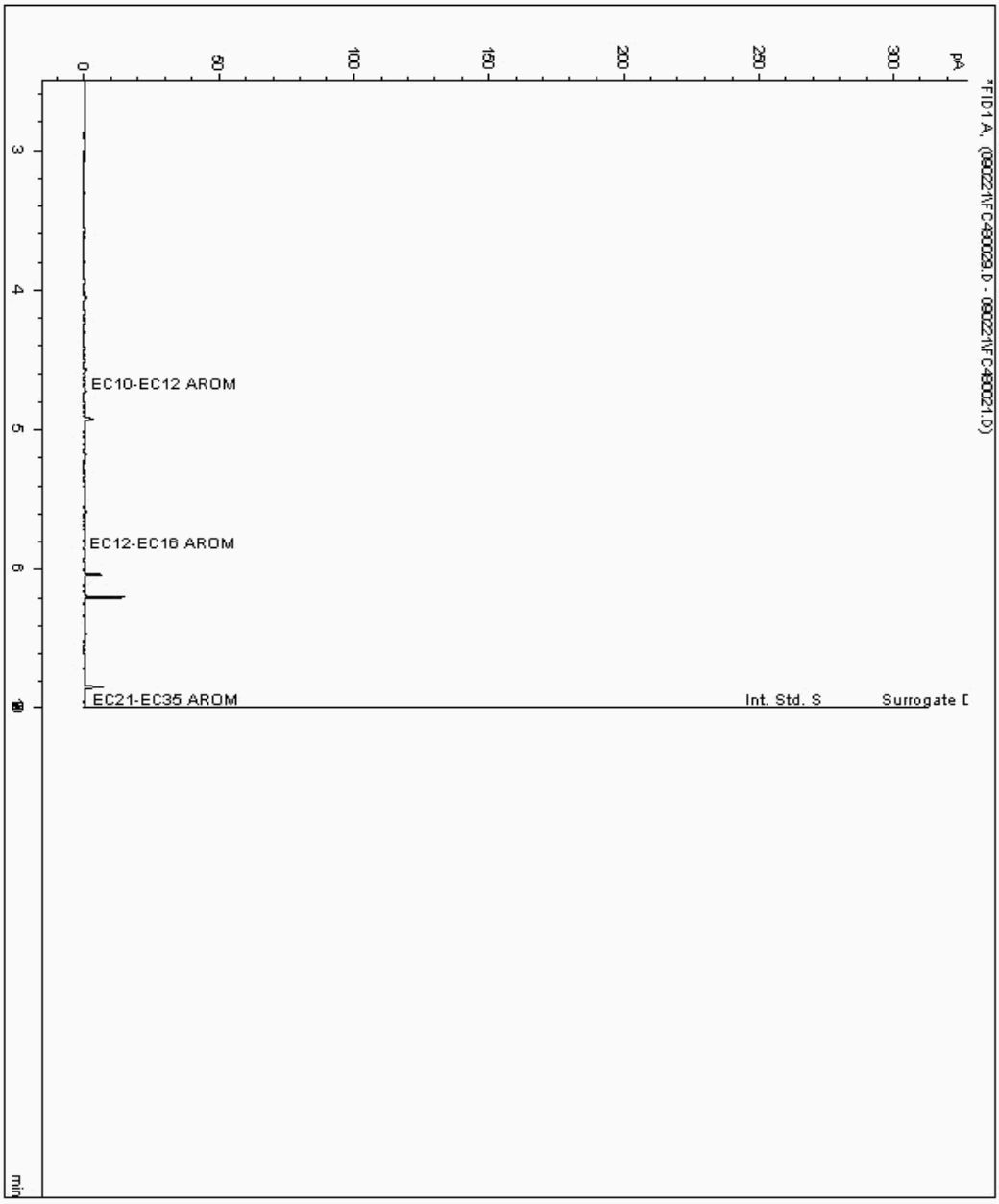
SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24882720 **Depth :** 0.00 - 0.00
Sample ID : BH16

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 23259894-
Date Acquired : 03/09/2021 02:19:44 PM
Units : ppb
Dilution : SE BH16[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

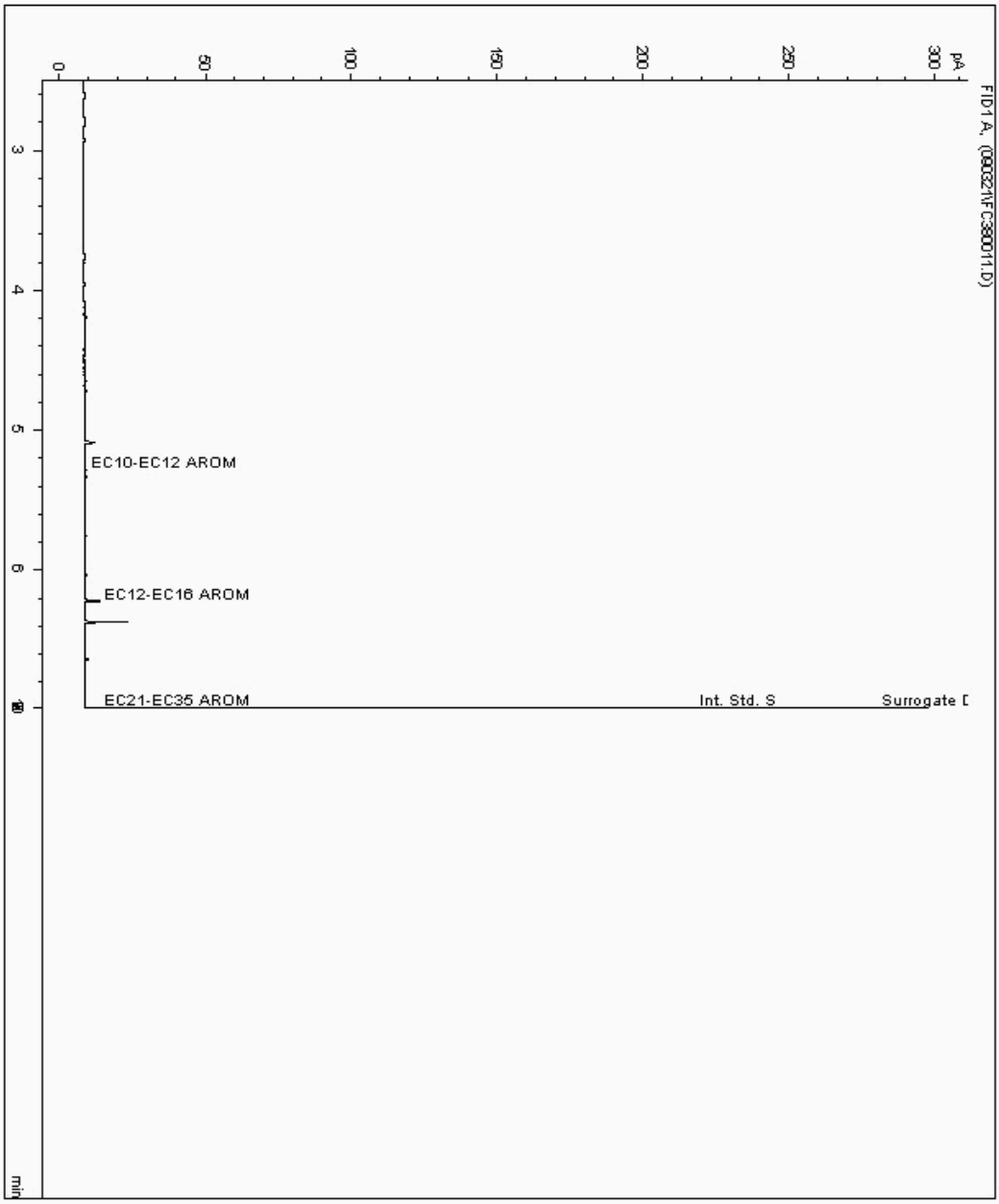
SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24882728 **Depth :** 0.00 - 0.00
Sample ID : BH18

Speciated TPH - AROM (C12 - C40)

Sample Identity: 23259912-
Date Acquired : 03/09/21 14:44:34 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

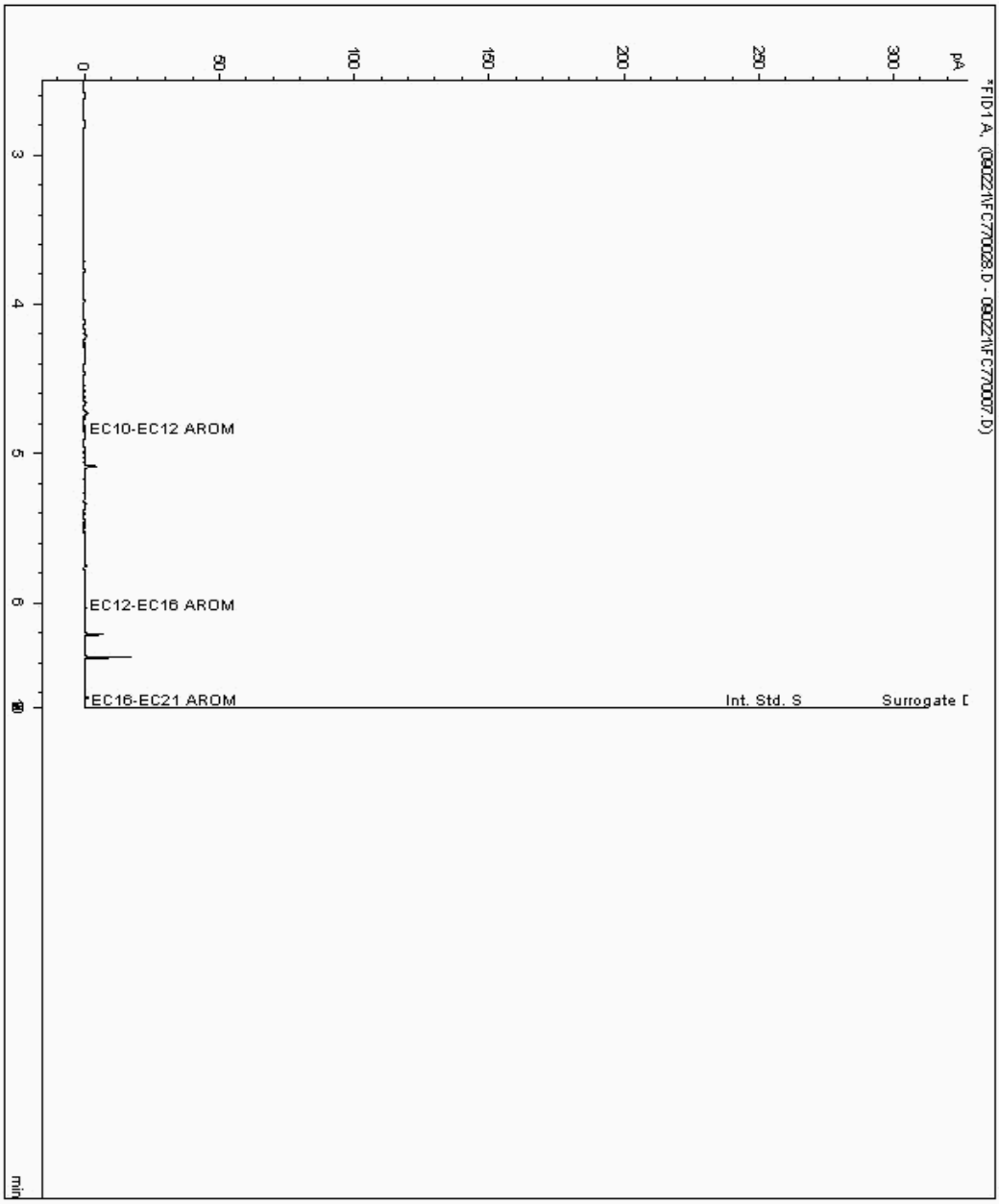
SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24883083 **Depth :** 0.00 - 0.00
Sample ID : BH22

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23260113-
Date Acquired : 9/3/2021 7:06:09 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

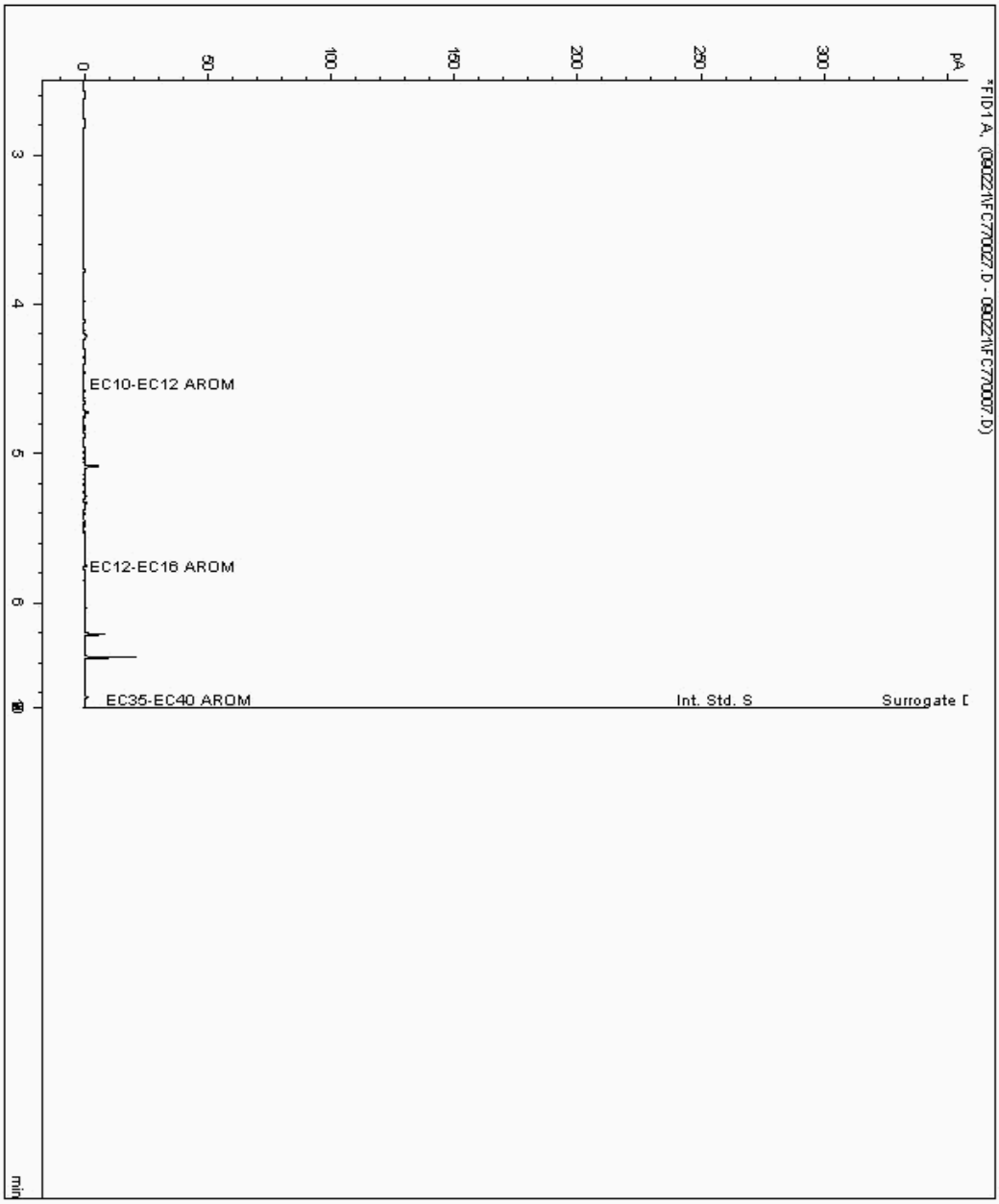
SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24883253 **Depth :** 0.00 - 0.00
Sample ID : BH15

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23259854-
Date Acquired : 9/3/2021 6:42:29 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

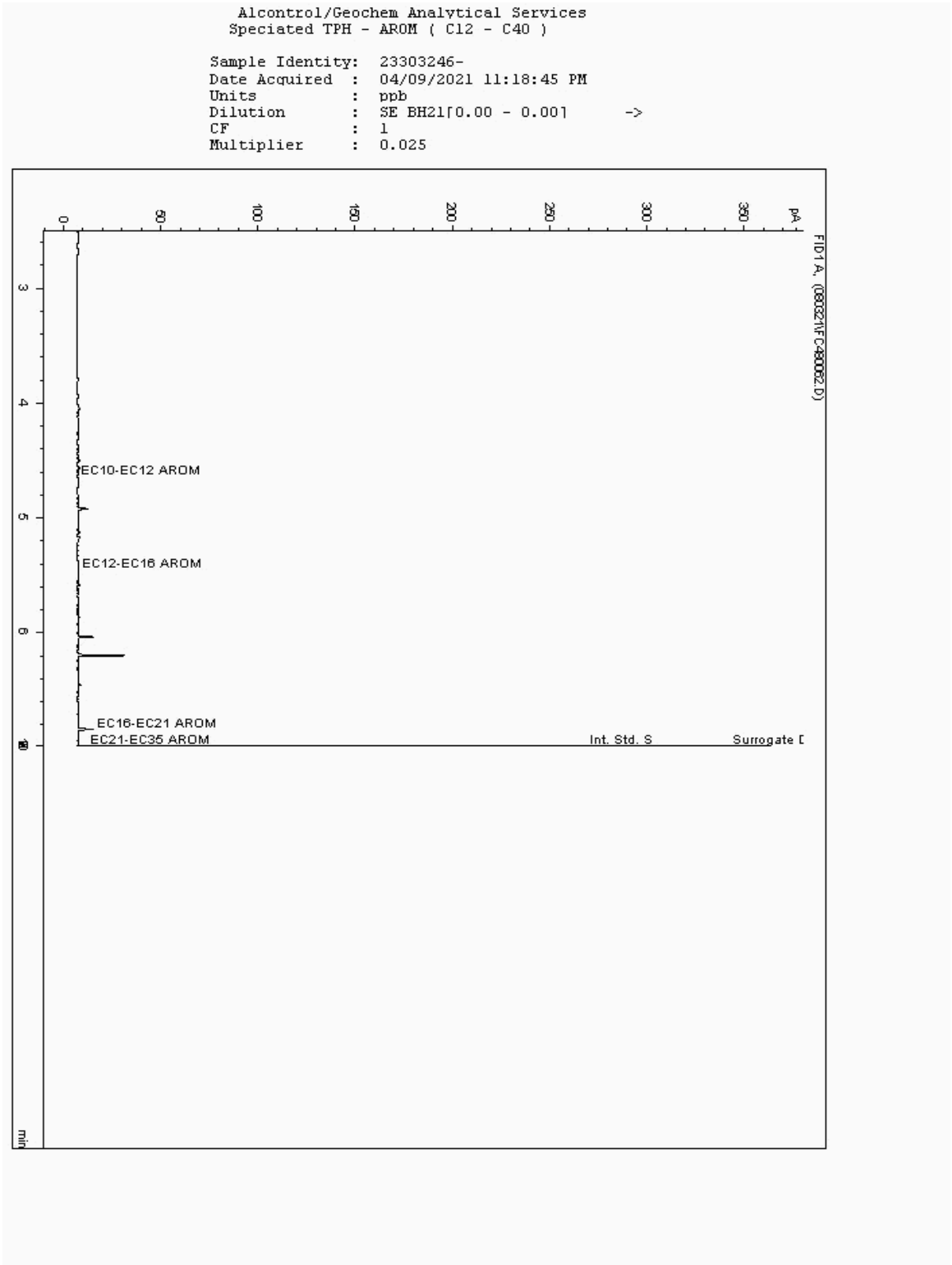


CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24919253 **Depth :** 0.00 - 0.00
Sample ID : BH21



CERTIFICATE OF ANALYSIS

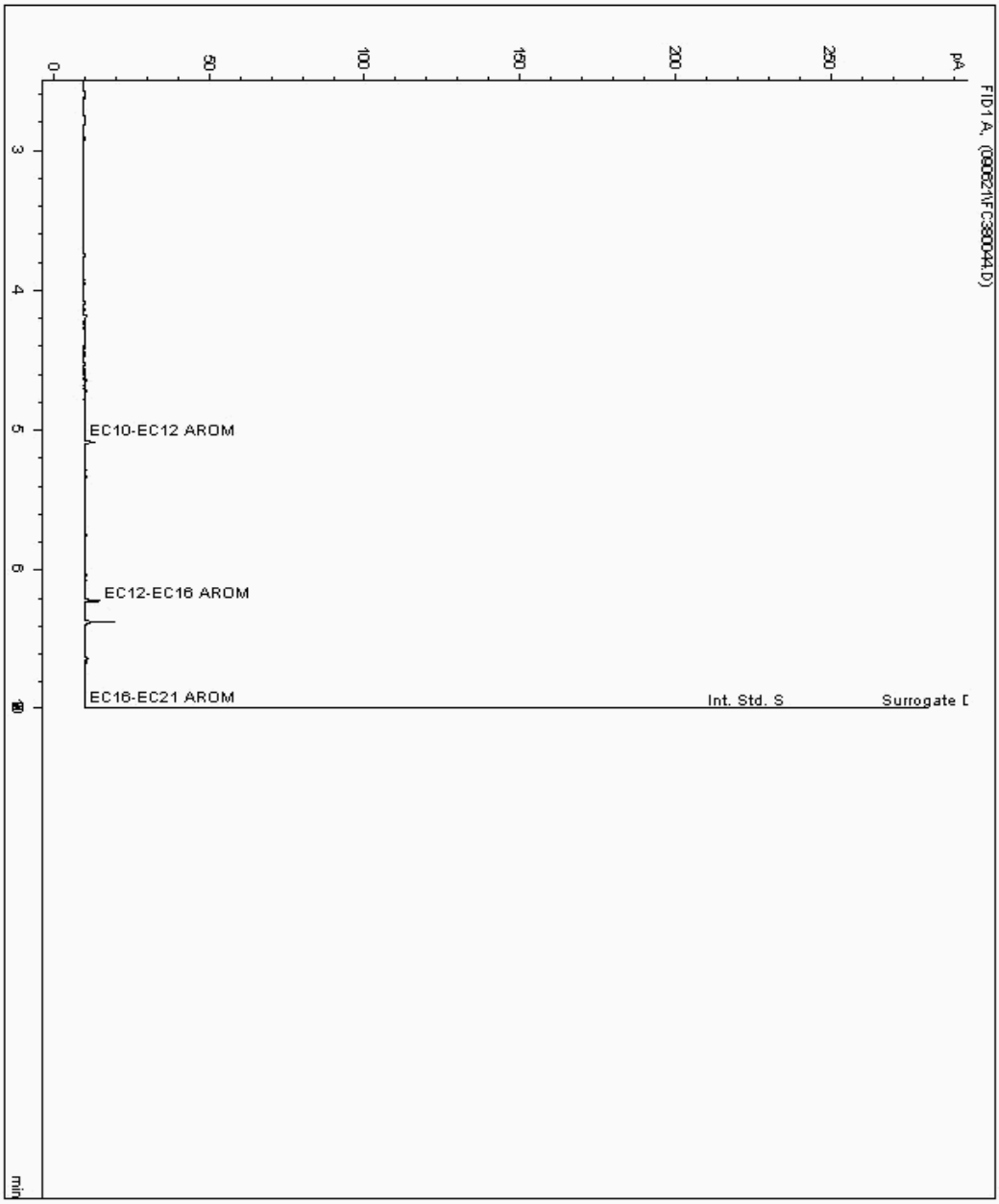
SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24930705 **Depth :** 0.00 - 0.00
Sample ID : BH21

Speciated TPH - AROM (C12 - C40)

Sample Identity: 23304369-
Date Acquired : 07/09/21 11:24:31 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.065

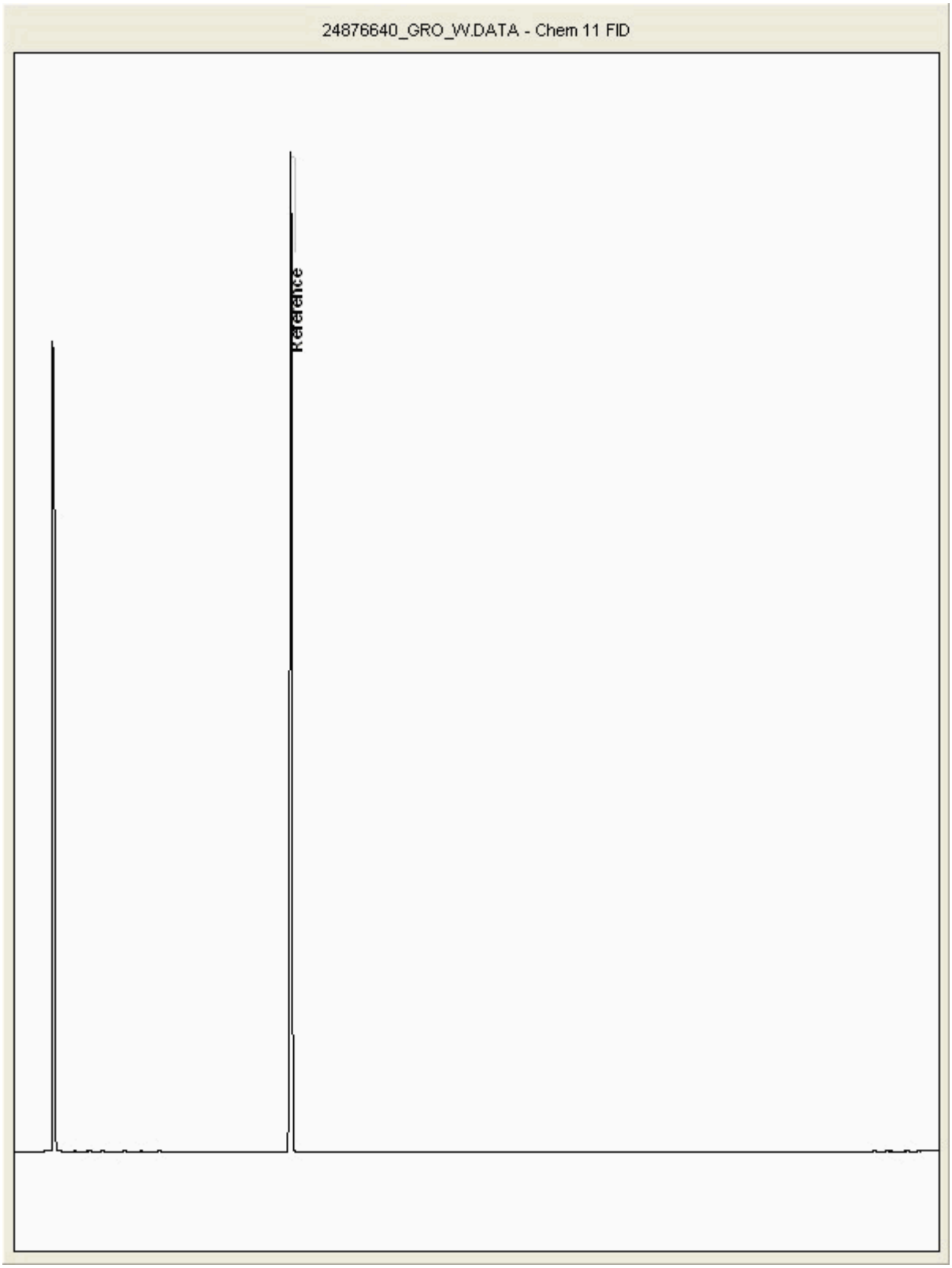


CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 24876640 **Depth :** 0.00 - 0.00
Sample ID : BH18

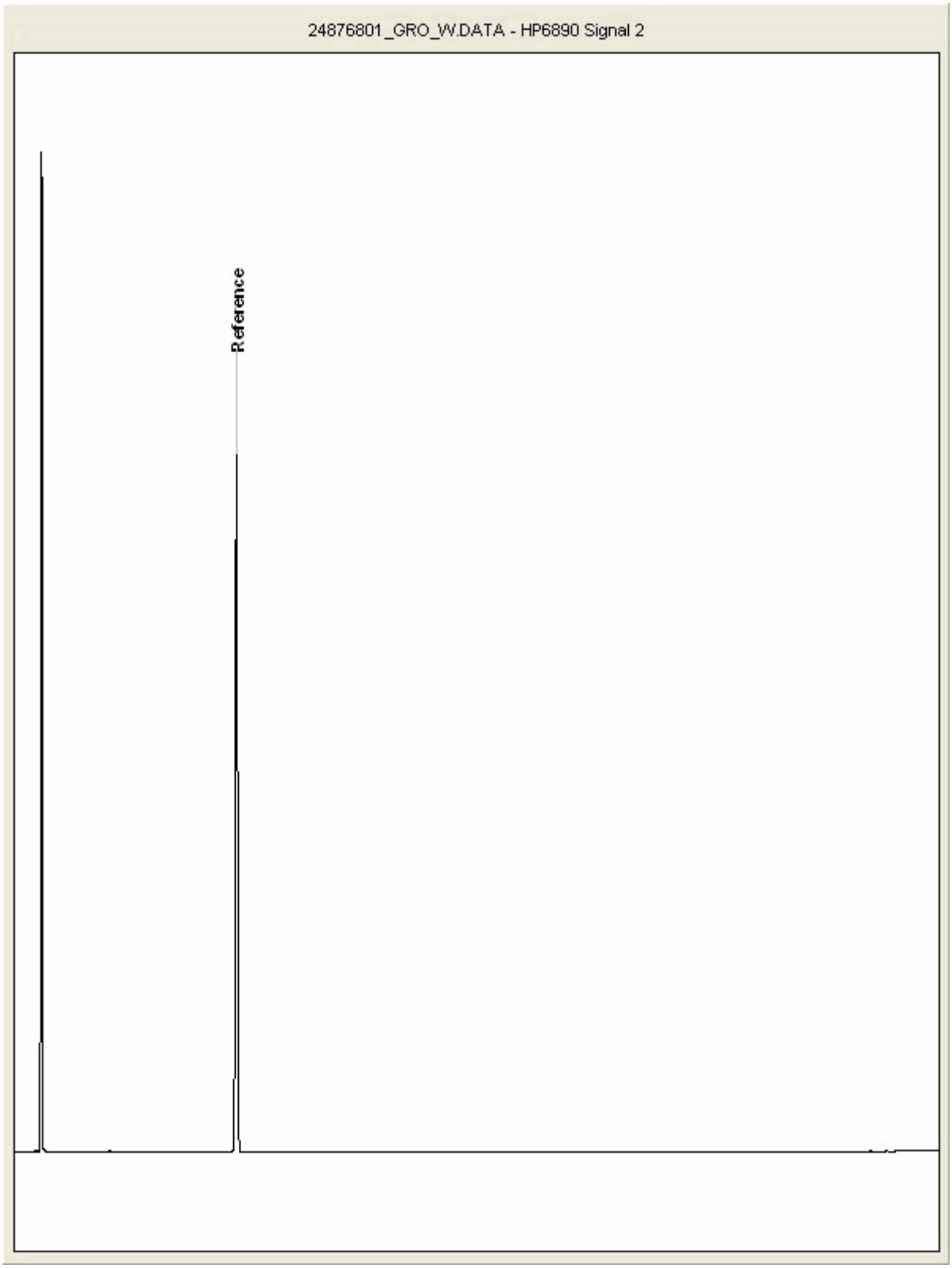


CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 24876801 **Depth :** 0.00 - 0.00
Sample ID : BH22

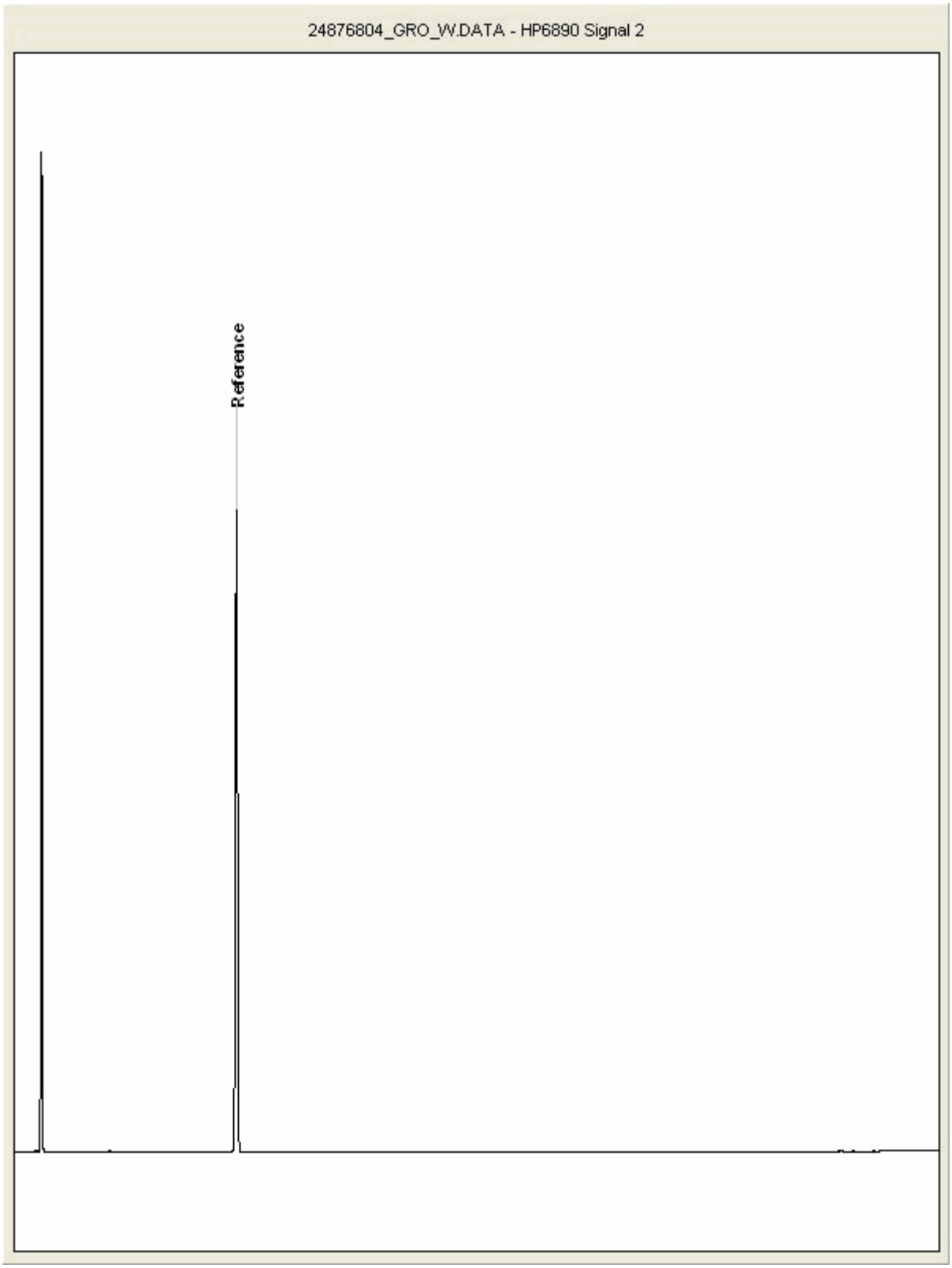


CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 24876804 **Depth :** 0.00 - 0.00
Sample ID : BH14

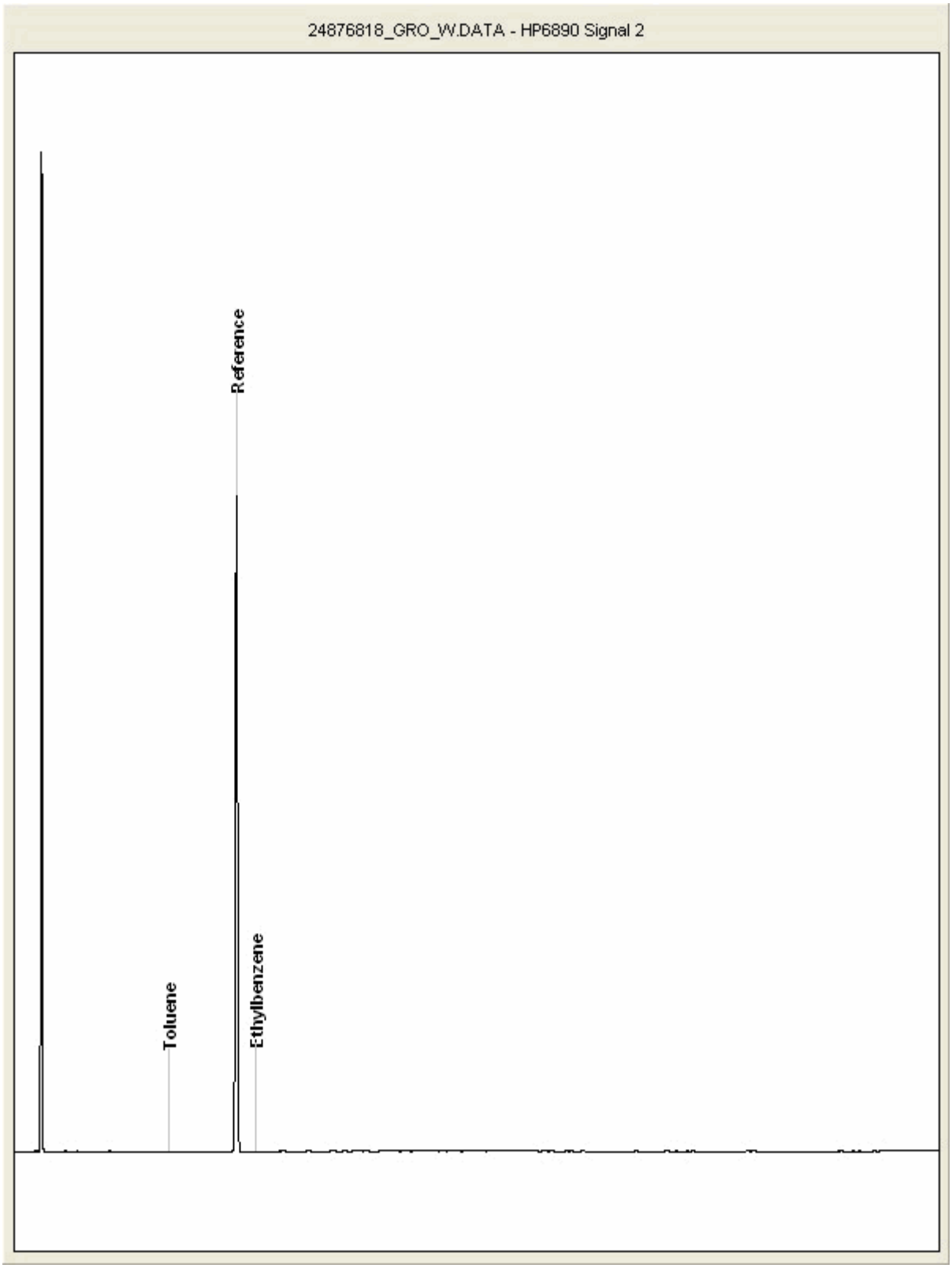


CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 24876818 **Depth :** 0.00 - 0.00
Sample ID : WS66

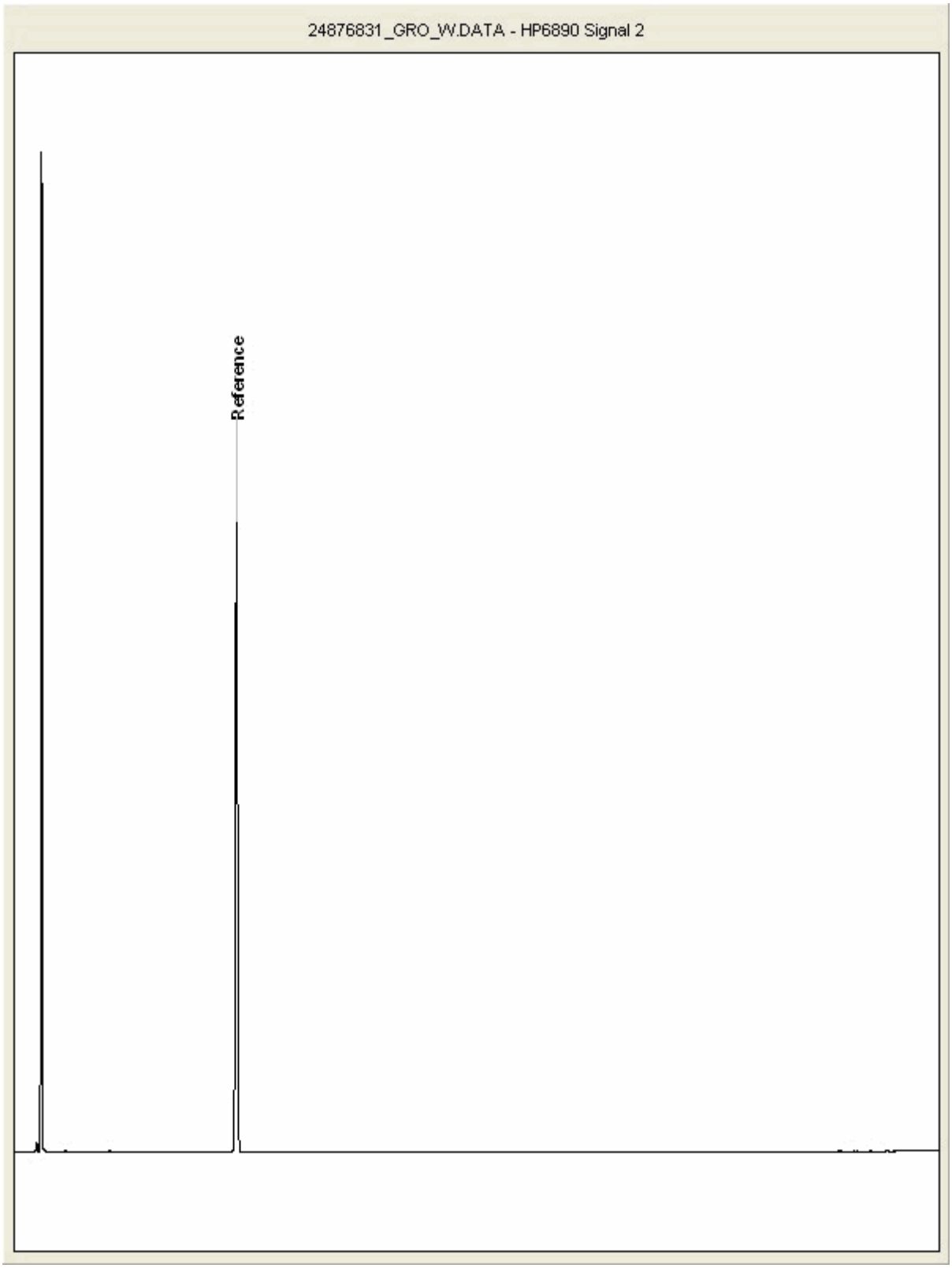


CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 24876831 **Depth :** 0.00 - 0.00
Sample ID : WS54

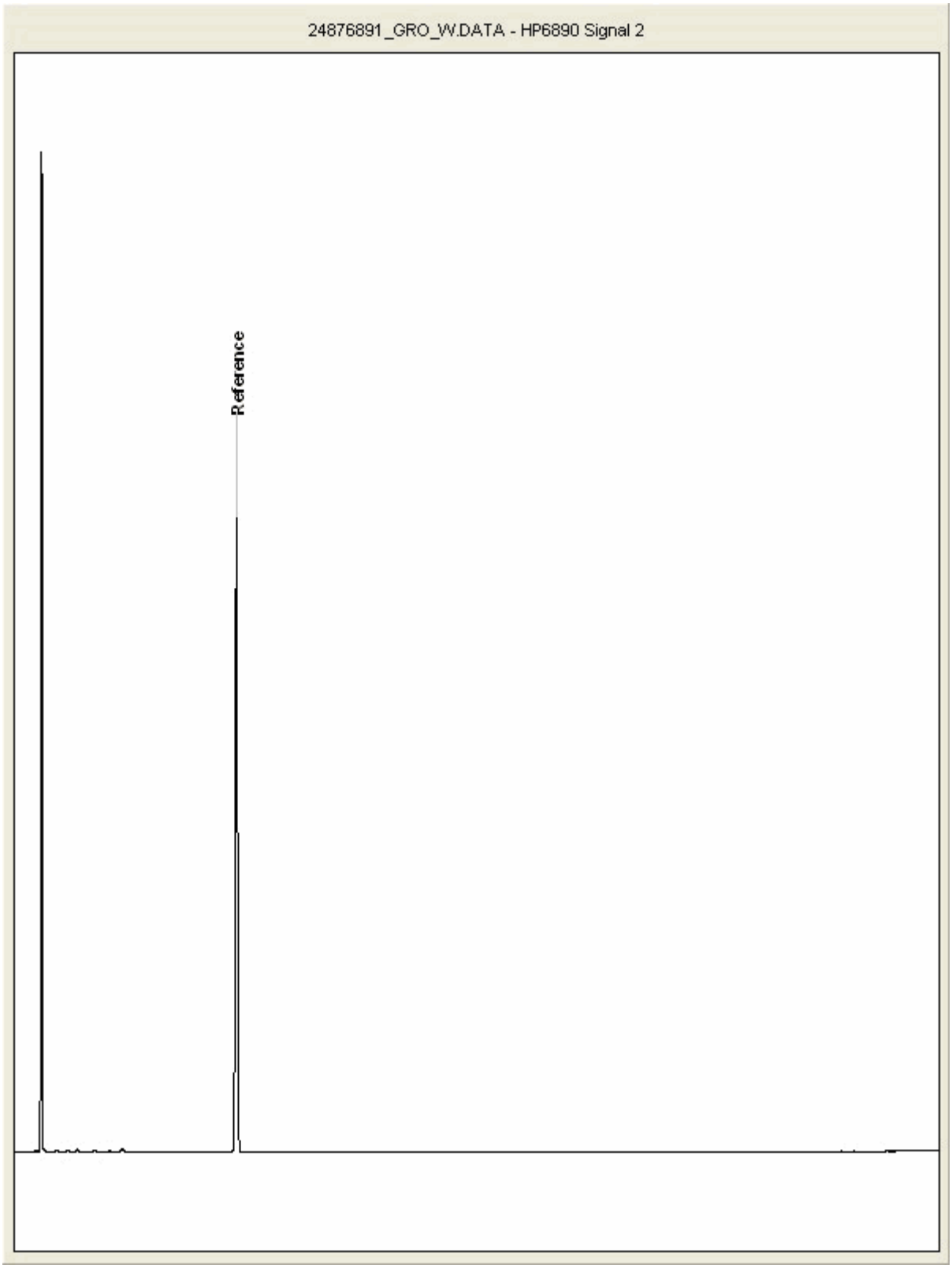


CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 24876891 **Depth :** 0.00 - 0.00
Sample ID : BH16

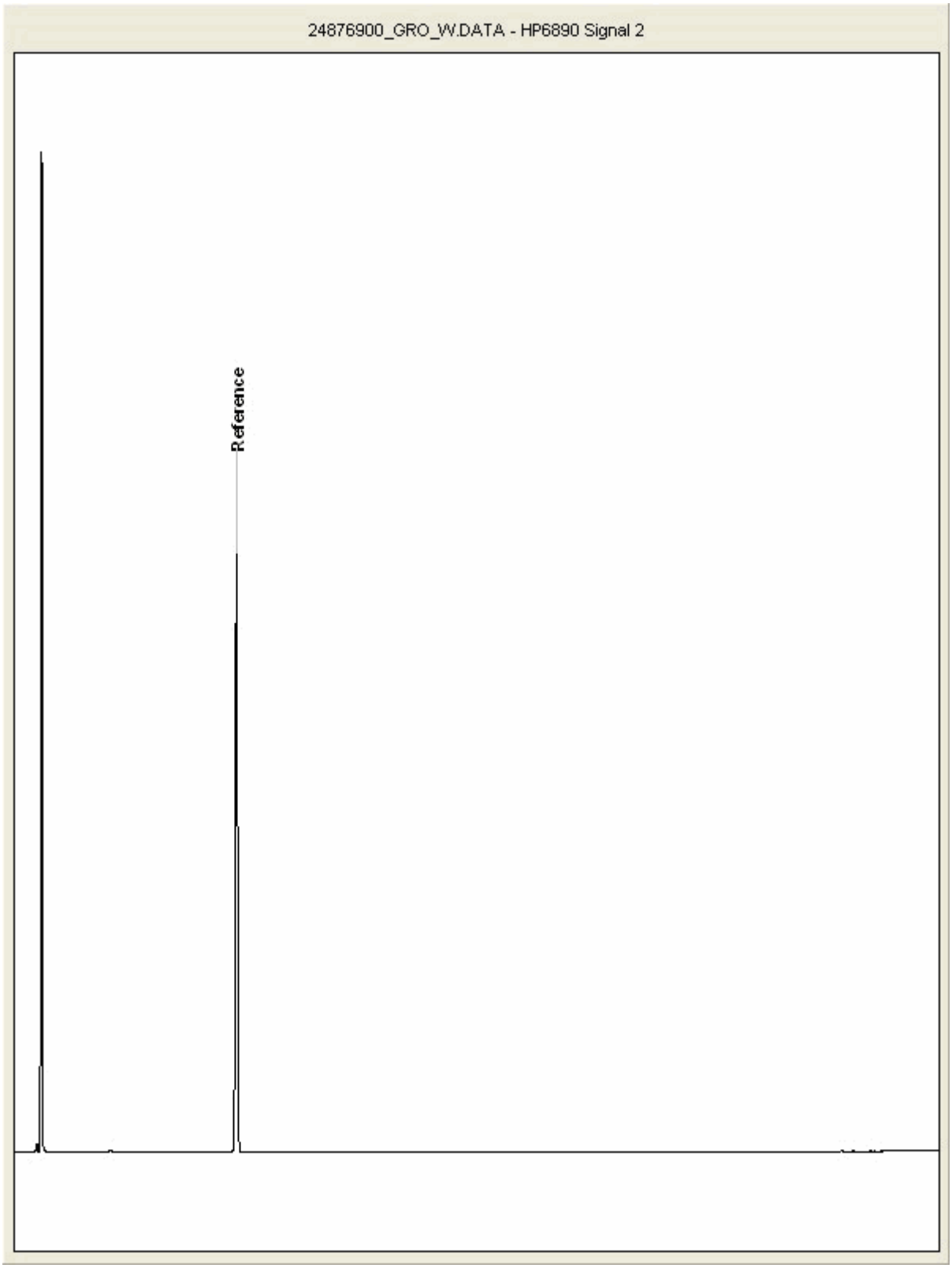


CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 24876900 **Depth :** 0.00 - 0.00
Sample ID : WS50

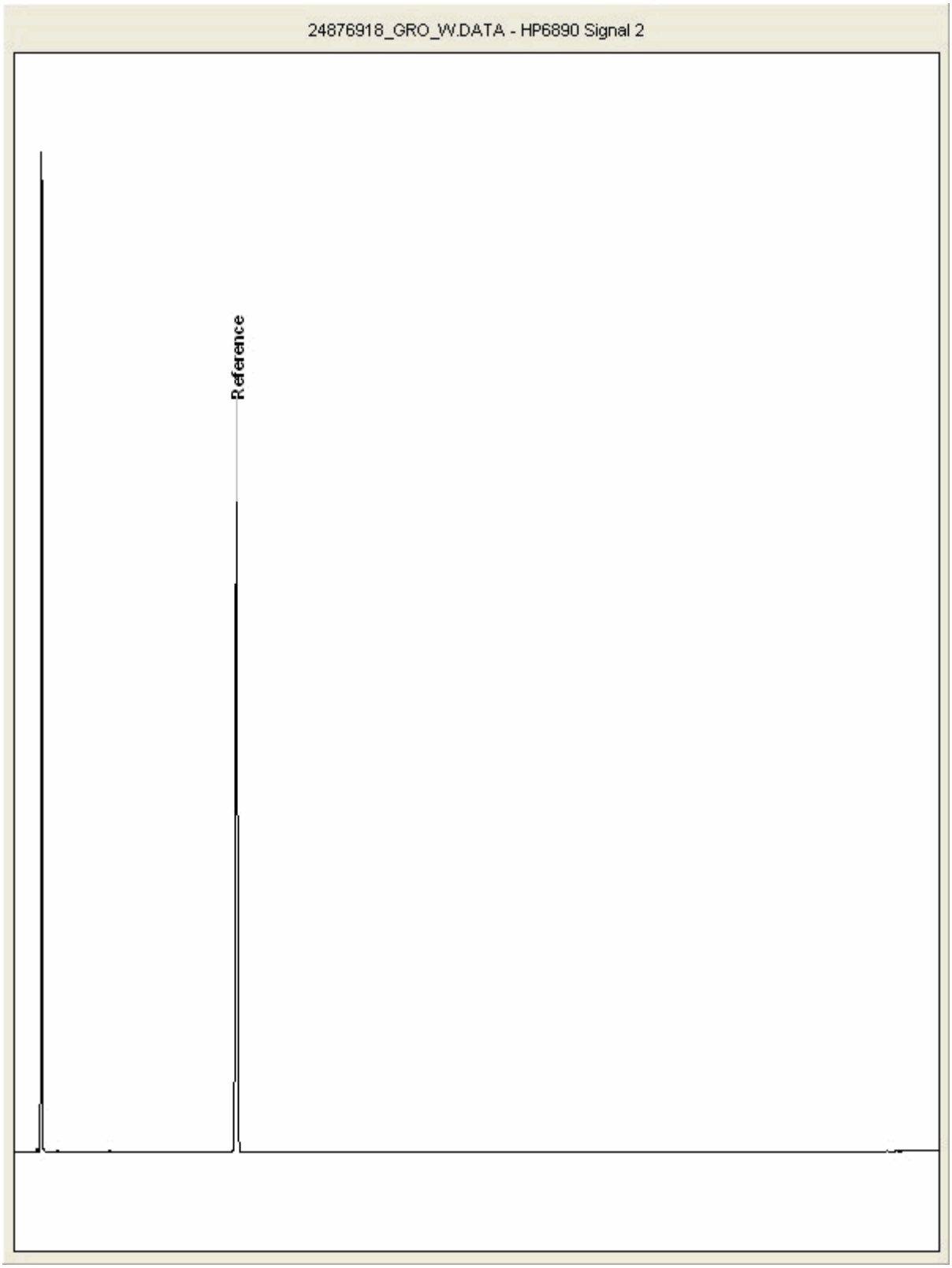


CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 24876918 **Depth :** 0.00 - 0.00
Sample ID : BH15

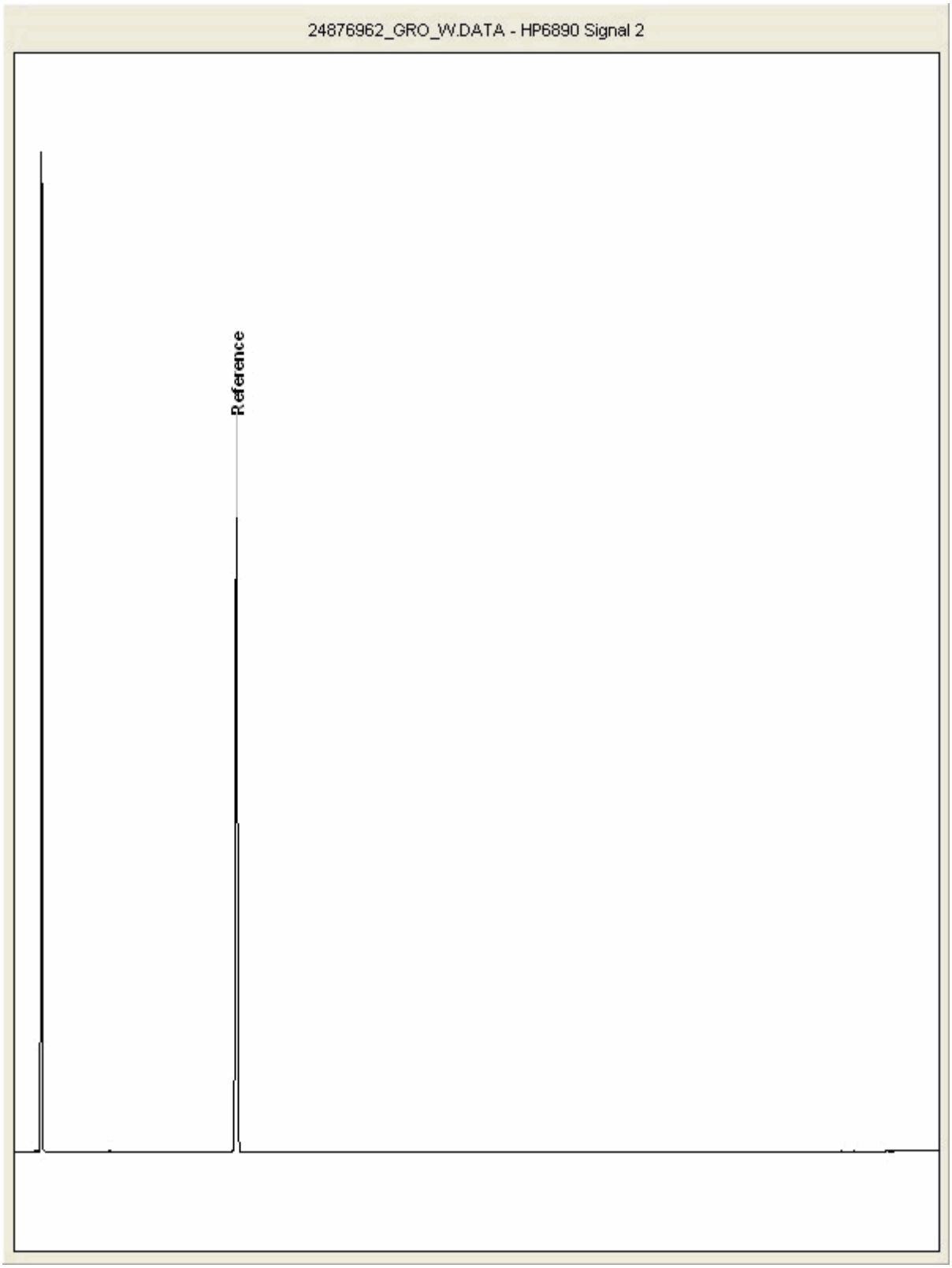


CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 24876962 **Depth :** 0.00 - 0.00
Sample ID : BH21

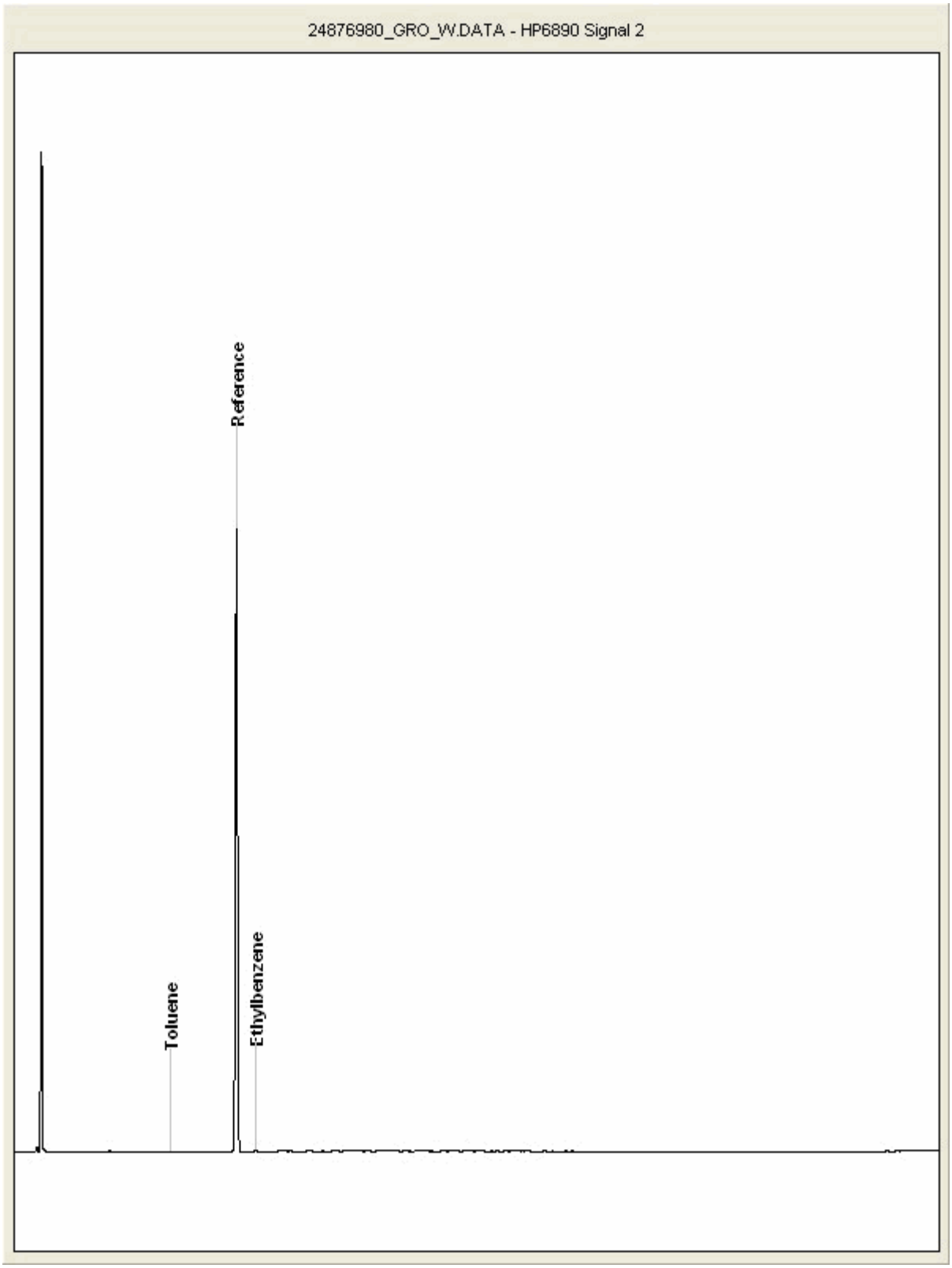


CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 24876980 **Depth :** 0.00 - 0.00
Sample ID : WS48

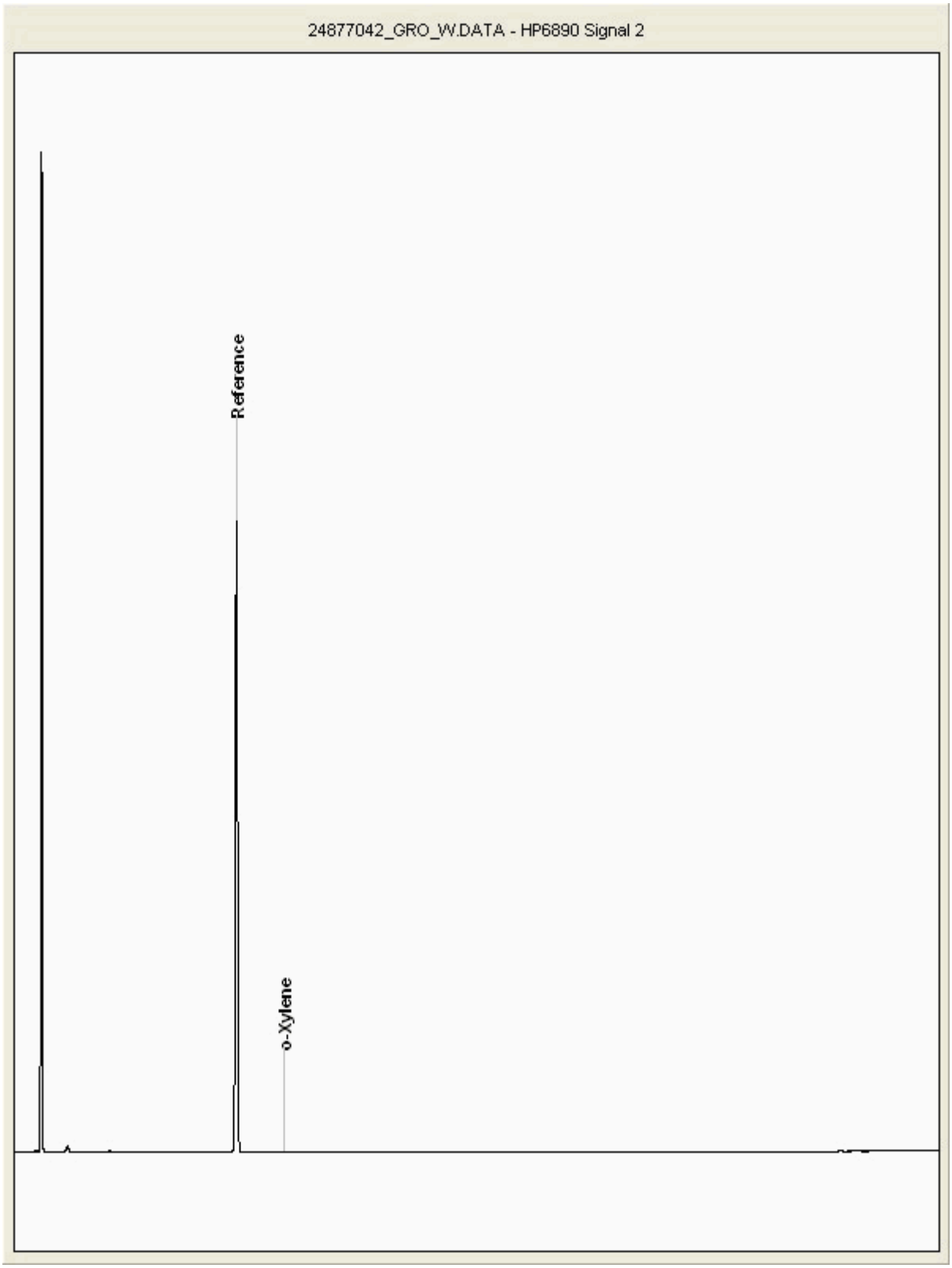


CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 24877042 **Depth :** 0.00 - 0.00
Sample ID : BH19

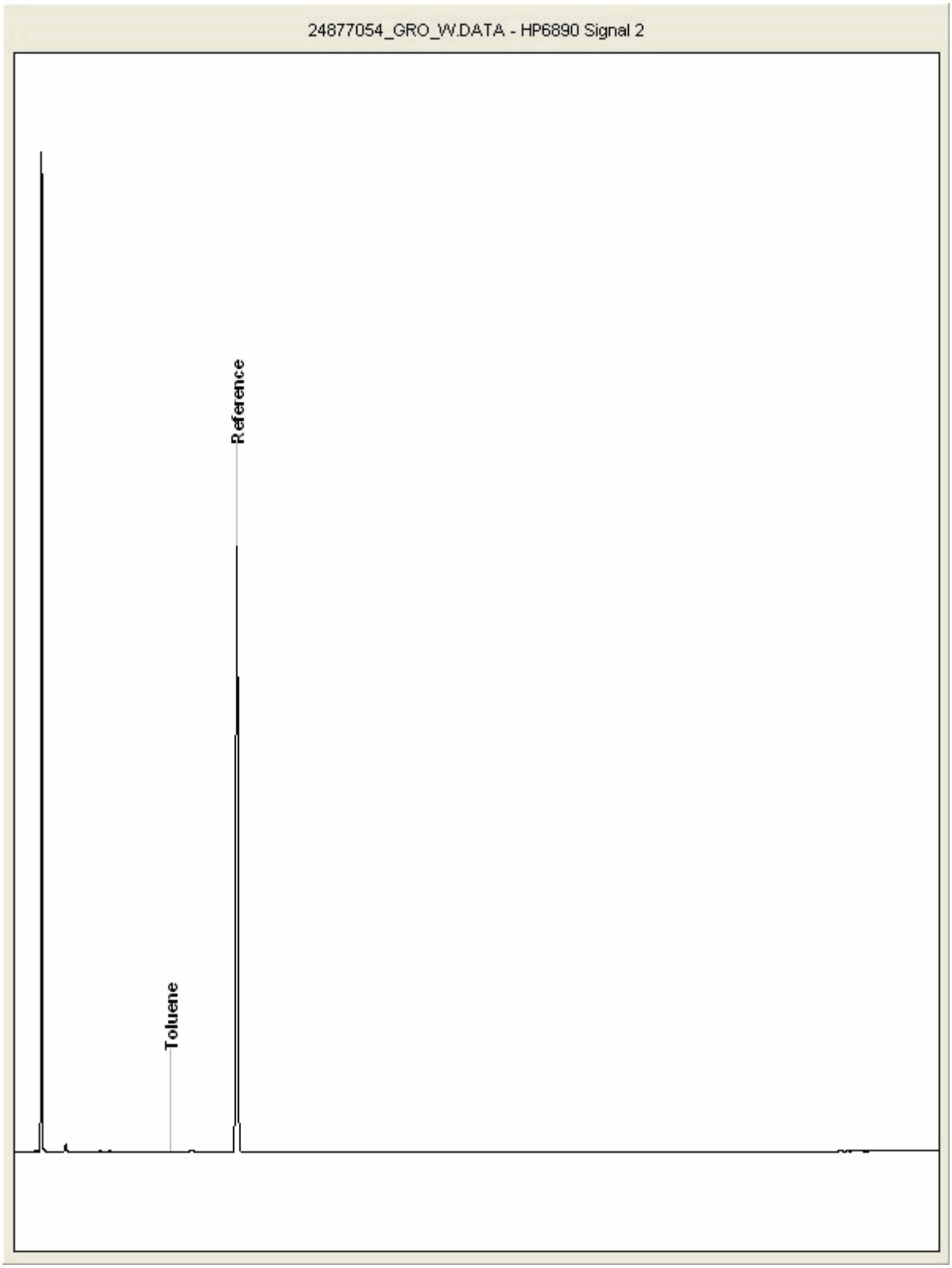


CERTIFICATE OF ANALYSIS

SDG: 210826-45 **Report Number:** 615526 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 24877054 **Depth :** 0.00 - 0.00
Sample ID : BH17



Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	07 September 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210828-19
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	611996

We received 5 samples on Friday August 27, 2021 and 5 of these samples were scheduled for analysis which was completed on Tuesday September 07, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24887373	BH07	ES1	0.00 - 0.00	25/08/2021
24887355	BH09	ES1	0.00 - 0.00	25/08/2021
24887364	BH10	ES1	0.00 - 0.00	25/08/2021
24887382	BH60	ES1	0.00 - 0.00	25/08/2021
24887392	BH61	ES1	0.00 - 0.00	25/08/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)								24887373							24887355							24887364					24887382
Customer Sample Reference								BH07							BH09							BH10					BH60
AGS Reference								ES1							ES1							ES1					ES1
Depth (m)								0.00 - 0.00							0.00 - 0.00							0.00 - 0.00					0.00 - 0.00
Container								0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)		0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)		0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	
Sample Type								GW	GW	GW	GW	GW	GW		GW	GW	GW	GW	GW	GW		GW	GW	GW	GW	GW	GW	
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 2								X																	
Ammonium Low	All	NDPs: 0 Tests: 5			X						X							X						X			X
Anions by Kone (w)	All	NDPs: 0 Tests: 5		X						X						X							X				
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 5					X								X					X							
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 5				X					X								X								
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 5	X						X						X							X					
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 5	X						X						X							X					
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 5	X						X						X							X					
GRO by GC-FID (W)	All	NDPs: 0 Tests: 5						X						X							X						
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 5		X						X						X							X				
Mercury Dissolved	All	NDPs: 0 Tests: 5				X					X								X								
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 5	X						X						X							X					
Pesticides (Suite I) by GCMS	All	NDPs: 0 Tests: 2								X																	
Pesticides (Suite II) by GCMS	All	NDPs: 0 Tests: 2								X																	
pH Value	All	NDPs: 0 Tests: 5		X						X						X							X				

	24887392								
	BH61								
	ES1								
	0.00 - 0.00								
	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)
	GW	GW	GW	GW	GW	GW	GW	GW	GW
						X			
				X					
					X				
		X						X	
			X						X
						X			
						X			
						X			
	X						X		
			X						X
						X			
						X			
						X			
					X				

CERTIFICATE OF ANALYSIS

SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)								24887373							24887355							24887364							24887382						
Customer Sample Reference								BH07							BH09							BH10							BH60						
AGS Reference								ES1							ES1							ES1							ES1						
Depth (m)								0.00 - 0.00							0.00 - 0.00							0.00 - 0.00							0.00 - 0.00						
Container								0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)						
Sample Type								GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW						
Phenols by HPLC (W)	All	NDPs: 0 Tests: 5			X					X						X				X								X						
Sulphide	All	NDPs: 0 Tests: 5		X						X						X				X								X						
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 1																																
Total Metals by ICP-MS	All	NDPs: 0 Tests: 5		X						X						X				X								X						
TPH CWG (W)	All	NDPs: 0 Tests: 5	X						X						X					X						X								
VOC MS (W)	All	NDPs: 0 Tests: 1																																

									24887392
								BH61	
							ES1		
						0.00 - 0.00			
GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	
X			X						
				X					
				X					
				X					
					X				
X									

CERTIFICATE OF ANALYSIS

SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	BH07	BH09	BH10	BH60	BH61
Customer Sample Ref.			BH07	BH09	BH10	BH60	BH61
Depth (m)			0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Sample Type			Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
Date Sampled			25/08/2021	25/08/2021	25/08/2021	25/08/2021	25/08/2021
Sampled Time			.	.	.	.	.
Date Received			27/08/2021	27/08/2021	27/08/2021	27/08/2021	27/08/2021
SDG Ref			210828-19	210828-19	210828-19	210828-19	210828-19
Lab Sample No.(s)			24887373	24887355	24887364	24887382	24887392
AGS Reference			ES1	ES1	ES1	ES1	ES1
Carbon, Organic (diss.filt)	<3 mg/l	TM090	5.97	4.59	6.24	6.2	6.81
Ammoniacal Nitrogen as N (low level)	<0.01 mg/l	TM099	0.135 #	0.055 #	0.122 #	0.099 #	0.104 #
Ammoniacal Nitrogen Low as NH4	<0.01 mg/l	TM099	0.174 #	0.0707 #	0.157 #	0.127 #	0.134 #
Sulphide	<0.01 mg/l	TM101	<0.01 2 #	0.183 2 #	0.224 2 #	<0.01 2 #	<0.01 2 #
Arsenic (diss.filt)	<0.5 µg/l	TM152	0.786 #	29.4 #	12 #	1.79 #	3.75 #
Boron (diss.filt)	<10 µg/l	TM152	145 #	137 #	192 #	121 #	143 #
Cadmium (diss.filt)	<0.08 µg/l	TM152	0.536 #	0.18 #	0.175 #	<0.08 #	1.03 #
Chromium (diss.filt)	<1 µg/l	TM152	<1 #	<1 #	<1 #	<1 #	<1 #
Copper (diss.filt)	<0.3 µg/l	TM152	1.84 #	1.47 #	2.02 #	0.521 #	3.85 #
Lead (diss.filt)	<0.2 µg/l	TM152	0.598 #	<0.2 #	0.444 #	0.331 #	3.18 #
Manganese (diss.filt)	<3 µg/l	TM152	414 #	712 #	302 #	2800 #	1310 #
Nickel (diss.filt)	<0.4 µg/l	TM152	15.2 #	3.13 #	3.05 #	5.83 #	129 #
Selenium (diss.filt)	<1 µg/l	TM152	<1 #	<1 #	1.19 #	<1 #	<1 #
Vanadium (diss.filt)	<1 µg/l	TM152	<1 #	11.6 #	2.39 #	<1 #	<1 #
Zinc (diss.filt)	<1 µg/l	TM152	14.6 #	4.06 #	3.38 #	13.2 #	64.5 #
Calcium (Dis.Filt)	<0.2 mg/l	TM152	191 #	126 #	289 #	149 #	153 #
Iron (Dis.Filt)	<0.019 mg/l	TM152	0.193 #	<0.019 #	<0.019 #	2.21 #	3.27 #
Hardness, Total as CaCO3 unfiltered	<0.35 mg/l	TM152	668 2	986 2	1470 2	565 2	758 2
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #
Sulphate	<2 mg/l	TM184	462 #	189 #	805 #	114 #	325 #
Nitrate as NO3	<0.3 mg/l	TM184	<0.3	19.4	17.2	<0.3	<0.3
Cyanide, Total	<0.05 mg/l	TM227	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
Cyanide, Free	<0.05 mg/l	TM227	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
Chromium, Hexavalent	<0.03 mg/l	TM241	<0.03 #	<0.03 #	<0.03 #	<0.03 #	<0.03 #
pH	<1 pH Units	TM256	7.52 #	7.71 #	7.67 #	6.89 #	6.75 #
Phenol	<0.002 mg/l	TM259	<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 #
Cresols	<0.006 mg/l	TM259	<0.006 #	<0.006 #	<0.006 #	<0.006 #	<0.006 #
Xylenols	<0.008 mg/l	TM259	<0.008 #	<0.008 #	<0.008 #	<0.008 #	<0.008 #
Phenols, Total Detected monohydric	<0.016 mg/l	TM259	<0.016 #	<0.016 #	<0.016 #	<0.016 #	<0.016 #
Trifluralin	<0.01 µg/l	TM343		<0.01			<0.01
alpha-HCH	<0.01 µg/l	TM343		<0.01			<0.01
gamma-HCH (Lindane)	<0.01 µg/l	TM343		<0.01			<0.01

CERTIFICATE OF ANALYSIS

SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH07	BH09	BH10	BH60	BH61
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	25/08/2021	25/08/2021	25/08/2021	25/08/2021	25/08/2021
			Sampled Time	.	.	.	.	.
			Date Received	27/08/2021	27/08/2021	27/08/2021	27/08/2021	27/08/2021
			SDG Ref	210828-19	210828-19	210828-19	210828-19	210828-19
			Lab Sample No.(s)	24887373	24887355	24887364	24887382	24887392
			AGS Reference	ES1	ES1	ES1	ES1	ES1
Heptachlor	<0.01 µg/l	TM343			<0.01			<0.01
Aldrin	<0.01 µg/l	TM343			<0.01			<0.01
beta-HCH	<0.01 µg/l	TM343			<0.01			<0.01
Isodrin	<0.01 µg/l	TM343			<0.01			<0.01
delta-HCH	<0.01 µg/l	TM343			<0.01			<0.01
Heptachlor epoxide	<0.01 µg/l	TM343			<0.01			<0.01
o,p'-DDE	<0.01 µg/l	TM343			<0.01			<0.01
Endosulphan I	<0.01 µg/l	TM343			<0.01			<0.01
trans-Chlordane	<0.01 µg/l	TM343			<0.01			<0.01
cis-Chlordane	<0.01 µg/l	TM343			<0.01			<0.01
p,p'-DDE	<0.01 µg/l	TM343			<0.01			<0.01
Dieldrin	<0.01 µg/l	TM343			<0.01			<0.01
o,p'-DDD (TDE)	<0.01 µg/l	TM343			<0.01			<0.01
Endrin	<0.01 µg/l	TM343			<0.02			<0.02
o,p'-DDT	<0.01 µg/l	TM343			<0.02			<0.02
p,p'-DDD (TDE)	<0.01 µg/l	TM343			<0.01			<0.01
Endosulphan II	<0.02 µg/l	TM343			<0.02			<0.02
p,p'-DDT	<0.01 µg/l	TM343			<0.02			<0.02
o,p'-Methoxychlor	<0.01 µg/l	TM343			<0.02			<0.02
p,p'-Methoxychlor	<0.01 µg/l	TM343			<0.02			<0.02
Endosulphan Sulphate	<0.02 µg/l	TM343			<0.04			<0.04
Permethrin I	<0.01 µg/l	TM343			<0.01			<0.01
Permethrin II	<0.01 µg/l	TM343			<0.01			<0.01
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344			<0.05			<0.05
Hexachlorobutadiene	<0.01 µg/l	TM344			<0.05			<0.05
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344			<0.05			<0.05
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344			<0.05			<0.05
Dichlorvos	<0.01 µg/l	TM344			<0.05			<0.05
Dichlobenil	<0.01 µg/l	TM344			<0.05			<0.05
Mevinphos	<0.01 µg/l	TM344			<0.05			<0.05
Tecnazene	<0.01 µg/l	TM344			<0.05			<0.05
Hexachlorobenzene	<0.01 µg/l	TM344			<0.05			<0.05

CERTIFICATE OF ANALYSIS

SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH07	BH09	BH10	BH60	BH61	
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	
			Date Sampled	25/08/2021	25/08/2021	25/08/2021	25/08/2021	25/08/2021	
			Sampled Time	.	.	.	.	.	
			Date Received	27/08/2021	27/08/2021	27/08/2021	27/08/2021	27/08/2021	
			SDG Ref	210828-19	210828-19	210828-19	210828-19	210828-19	
			Lab Sample No.(s)	24887373	24887355	24887364	24887382	24887392	
			AGS Reference	ES1	ES1	ES1	ES1	ES1	
Demeton-S-methyl	<0.01 µg/l	TM344			<0.05			<0.05	
Phorate	<0.01 µg/l	TM344			<0.05			<0.05	
Diazinon	<0.01 µg/l	TM344			<0.05			<0.05	
Triallate	<0.01 µg/l	TM344			<0.05			<0.05	
Atrazine	<0.01 µg/l	TM344			<0.05			<0.05	
Simazine	<0.01 µg/l	TM344			<0.05			<0.05	
Disulfoton	<0.01 µg/l	TM344			<0.05			<0.05	
Propetamphos	<0.01 µg/l	TM344			<0.05			<0.05	
Chlorpyriphos-methyl	<0.01 µg/l	TM344			<0.05			<0.05	
Dimethoate	<0.01 µg/l	TM344			<0.1			<0.1	
Pirimiphos-methyl	<0.01 µg/l	TM344			<0.05			<0.05	
Chlorpyriphos	<0.01 µg/l	TM344			<0.05			<0.05	
Methyl Parathion	<0.01 µg/l	TM344			<0.1			<0.1	
Malathion	<0.01 µg/l	TM344			<0.05			<0.05	
Fenthion	<0.01 µg/l	TM344			<0.05			<0.05	
Fenitrothion	<0.01 µg/l	TM344			<0.1			<0.1	
Triadimefon	<0.01 µg/l	TM344			<0.05			<0.05	
Pendimethalin	<0.01 µg/l	TM344			<0.05			<0.05	
Parathion	<0.01 µg/l	TM344			<0.05			<0.05	
Chlorfenvinphos	<0.01 µg/l	TM344			<0.05			<0.05	
trans-Chlordane	<0.01 µg/l	TM344			<0.05			<0.05	
cis-Chlordane	<0.01 µg/l	TM344			<0.05			<0.05	
Ethion	<0.01 µg/l	TM344			<0.05			<0.05	
Carbophenothion	<0.01 µg/l	TM344			<0.05			<0.05	
Triazophos	<0.01 µg/l	TM344			<0.1			<0.1	
Phosalone	<0.01 µg/l	TM344			<0.15			<0.15	
Azinphos methyl	<0.02 µg/l	TM344			<0.5			<0.5	
Azinphos ethyl	<0.02 µg/l	TM344			<0.2			<0.2	
Dinitro-o-cresol	<0.1 µg/l	TM411			<0.5			<1	
Clopyralid	<0.04 µg/l	TM411			<0.2			<0.4	
MCPA	<0.05 µg/l	TM411			<0.25			<0.5	
Mecoprop	<0.04 µg/l	TM411			<0.2			<0.4	

CERTIFICATE OF ANALYSIS

SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	BH07	BH09	BH10	BH60	BH61	
Customer Sample Ref.								
Depth (m)			0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	
Sample Type			Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	
Date Sampled			25/08/2021	25/08/2021	25/08/2021	25/08/2021	25/08/2021	
Sampled Time			.	.	.	.	.	
Date Received			27/08/2021	27/08/2021	27/08/2021	27/08/2021	27/08/2021	
SDG Ref			210828-19	210828-19	210828-19	210828-19	210828-19	
Lab Sample No.(s)			24887373	24887355	24887364	24887382	24887392	
AGS Reference			ES1	ES1	ES1	ES1	ES1	
Dicamba	<0.04	µg/l	TM411		<0.2			<0.4	
MCPB	<0.05	µg/l	TM411		<0.25			<0.5	
2,4-DB	<0.1	µg/l	TM411		<0.5			<1	
2,3,6-Trichlorobenzoic acid	<0.05	µg/l	TM411		<0.25			<0.5	
Dichlorprop	<0.1	µg/l	TM411		<0.5			<1	
Triclopyr	<0.05	µg/l	TM411		<0.25			<0.5	
Fenoprop (Silvex)	<0.1	µg/l	TM411		<0.5			<1	
2,4-Dichlorophenoxyacetic acid	<0.05	µg/l	TM411		<0.25			<0.5	
2,4,5-Trichlorophenoxyacetic acid	<0.05	µg/l	TM411		<0.25			<0.5	
Bromoxynil	<0.04	µg/l	TM411		<0.2			<0.4	
Benazolin	<0.04	µg/l	TM411		<0.2			<0.4	
Ioxynil	<0.05	µg/l	TM411		<0.25			<0.5	
Pentachlorophenol	<0.04	µg/l	TM411		<0.2			<0.4	
Fluoroxypyr	<0.1	µg/l	TM411		<0.5			<1	

CERTIFICATE OF ANALYSIS

SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH07	BH09	BH10	BH60	BH61
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	25/08/2021	25/08/2021	25/08/2021	25/08/2021	25/08/2021
			Sampled Time	.	.	.	.	.
			Date Received	27/08/2021	27/08/2021	27/08/2021	27/08/2021	27/08/2021
			SDG Ref	210828-19	210828-19	210828-19	210828-19	210828-19
			Lab Sample No.(s)	24887373	24887355	24887364	24887382	24887392
			AGS Reference	ES1	ES1	ES1	ES1	ES1
Naphthalene (aq)	<0.01 µg/l	TM178		<0.01 #	<0.01 #	<0.1 #	0.103 #	0.221 #
Acenaphthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.05 #	<0.05 #	<0.05 #
Acenaphthylene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.05 #	<0.05 #	<0.05 #
Fluoranthene (aq)	<0.005 µg/l	TM178		<0.005 #	0.0534 #	0.0959 #	0.352 #	0.197 #
Anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.05 #	<0.05 #	<0.05 #
Phenanthrene (aq)	<0.005 µg/l	TM178		<0.005 #	0.0168 #	<0.05 #	0.151 #	0.118 #
Fluorene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.05 #	<0.05 #	<0.05 #
Chrysene (aq)	<0.005 µg/l	TM178		<0.005 #	0.0321 #	<0.05 #	0.196 #	0.0954 #
Pyrene (aq)	<0.005 µg/l	TM178		0.0146 #	0.0501 #	0.105 #	0.351 #	0.209 #
Benzo(a)anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	0.0309 #	<0.05 #	0.134 #	0.0586 #
Benzo(b)fluoranthene (aq)	<0.005 µg/l	TM178		<0.005 #	0.0544 #	0.0858 #	0.309 #	0.189 #
Benzo(k)fluoranthene (aq)	<0.005 µg/l	TM178		<0.005 #	0.0209 #	0.0507 #	0.145 #	0.0948 #
Benzo(a)pyrene (aq)	<0.002 µg/l	TM178		<0.002 #	0.0368 #	0.0736 #	0.224 #	0.132 #
Dibenzo(a,h)anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	0.00694 #	<0.05 #	<0.05 #	<0.05 #
Benzo(g,h,i)perylene (aq)	<0.005 µg/l	TM178		<0.005 #	0.0309 #	<0.05 #	0.179 #	0.106 #
Indeno(1,2,3-cd)pyrene (aq)	<0.005 µg/l	TM178		<0.005 #	0.0266 #	<0.05 #	0.148 #	<0.05 #
PAH, Total Detected USEPA 16 (aq)	<0.082 µg/l	TM178		<0.082 #	0.36 #	<0.82 #	2.29 #	1.42 #

CERTIFICATE OF ANALYSIS

SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

SVOC MS (W) - Aqueous

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH61
Depth (m)	0.00 - 0.00
Sample Type	Ground Water (GW)
Date Sampled	25/08/2021
Sampled Time	.
Date Received	27/08/2021
SDG Ref	210828-19
Lab Sample No.(s)	24887392
AGS Reference	ES1

Component	LOD/Units	Method	
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176	<10 #
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176	<10 #
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176	<10 #
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176	<10 #
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176	<10 #
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176	<10 #
2,4-Dichlorophenol (aq)	<1 µg/l	TM176	<10 #
2,4-Dimethylphenol (aq)	<1 µg/l	TM176	<10 #
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176	<10 #
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176	<10 #
2-Chloronaphthalene (aq)	<1 µg/l	TM176	<10 #
2-Chlorophenol (aq)	<1 µg/l	TM176	<10 #
2-Methylnaphthalene (aq)	<1 µg/l	TM176	<10 #
2-Methylphenol (aq)	<1 µg/l	TM176	<10 #
2-Nitroaniline (aq)	<1 µg/l	TM176	<10 #
2-Nitrophenol (aq)	<1 µg/l	TM176	<10 #
3-Nitroaniline (aq)	<1 µg/l	TM176	<10 #
4-Bromophenylphenylether (aq)	<1 µg/l	TM176	<10 #
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176	<10 #
4-Chloroaniline (aq)	<1 µg/l	TM176	<10
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176	<10 #
4-Methylphenol (aq)	<1 µg/l	TM176	<10 #
4-Nitroaniline (aq)	<1 µg/l	TM176	<10 #
4-Nitrophenol (aq)	<1 µg/l	TM176	<10
Azobenzene (aq)	<1 µg/l	TM176	<10 #
Acenaphthylene (aq)	<1 µg/l	TM176	<10 #
Acenaphthene (aq)	<1 µg/l	TM176	<10 #
Anthracene (aq)	<1 µg/l	TM176	<10 #
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176	<10 #
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176	<10 #
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176	<20 #
Butylbenzyl phthalate (aq)	<1 µg/l	TM176	<10 #

CERTIFICATE OF ANALYSIS

SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

SVOC MS (W) - Aqueous

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH61
Depth (m)	0.00 - 0.00
Sample Type	Ground Water (GW)
Date Sampled	25/08/2021
Sampled Time	.
Date Received	27/08/2021
SDG Ref	210828-19
Lab Sample No.(s)	24887392
AGS Reference	ES1

Component	LOD/Units	Method	
Benzo(a)anthracene (aq)	<1 µg/l	TM176	<10 #
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176	<10 #
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176	<10 #
Benzo(a)pyrene (aq)	<1 µg/l	TM176	<10 #
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176	<10 #
Carbazole (aq)	<1 µg/l	TM176	<10 #
Chrysene (aq)	<1 µg/l	TM176	<10 #
Dibenzofuran (aq)	<1 µg/l	TM176	<10 #
n-Dibutyl phthalate (aq)	<1 µg/l	TM176	<10 #
Diethyl phthalate (aq)	<1 µg/l	TM176	<10 #
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176	<10 #
Dimethyl phthalate (aq)	<1 µg/l	TM176	<10 #
n-Dioctyl phthalate (aq)	<5 µg/l	TM176	<50 #
Fluoranthene (aq)	<1 µg/l	TM176	<10 #
Fluorene (aq)	<1 µg/l	TM176	<10 #
Hexachlorobenzene (aq)	<1 µg/l	TM176	<10 #
Hexachlorobutadiene (aq)	<1 µg/l	TM176	<10 #
Pentachlorophenol (aq)	<1 µg/l	TM176	<10
Phenol (aq)	<1 µg/l	TM176	<10
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176	<10 #
Hexachloroethane (aq)	<1 µg/l	TM176	<10 #
Nitrobenzene (aq)	<1 µg/l	TM176	<10 #
Naphthalene (aq)	<1 µg/l	TM176	<10 #
Isophorone (aq)	<1 µg/l	TM176	<10 #
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176	<10
Phenanthrene (aq)	<1 µg/l	TM176	<10 #
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176	<10 #
Pyrene (aq)	<1 µg/l	TM176	<10 #

CERTIFICATE OF ANALYSIS

SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH07	BH09	BH10	BH60	BH61
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	25/08/2021	25/08/2021	25/08/2021	25/08/2021	25/08/2021
			Sampled Time	.	.	.	.	.
			Date Received	27/08/2021	27/08/2021	27/08/2021	27/08/2021	27/08/2021
			SDG Ref	210828-19	210828-19	210828-19	210828-19	210828-19
			Lab Sample No.(s)	24887373	24887355	24887364	24887382	24887392
			AGS Reference	ES1	ES1	ES1	ES1	ES1
GRO Surrogate % recovery**	%	TM245		109	106	110	109	110
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #	<50 #	<50 #	<50 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #
Benzene	<7 µg/l	TM245		<7 #	<7 #	<7 #	<7 #	<7 #
Toluene	<4 µg/l	TM245		<4 #	<4 #	<4 #	<4 #	<4 #
Ethylbenzene	<5 µg/l	TM245		<5 #	<5 #	<5 #	<5 #	<5 #
m,p-Xylene	<8 µg/l	TM245		<8 #	<8 #	<8 #	<8 #	<8 #
o-Xylene	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #
Sum of detected Xylenes	<11 µg/l	TM245		<11	<11	<11	<11	<11
Sum of detected BTEX	<28 µg/l	TM245		<28	<28	<28	<28	<28
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	<10	<10	<10
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	<10	<10	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10	91	165
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	144	646	392	213
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	144	646	483	378
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	<10	<10	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	421	<10
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	421	<10
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		<10	149	646	904	380
Aliphatics >C16-C35 Aqueous	<10 µg/l	TM174		<10	144	646	392	213

CERTIFICATE OF ANALYSIS

SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH61
Depth (m)	0.00 - 0.00
Sample Type	Ground Water (GW)
Date Sampled	25/08/2021
Sampled Time	.
Date Received	27/08/2021
SDG Ref	210828-19
Lab Sample No.(s)	24887392
AGS Reference	ES1

Component	LOD/Units	Method	
Dibromofluoromethane**	%	TM208	113
Toluene-d8**	%	TM208	100
4-Bromofluorobenzene**	%	TM208	100
Dichlorodifluoromethane	<1 µg/l	TM208	<1 #
Chloromethane	<1 µg/l	TM208	<1 #
Vinyl chloride	<1 µg/l	TM208	<1 #
Bromomethane	<1 µg/l	TM208	<1 #
Chloroethane	<1 µg/l	TM208	<1 #
Trichlorofluoromethane	<1 µg/l	TM208	<1 #
1,1-Dichloroethene	<1 µg/l	TM208	<1 #
Carbon disulphide	<1 µg/l	TM208	<1 #
Dichloromethane	<3 µg/l	TM208	<3 #
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208	<1 #
trans-1,2-Dichloroethene	<1 µg/l	TM208	<1 #
1,1-Dichloroethane	<1 µg/l	TM208	<1 #
cis-1,2-Dichloroethene	<1 µg/l	TM208	<1 #
2,2-Dichloropropane	<1 µg/l	TM208	<1
Bromochloromethane	<1 µg/l	TM208	<1 #
Chloroform	<1 µg/l	TM208	<1 #
1,1,1-Trichloroethane	<1 µg/l	TM208	<1 #
1,1-Dichloropropene	<1 µg/l	TM208	<1 #
Carbontetrachloride	<1 µg/l	TM208	<1 #
1,2-Dichloroethane	<1 µg/l	TM208	<1 #
Benzene	<1 µg/l	TM208	<1 #
Trichloroethene	<1 µg/l	TM208	<1 #
1,2-Dichloropropane	<1 µg/l	TM208	<1 #
Dibromomethane	<1 µg/l	TM208	<1 #
Bromodichloromethane	<1 µg/l	TM208	<1 #
cis-1,3-Dichloropropene	<1 µg/l	TM208	<1 #
Toluene	<1 µg/l	TM208	<1 #
trans-1,3-Dichloropropene	<1 µg/l	TM208	<1 #
1,1,2-Trichloroethane	<1 µg/l	TM208	<1 #

CERTIFICATE OF ANALYSIS

SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH61
Depth (m)	0.00 - 0.00
Sample Type	Ground Water (GW)
Date Sampled	25/08/2021
Sampled Time	.
Date Received	27/08/2021
SDG Ref	210828-19
Lab Sample No.(s)	24887392
AGS Reference	ES1

Component	LOD/Units	Method					
1,3-Dichloropropane	<1 µg/l	TM208	<1 #				
Tetrachloroethene	<1 µg/l	TM208	<1 #				
Dibromochloromethane	<1 µg/l	TM208	<1 #				
1,2-Dibromoethane	<1 µg/l	TM208	<1 #				
Chlorobenzene	<1 µg/l	TM208	<1 #				
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208	<1 #				
Ethylbenzene	<1 µg/l	TM208	<1 #				
m,p-Xylene	<1 µg/l	TM208	<1 #				
o-Xylene	<1 µg/l	TM208	<1 #				
Styrene	<1 µg/l	TM208	<1 #				
Bromoform	<1 µg/l	TM208	<1 #				
Isopropylbenzene	<1 µg/l	TM208	<1 #				
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208	<1 #				
1,2,3-Trichloropropane	<1 µg/l	TM208	<1 #				
Bromobenzene	<1 µg/l	TM208	<1 #				
Propylbenzene	<1 µg/l	TM208	<1 #				
2-Chlorotoluene	<1 µg/l	TM208	<1 #				
1,3,5-Trimethylbenzene	<1 µg/l	TM208	<1 #				
4-Chlorotoluene	<1 µg/l	TM208	<1 #				
tert-Butylbenzene	<1 µg/l	TM208	<1 #				
1,2,4-Trimethylbenzene	<1 µg/l	TM208	<1 #				
sec-Butylbenzene	<1 µg/l	TM208	<1 #				
4-iso-Propyltoluene	<1 µg/l	TM208	<1 #				
1,3-Dichlorobenzene	<1 µg/l	TM208	<1 #				
1,4-Dichlorobenzene	<1 µg/l	TM208	<1 #				
n-Butylbenzene	<1 µg/l	TM208	<1 #				
1,2-Dichlorobenzene	<1 µg/l	TM208	<1 #				
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208	<1				
1,2,4-Trichlorobenzene	<1 µg/l	TM208	<1 #				
Hexachlorobutadiene	<1 µg/l	TM208	<1 #				
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1 #				
Naphthalene	<1 µg/l	TM208	<1 #				

CERTIFICATE OF ANALYSIS

SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	
			Depth (m)	0.00 - 0.00
			Sample Type	Ground Water (GW)
			Date Sampled	25/08/2021
			Sampled Time	.
			Date Received	27/08/2021
			SDG Ref	210828-19
			Lab Sample No.(s)	24887392
			AGS Reference	ES1
1,2,3-Trichlorobenzene	<1 µg/l	TM208	<1 #	
1,3,5-Trichlorobenzene	<1 µg/l	TM208	<1	

CERTIFICATE OF ANALYSIS

SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM343	EPA 8270D - Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of Selected Pesticides (Suite I) in Liquids by GCMS
TM344	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite II) by GCMS
TM411	Acid_Herbs_GCMS	Acid Herbs in Water by GCMS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	24887373	24887355	24887364	24887382	24887392
Customer Sample Ref.	BH07	BH09	BH10	BH60	BH61
AGS Ref.	ES1	ES1	ES1	ES1	ES1
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Acid Herbicides by GCMS		06-Sep-2021			06-Sep-2021
Ammonium Low	06-Sep-2021	06-Sep-2021	06-Sep-2021	06-Sep-2021	06-Sep-2021
Anions by Kone (w)	06-Sep-2021	06-Sep-2021	06-Sep-2021	06-Sep-2021	06-Sep-2021
Cyanide Comp/Free/Total/Thiocyanate	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021
Dissolved Metals by ICP-MS	02-Sep-2021	02-Sep-2021	02-Sep-2021	02-Sep-2021	02-Sep-2021
Dissolved Organic/Inorganic Carbon	04-Sep-2021	04-Sep-2021	04-Sep-2021	04-Sep-2021	04-Sep-2021
EPH CWG (Aliphatic) Aqueous GC (W)	05-Sep-2021	05-Sep-2021	05-Sep-2021	05-Sep-2021	05-Sep-2021
EPH CWG (Aromatic) Aqueous GC (W)	05-Sep-2021	05-Sep-2021	05-Sep-2021	05-Sep-2021	05-Sep-2021
GRO by GC-FID (W)	31-Aug-2021	31-Aug-2021	31-Aug-2021	31-Aug-2021	31-Aug-2021
Hexavalent Chromium (w)	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021
Mercury Dissolved	02-Sep-2021	02-Sep-2021	02-Sep-2021	02-Sep-2021	02-Sep-2021
Nitrite by Kone (w)	02-Sep-2021	02-Sep-2021	02-Sep-2021	02-Sep-2021	02-Sep-2021
PAH Spec MS - Aqueous (W)	06-Sep-2021	06-Sep-2021	06-Sep-2021	06-Sep-2021	06-Sep-2021
Pesticides (Suite I) by GCMS		07-Sep-2021			07-Sep-2021
Pesticides (Suite II) by GCMS		01-Sep-2021			01-Sep-2021
pH Value	02-Sep-2021	02-Sep-2021	02-Sep-2021	02-Sep-2021	02-Sep-2021
Phenols by HPLC (W)	06-Sep-2021	03-Sep-2021	03-Sep-2021	06-Sep-2021	03-Sep-2021
Sulphide	06-Sep-2021	06-Sep-2021	06-Sep-2021	06-Sep-2021	06-Sep-2021
SVOC MS (W) - Aqueous					06-Sep-2021
Total Metals by ICP-MS	02-Sep-2021	02-Sep-2021	02-Sep-2021	02-Sep-2021	02-Sep-2021
TPH CWG (W)	05-Sep-2021	05-Sep-2021	05-Sep-2021	05-Sep-2021	05-Sep-2021
VOC MS (W)					01-Sep-2021

CERTIFICATE OF ANALYSIS

SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

ASSOCIATED AQC DATA

Acid Herbicides by GCMS

Component	Method Code	QC 2423	QC 2451
2,3,6-TBA (Raw)	TM411	**103.27** 72.24 : 118.28	**99.05** 72.24 : 118.28
2,4,5-T (Raw)	TM411	**87.17** 66.88 : 130.00	**90.0** 66.88 : 130.00
2,4-D (Raw)	TM411	**99.85** 68.29 : 133.58	**106.38** 68.29 : 133.58
2,4-DB (Raw)	TM411	**108.3** 57.23 : 133.50	**105.14** 57.23 : 133.50
Benazolin (Raw)	TM411	**108.16** 78.76 : 146.78	**110.42** 78.76 : 146.78
Bromoxynil (Raw)	TM411	**106.07** 77.69 : 118.97	**105.09** 77.69 : 118.97
Clopyralid (Raw)	TM411	**90.18** 64.11 : 124.08	**93.03** 64.11 : 124.08
Dicamba (Raw)	TM411	**104.77** 77.45 : 123.02	**102.85** 77.45 : 123.02
Dichloroprop (Raw)	TM411	**99.14** 74.86 : 126.35	**99.31** 74.86 : 126.35
DNOC (Raw)	TM411	**92.65** 65.53 : 129.07	**98.02** 65.53 : 129.07
Fenoprop (Raw)	TM411	**103.15** 74.33 : 126.19	**102.23** 74.33 : 126.19
Fluroxypyr (Raw)	TM411	**107.17** 80.51 : 140.78	**112.27** 80.51 : 140.78
Ioxynil (Raw)	TM411	**83.04** 42.19 : 122.44	**83.62** 42.19 : 122.44
MCPA (Raw)	TM411	**97.41** 79.83 : 124.11	**99.36** 79.83 : 124.11
MCPB (Raw)	TM411	**100.3** 33.12 : 147.97	**99.97** 33.12 : 147.97
Mecoprop (Raw)	TM411	**107.71** 80.77 : 125.74	**102.34** 80.77 : 125.74
Pentachlorophenol (Raw)	TM411	**105.82** 76.67 : 131.12	**111.17** 76.67 : 131.12
Triclopyr (Raw)	TM411	**104.8** 69.64 : 132.21	**105.87** 69.64 : 132.21

Ammonium Low

Component	Method Code	QC 2411
Ammoniacal Nitrogen as N	TM099	**95.2** 94.00 : 106.00

Anions by Kone (w)

CERTIFICATE OF ANALYSIS

SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Anions by Kone (w)

Component	Method Code	QC 2496
Sulphate (soluble)	TM184	**105.2** 91.99 : 109.30
TON as NO3	TM184	**101.5** 90.35 : 108.35

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2460
Free Cyanide (W)	TM227	**83.25** 90.67 : 122.67
Thiocyanate (W)	TM227	**111.0** 92.25 : 117.75
Total Cyanide (W)	TM227	**106.0** 96.25 : 112.75

Dissolved Metals by ICP-MS

Component	Method Code	QC 2474	QC 2479	QC 2499	QC 2412
Aluminium	TM152	**101.0** 90.98 : 111.82	**98.67** 90.98 : 111.82	**99.67** 90.78 : 110.89	**98.67** 90.78 : 110.89
Antimony	TM152	**100.5** 90.44 : 113.04	**98.83** 90.44 : 113.04	**99.5** 77.22 : 119.42	**99.17** 77.22 : 119.42
Arsenic	TM152	**101.83** 88.00 : 112.00	**100.67** 88.00 : 112.00	**101.0** 86.77 : 107.67	**100.0** 86.77 : 107.67
Barium	TM152	**94.67** 90.20 : 111.19	**95.0** 90.20 : 111.19	**102.17** 87.86 : 110.23	**100.67** 87.86 : 110.23
Beryllium	TM152	**100.33** 87.77 : 113.97	**97.83** 87.77 : 113.97	**101.33** 86.19 : 112.98	**101.17** 86.19 : 112.98
Bismuth	TM152	**103.17** 91.90 : 112.20	**102.33** 91.90 : 112.20	**100.67** 84.06 : 106.46	**100.17** 84.06 : 106.46
Borate	TM152	**98.77** 88.00 : 112.00	**96.3** 88.00 : 112.00	**99.38** 88.00 : 112.00	**99.38** 88.00 : 112.00
Boron	TM152	**99.0** 96.48 : 114.93	**96.33** 96.48 : 114.93	**99.33** 83.92 : 114.90	**99.0** 83.92 : 114.90
Cadmium	TM152	**102.33** 96.43 : 110.53	**101.83** 96.43 : 110.53	**99.5** 88.89 : 106.69	**99.17** 88.89 : 106.69
Calcium	TM152	**104.67** 93.36 : 108.97	**103.33** 93.36 : 108.97	**106.0** 80.24 : 117.95	**103.33** 80.24 : 117.95
Chromium	TM152	**100.67** 91.84 : 108.67	**99.83** 91.84 : 108.67	**100.67** 83.22 : 110.16	**98.33** 83.22 : 110.16
Cobalt	TM152	**100.67** 88.00 : 112.00	**99.17** 88.00 : 112.00	**100.33** 82.49 : 112.36	**98.83** 82.49 : 112.36
Copper	TM152	**102.67** 92.47 : 118.11	**102.33** 92.47 : 118.11	**100.83** 83.14 : 113.00	**100.17** 83.14 : 113.00
Iron	TM152	**100.67** 93.23 : 106.27	**100.0** 93.23 : 106.27	**100.0** 88.40 : 109.24	**98.0** 88.40 : 109.24
Lead	TM152	**97.5** 88.00 : 112.00	**97.67** 88.00 : 112.00	**99.5** 83.71 : 109.58	**99.17** 83.71 : 109.58
Lithium	TM152	**100.33** 91.62 : 113.12	**98.17** 91.62 : 113.12	**100.5** 84.50 : 114.28	**100.83** 84.50 : 114.28
Magnesium	TM152	**101.33** 87.77 : 110.48	**100.0** 87.77 : 110.48	**100.67** 87.56 : 114.57	**99.33** 87.56 : 114.57

Dissolved Metals by ICP-MS

		QC 2474	QC 2479	QC 2499	QC 2412
Manganese	TM152	**102.0** 95.03 : 110.58	**100.17** 95.03 : 110.58	**100.0** 90.01 : 108.72	**98.5** 90.01 : 108.72
Molybdenum	TM152	**100.5** 88.00 : 112.00	**98.83** 88.00 : 112.00	**99.0** 85.53 : 107.42	**98.83** 85.53 : 107.42
Nickel	TM152	**101.5** 88.00 : 112.00	**100.5** 88.00 : 112.00	**101.83** 88.05 : 106.42	**99.83** 88.05 : 106.42
Phosphorus	TM152	**99.67** 91.54 : 107.12	**98.0** 91.54 : 107.12	**101.83** 82.76 : 107.72	**99.83** 82.76 : 107.72
Potassium	TM152	**104.0** 92.16 : 109.93	**102.67** 92.16 : 109.93	**104.67** 88.45 : 106.42	**102.0** 88.45 : 106.42
Selenium	TM152	**102.5** 91.58 : 115.98	**100.67** 91.58 : 115.98	**101.5** 85.61 : 111.03	**100.83** 85.61 : 111.03
Silver	TM152	**103.17** 88.80 : 122.30	**102.0** 88.80 : 122.30	**101.0** 88.48 : 110.48	**99.17** 88.48 : 110.48
Sodium	TM152	**101.33** 89.47 : 109.62	**100.0** 89.47 : 109.62	**101.33** 88.32 : 106.30	**99.33** 88.32 : 106.30
Strontium	TM152	**100.33** 88.00 : 112.00	**100.33** 88.00 : 112.00	**100.33** 83.77 : 107.87	**99.67** 83.77 : 107.87
Tellurium	TM152	**101.83** 93.32 : 114.66	**102.5** 93.32 : 114.66	**102.83** 82.83 : 104.73	**103.0** 82.83 : 104.73
Thallium	TM152	**102.33** 88.00 : 112.00	**102.17** 88.00 : 112.00	**98.67** 77.47 : 113.87	**97.5** 77.47 : 113.87
Tin	TM152	**100.83** 92.63 : 109.70	**99.83** 92.63 : 109.70	**99.5** 87.36 : 109.55	**98.83** 87.36 : 109.55
Titanium	TM152	**100.83** 95.58 : 111.68	**98.17** 95.58 : 111.68	**99.33** 87.29 : 108.31	**99.0** 87.29 : 108.31
Tungsten	TM152	**103.5** 81.32 : 124.72	**103.83** 81.32 : 124.72	**103.33** 68.27 : 122.97	**102.5** 68.27 : 122.97
Uranium	TM152	**101.0** 88.00 : 112.00	**100.5** 88.00 : 112.00	**98.67** 82.46 : 105.16	**98.0** 82.46 : 105.16
Vanadium	TM152	**96.67** 88.00 : 112.00	**99.67** 88.00 : 112.00	**101.67** 88.43 : 114.30	**98.33** 88.43 : 114.30
Zinc	TM152	**102.67** 92.98 : 118.95	**102.0** 92.98 : 118.95	**100.67** 85.57 : 114.31	**100.0** 85.57 : 114.31

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2434
Dissolved Inorganic Carbon	TM090	**99.67** 93.58 : 112.28
Dissolved Organic Carbon	TM090	**102.67** 97.80 : 107.10

EPH CWG (Aliphatic) Aqueous GC (W)

Component	Method Code	QC 2441
Total Aliphatics >C10-C40	TM174	**115.68** 65.58 : 141.57

EPH CWG (Aromatic) Aqueous GC (W)

Component	Method Code	QC 2457
Total Aromatics >EC10-EC40	TM174	**111.95** 60.75 : 129.09

GRO by GC-FID (W)

Component	Method Code	QC 2454
Benzene by GC	TM245	**90.5** 83.48 : 117.21
Ethylbenzene by GC	TM245	**89.0** 84.11 : 114.89
m & p Xylene by GC	TM245	**87.25** 83.73 : 116.33
MTBE GC-FID	TM245	**90.0** 84.42 : 117.50
o Xylene by GC	TM245	**89.0** 85.03 : 117.59
QC	TM245	**73.32** 60.71 : 137.65
Toluene by GC	TM245	**89.5** 84.73 : 116.85

Hexavalent Chromium (w)

Component	Method Code	QC 2431	QC 2440
Hexavalent Chromium	TM241	**102.0** 94.17 : 106.17	**102.0** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2454
Mercury Dissolved (CVAF)	TM183	**93.7** 69.30 : 128.70

PAH Spec MS - Aqueous (W)

Component	Method Code	QC 2470
Acenaphthene by GCMS	TM178	**112.0** 90.45 : 118.63
Acenaphthylene by GCMS	TM178	**113.2** 90.13 : 116.27
Anthracene by GCMS	TM178	**110.8** 92.40 : 114.00
Benz(a)anthracene by GCMS	TM178	**111.2** 89.51 : 117.69

PAH Spec MS - Aqueous (W)

		QC 2470
Benzo(a)pyrene by GCMS	TM178	**107.6** 89.43 : 118.57
Benzo(b)fluoranthene by GCMS	TM178	**110.8** 87.80 : 121.80
Benzo(ghi)perylene by GCMS	TM178	**102.8** 87.10 : 119.30
Benzo(k)fluoranthene by GCMS	TM178	**112.4** 93.23 : 123.57
Chrysene by GCMS	TM178	**112.4** 88.68 : 116.92
Dibenzo(ah)anthracene by GCMS	TM178	**108.0** 86.24 : 118.56
Fluoranthene by GCMS	TM178	**110.4** 86.04 : 121.96
Fluorene by GCMS	TM178	**111.6** 90.76 : 121.24
Indeno(123cd)pyrene by GCMS	TM178	**107.2** 88.39 : 119.61
Naphthalene by GCMS	TM178	**112.0** 89.40 : 121.80
Phenanthrene by GCMS	TM178	**112.8** 90.41 : 119.19
Pyrene by GCMS	TM178	**109.2** 91.00 : 120.20

Pesticides (Suite I) by GCMS

Component	Method Code	QC 2482
Aldrin - (Inst.)	TM343	**90.16** 59.75 : 143.00
alpha-HCH - (Inst.)	TM343	**92.03** 75.13 : 166.63
beta-HCH - (Inst.)	TM343	**93.67** 85.48 : 166.48
cis-Chlordane - (Inst.)	TM343	**92.98** 71.70 : 156.00
delta-HCH - (Inst.)	TM343	**81.01** 83.98 : 156.58
Dieldrin - (Inst.)	TM343	**103.13** 77.45 : 154.10
Endosulphan I - (Inst.)	TM343	**95.95** 91.30 : 168.70
Endosulphan II - (Inst.)	TM343	**94.67** 82.68 : 161.13
Endosulphan Sulphate - (Inst.)	TM343	**56.51** 69.65 : 165.95
Endrin - (Inst.)	TM343	**90.78** 81.33 : 178.68
gamma-HCH (Lindane) - (Inst.)	TM343	**83.18** 83.15 : 175.40
Heptachlor - (Inst.)	TM343	**95.99** 63.65 : 167.80
Heptachlor epoxide - (Inst.)	TM343	**87.61** 73.28 : 159.38

Pesticides (Suite I) by GCMS

		QC 2482
Isodrin - (Inst.)	TM343	**89.44** 58.34 : 153.81
o,p-DDD (TDE) - (Inst.)	TM343	**95.16** 66.93 : 162.03
o,p-DDE - (Inst.)	TM343	**92.38** 64.68 : 156.78
o,p-DDT - (Inst.)	TM343	**108.51** 72.20 : 170.15
o,p-Methoxychlor - (Inst.)	TM343	**104.17** 73.33 : 171.13
p,p-DDD (TDE) - (Inst.)	TM343	**90.95** 67.95 : 160.20
p,p-DDE - (Inst.)	TM343	**95.8** 67.80 : 159.45
p,p-DDT - (Inst.)	TM343	**118.73** 68.30 : 178.25
p,p-Methoxychlor - (Inst.)	TM343	**121.56** 66.94 : 176.47
Permethrin I - (Inst.)	TM343	**110.28** 63.25 : 146.35
Permethrin II - (Inst.)	TM343	**114.22** 66.00 : 151.80
trans-Chlordane - (Inst.)	TM343	**89.88** 71.68 : 165.88
Trifluralin - (Inst.)	TM343	**95.25** 64.73 : 161.48

pH Value

Component	Method Code	QC 2472	QC 2442	QC 2448
pH	TM256	**99.87** 99.33 : 102.54	**99.87** 99.33 : 102.54	**100.13** 99.33 : 102.54

Phenols by HPLC (W)

Component	Method Code	QC 2434	QC 2419	QC 2410
2.3.5 Trimethyl-Phenol by HPLC (W)	TM259	**93.75** 73.97 : 135.63	**95.7** 76.00 : 124.00	**97.66** 73.97 : 135.63
2-Isopropyl Phenol by HPLC (W)	TM259	**87.95** 88.30 : 124.10	**91.78** 76.00 : 124.00	**95.6** 88.30 : 124.10
Cresols by HPLC (W)	TM259	**94.08** 85.46 : 124.01	**96.71** 76.00 : 124.00	**98.68** 85.46 : 124.01
Napthol by HPLC (W)	TM259	**91.8** 75.83 : 130.17	**93.75** 76.00 : 124.00	**93.75** 75.83 : 130.17
Phenol by HPLC (W)	TM259	**88.85** 89.03 : 126.97	**92.63** 76.00 : 124.00	**94.52** 89.03 : 126.97
Xylenols by HPLC (W)	TM259	**92.41** 92.20 : 121.33	**94.62** 76.00 : 124.00	**95.57** 92.20 : 121.33

Sulphide

Sulphide

Component	Method Code	QC 2459	QC 2482
Sulphide	TM101	**96.67** 88.90 : 112.50	**98.0** 88.90 : 112.50

SVOC MS (W) - Aqueous

Component	Method Code	QC 2406
4-Bromophenylphenylether	TM176	**88.0** 61.60 : 106.72
Benzo(a)anthracene	TM176	**85.6** 64.64 : 115.52
Benzo(a)pyrene	TM176	**84.8** 60.56 : 115.28
Butylbenzyl phthalate	TM176	**85.6** 57.12 : 116.16
Hexachlorobutadiene	TM176	**75.52** 52.88 : 95.12
Naphthalene	TM176	**88.8** 65.68 : 110.32
Nitrobenzene	TM176	**84.8** 57.12 : 109.44
Phenol	TM176	**51.76** 37.60 : 70.72

Total Metals by ICP-MS

Component	Method Code	QC 2483	QC 2499
Aluminium	TM152	**102.0** 88.99 : 114.16	**105.67** 88.99 : 114.16
Antimony	TM152	**99.17** 93.05 : 123.32	**102.17** 93.05 : 123.32
Arsenic	TM152	**100.5** 97.95 : 112.90	**104.0** 97.95 : 112.90
Barium	TM152	**101.5** 95.11 : 116.80	**104.33** 95.11 : 116.80
Beryllium	TM152	**104.0** 96.06 : 116.39	**108.0** 96.06 : 116.39
Bismuth	TM152	**98.17** 93.21 : 113.89	**102.83** 93.21 : 113.89
Boron	TM152	**105.67** 86.68 : 117.67	**109.33** 86.68 : 117.67
Cadmium	TM152	**100.17** 96.08 : 112.92	**102.67** 96.08 : 112.92
Calcium	TM152	**104.0** 95.17 : 121.17	**108.67** 95.17 : 121.17
Chromium	TM152	**99.83** 97.65 : 111.90	**104.33** 97.65 : 111.90
Cobalt	TM152	**99.83** 96.52 : 113.04	**103.5** 96.52 : 113.04
Copper	TM152	**101.33** 97.32 : 113.53	**103.67** 97.32 : 113.53

Total Metals by ICP-MS

		QC 2483	QC 2499
Iron	TM152	**99.33** 96.27 : 111.69	**102.67** 96.27 : 111.69
Lead	TM152	**98.0** 96.90 : 113.51	**100.83** 96.90 : 113.51
Lithium	TM152	**102.67** 94.68 : 116.74	**106.67** 94.68 : 116.74
Magnesium	TM152	**98.67** 92.42 : 114.10	**102.0** 92.42 : 114.10
Manganese	TM152	**99.17** 97.04 : 112.45	**103.83** 97.04 : 112.45
Molybdenum	TM152	**98.5** 87.00 : 108.89	**101.17** 87.00 : 108.89
Nickel	TM152	**100.83** 97.57 : 113.15	**104.5** 97.57 : 113.15
Phosphorus	TM152	**101.17** 96.28 : 113.79	**105.17** 96.28 : 113.79
Potassium	TM152	**102.0** 96.14 : 114.83	**105.33** 96.14 : 114.83
Selenium	TM152	**102.17** 96.70 : 113.86	**103.83** 96.70 : 113.86
Silver	TM152	**100.0** 82.13 : 120.33	**104.17** 82.13 : 120.33
Sodium	TM152	**98.0** 92.77 : 115.64	**102.0** 92.77 : 115.64
Strontium	TM152	**101.0** 90.72 : 114.82	**102.33** 90.72 : 114.82
Tellurium	TM152	**100.33** 95.55 : 115.82	**104.83** 95.55 : 115.82
Thallium	TM152	**97.17** 80.92 : 114.72	**103.33** 80.92 : 114.72
Tin	TM152	**99.0** 96.04 : 111.04	**101.5** 96.04 : 111.04
Titanium	TM152	**102.0** 96.48 : 114.94	**108.5** 96.48 : 114.94
Uranium	TM152	**96.33** 95.56 : 112.07	**100.5** 95.56 : 112.07
Vanadium	TM152	**98.83** 88.43 : 114.30	**107.67** 88.43 : 114.30
Zinc	TM152	**99.33** 97.95 : 113.95	**102.67** 97.95 : 113.95

VOC MS (W)

Component	Method Code	QC 2423
1,1,1,2-Tetrachloroethane	TM208	**99.0** 87.41 : 110.84
1,1,1-Trichloroethane	TM208	**99.5** 81.01 : 112.00
1,1-Dichloroethane	TM208	**102.5** 82.09 : 116.41
1,2-Dichloroethane	TM208	**99.0** 80.28 : 123.63
2-Chlorotoluene	TM208	**99.0** 83.31 : 110.91

VOC MS (W)

		QC 2423
4-Chlorotoluene	TM208	**97.5** 84.01 : 111.46
Benzene	TM208	**104.5** 87.46 : 118.30
Bromomethane	TM208	**94.0** 76.99 : 118.39
Carbontetrachloride	TM208	**99.5** 81.73 : 114.22
Chlorobenzene	TM208	**99.5** 90.24 : 109.71
Chloroform	TM208	**99.5** 83.67 : 118.08
Chloromethane	TM208	**100.0** 70.42 : 127.06
Cis-1,2-Dichloroethene	TM208	**100.5** 83.95 : 112.60
Dichloromethane	TM208	**100.0** 81.65 : 120.83
Ethylbenzene	TM208	**97.0** 85.59 : 106.44
Hexachlorobutadiene	TM208	**94.0** 66.83 : 108.27
o-Xylene	TM208	**95.0** 78.40 : 110.68
p/m-Xylene	TM208	**95.5** 82.64 : 112.12
Tert-butyl methyl ether	TM208	**98.0** 68.23 : 127.69
Tetrachloroethene	TM208	**98.0** 81.10 : 112.63
Toluene	TM208	**99.0** 87.40 : 109.78
Trichloroethene	TM208	**99.0** 81.17 : 111.80
Vinyl Chloride	TM208	**100.5** 72.73 : 123.40

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

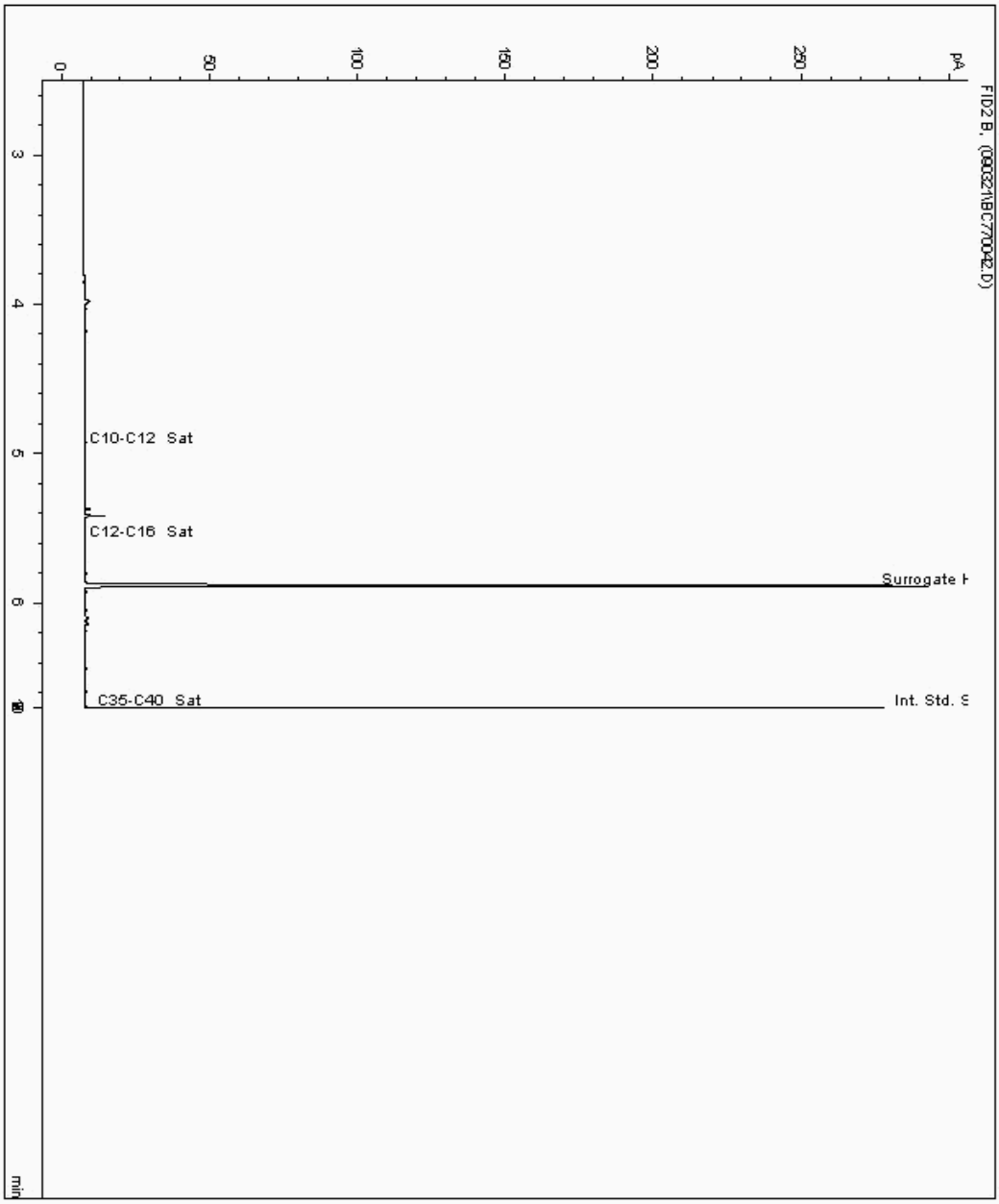
SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24894172 **Depth :** 0.00 - 0.00
Sample ID : BH10

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23277385-
Date Acquired : 9/4/2021 7:31:18 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.026



CERTIFICATE OF ANALYSIS

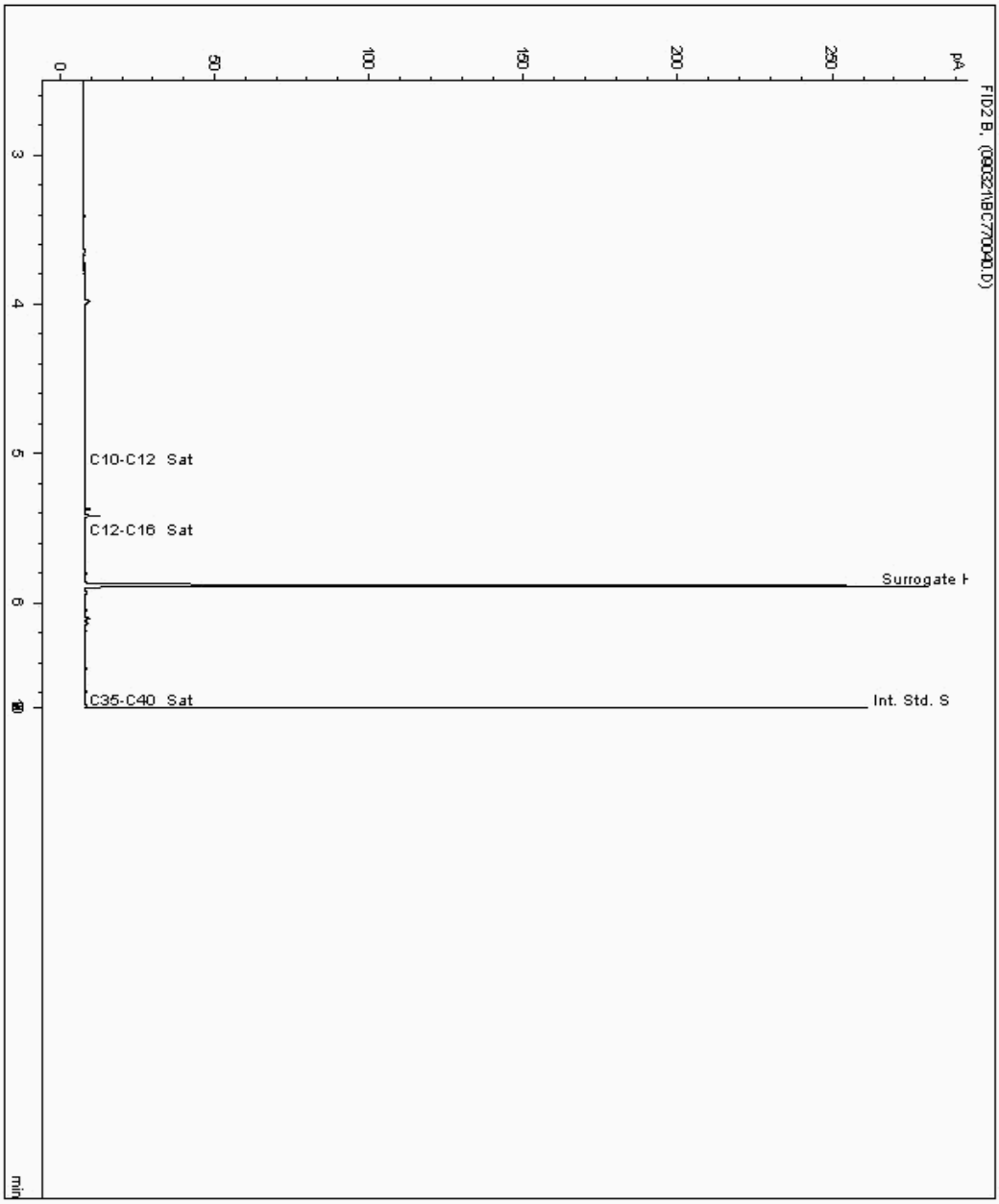
SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24894278 **Depth :** 0.00 - 0.00
Sample ID : BH07

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23277403-
Date Acquired : 9/4/2021 6:43:20 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

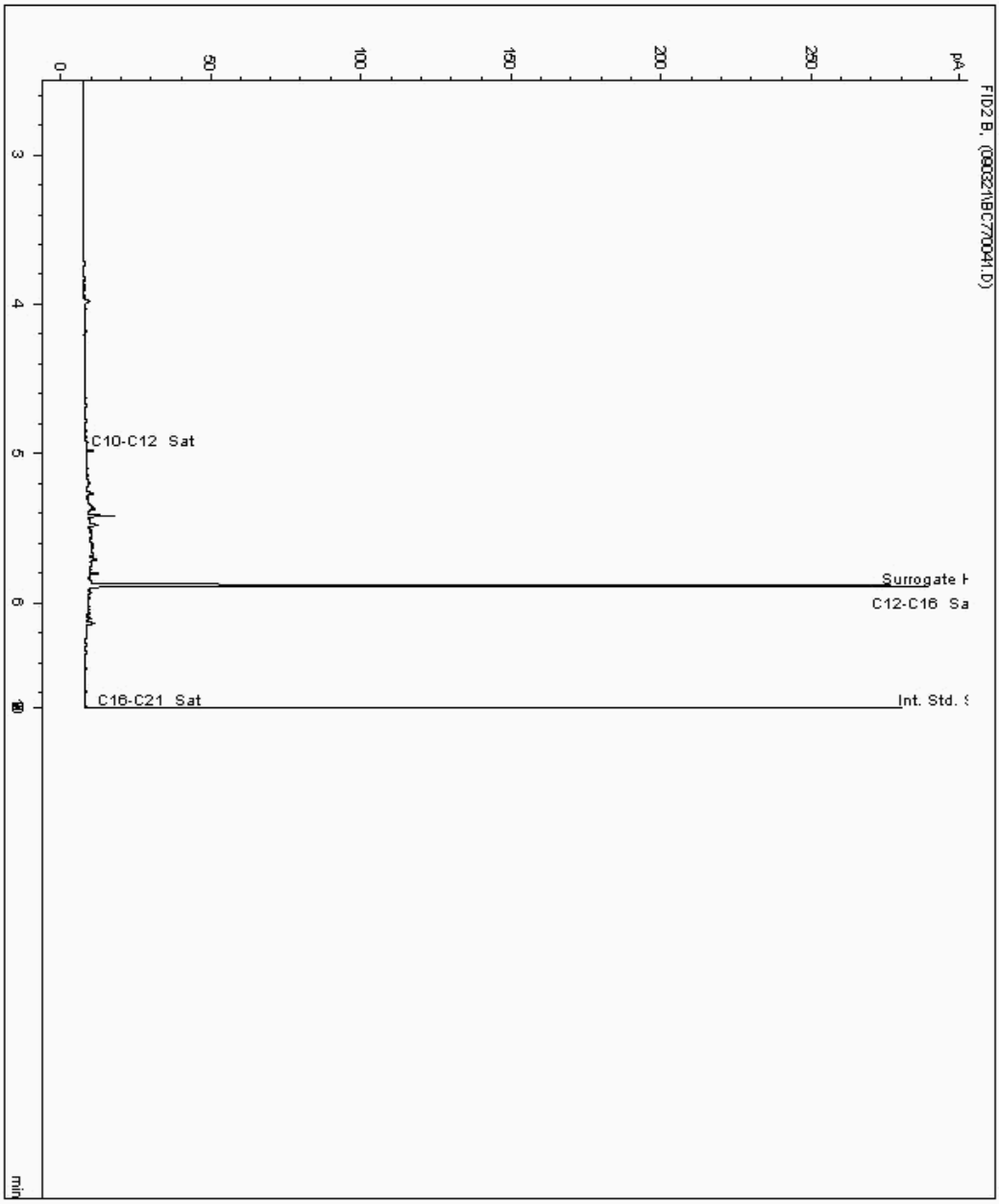
SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24894324 **Depth :** 0.00 - 0.00
Sample ID : BH60

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23277421-
Date Acquired : 9/4/2021 7:07:14 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

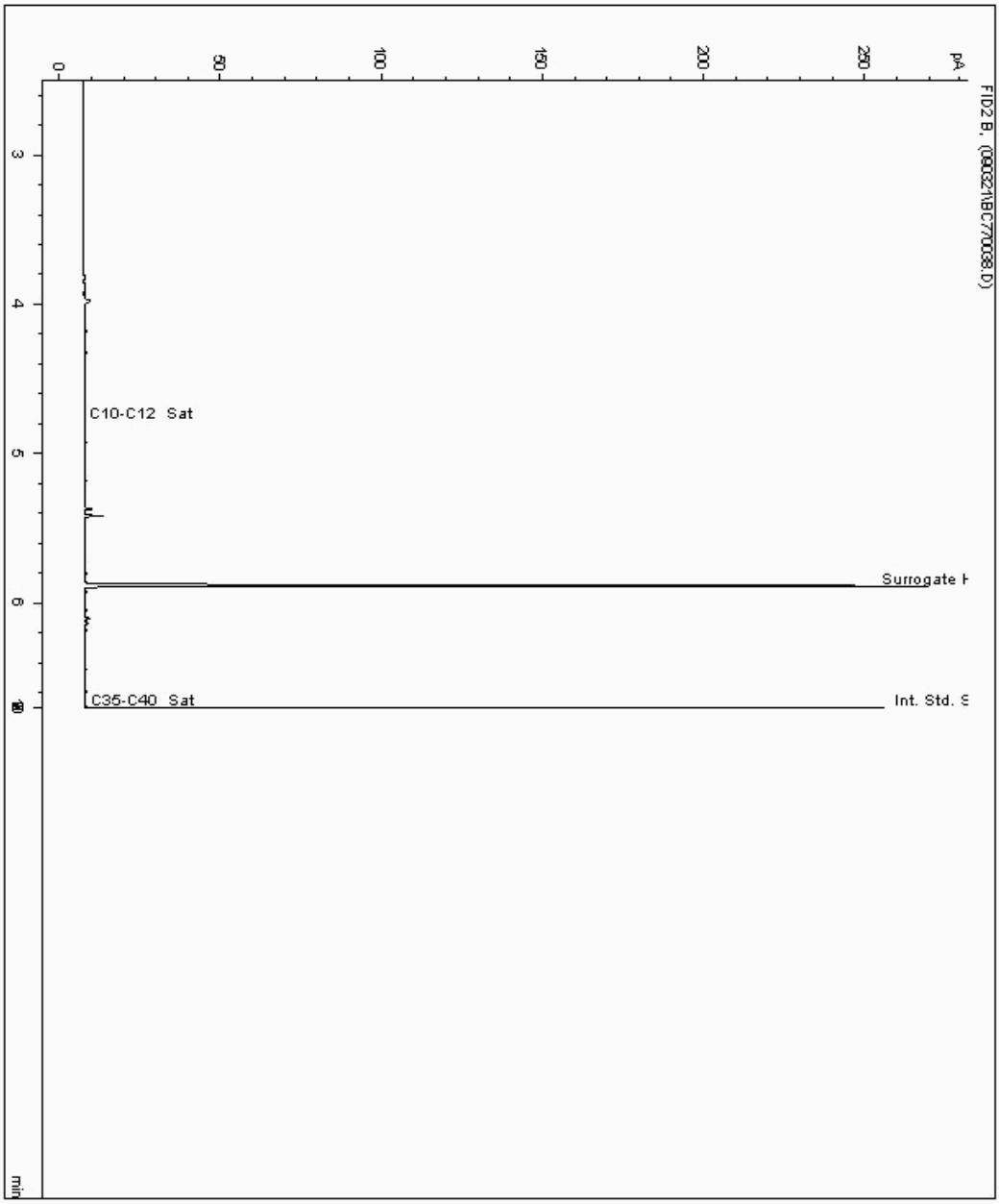
SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24894398 **Depth :** 0.00 - 0.00
Sample ID : BH09

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23277364-
Date Acquired : 9/4/2021 5:55:29 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

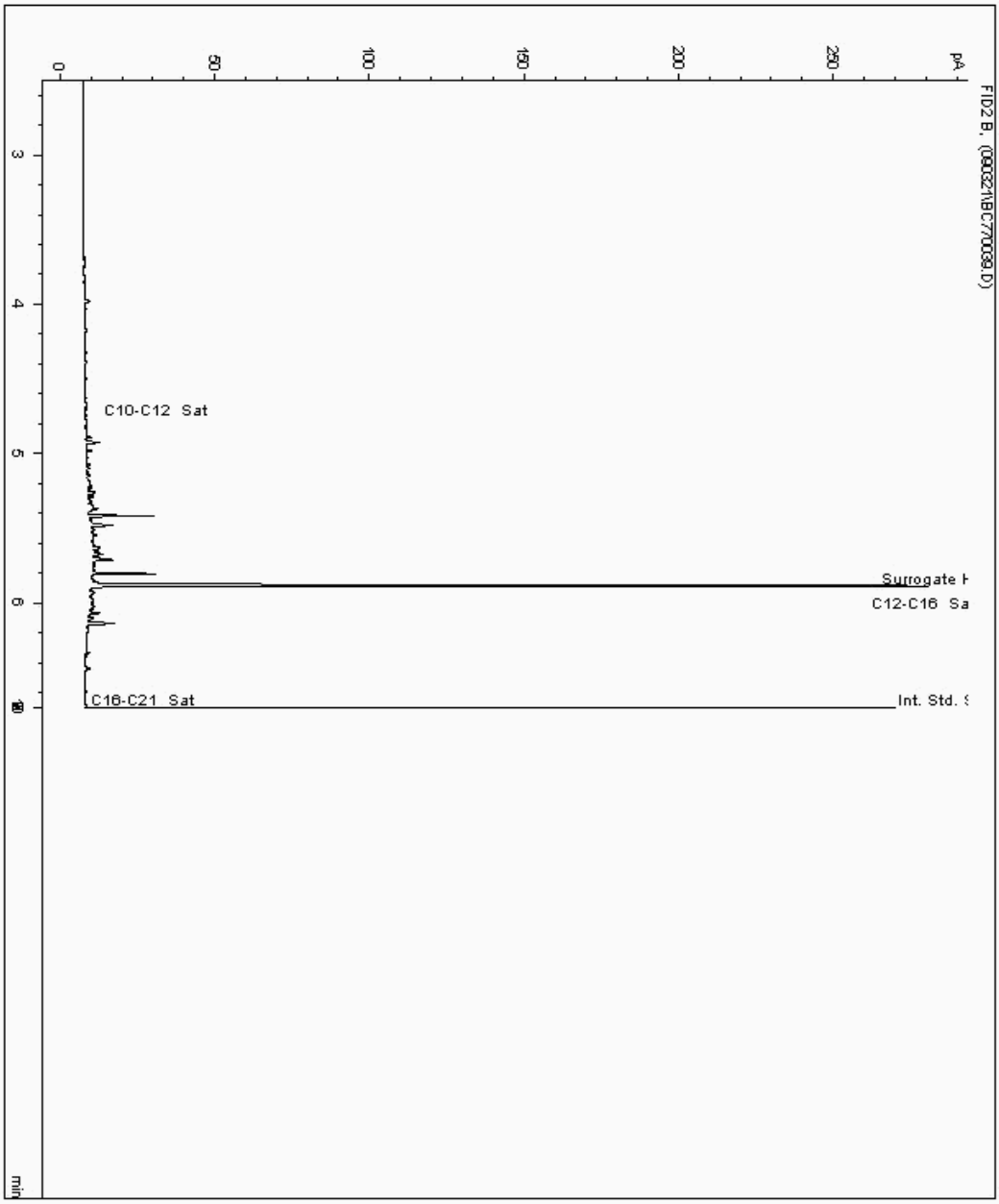
SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24894452 **Depth :** 0.00 - 0.00
Sample ID : BH61

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23277439-
Date Acquired : 9/4/2021 6:19:28 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

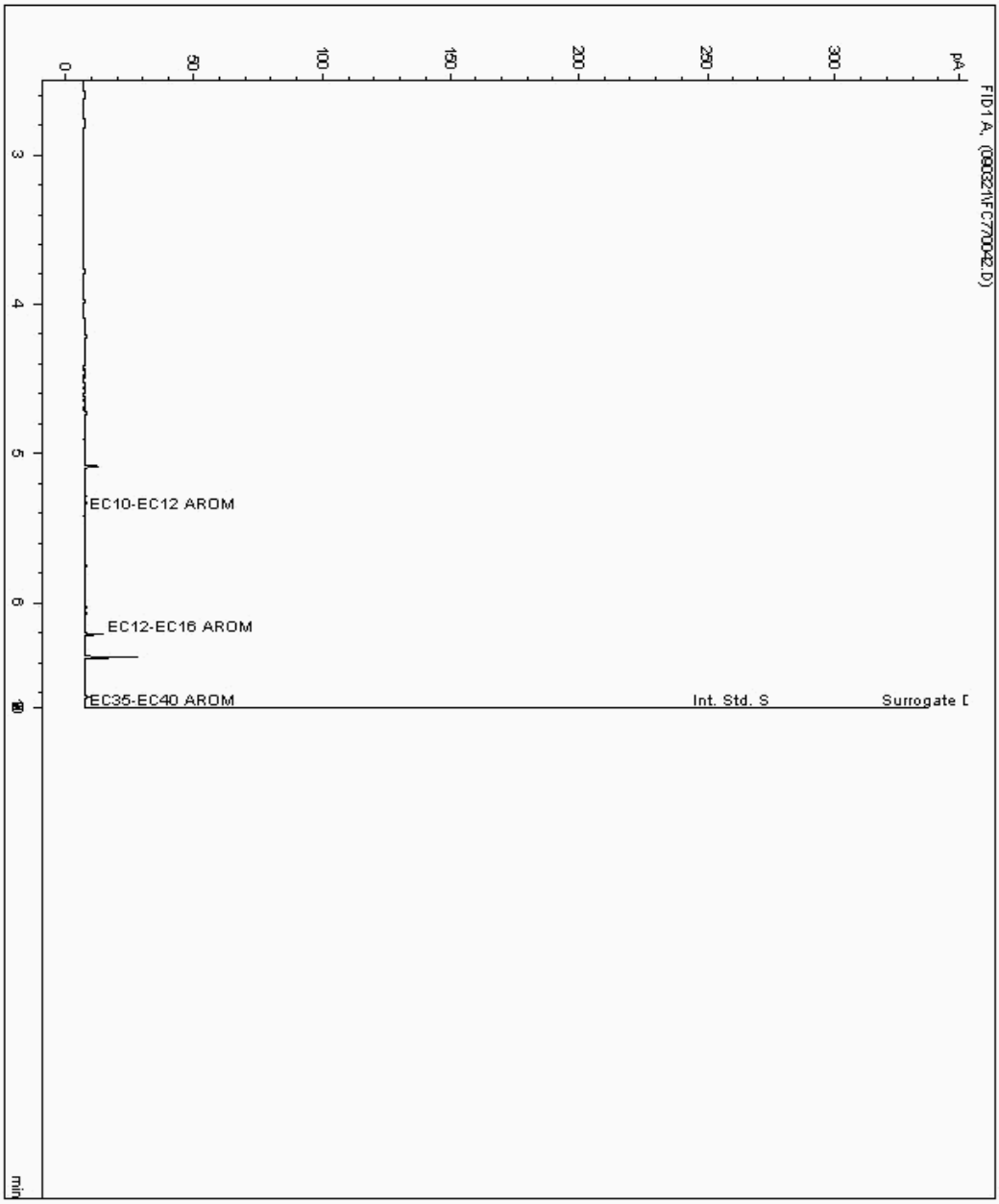
SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24894172 **Sample ID :** BH10 **Depth :** 0.00 - 0.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23277386-
Date Acquired : 9/4/2021 7:31:18 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.026



CERTIFICATE OF ANALYSIS

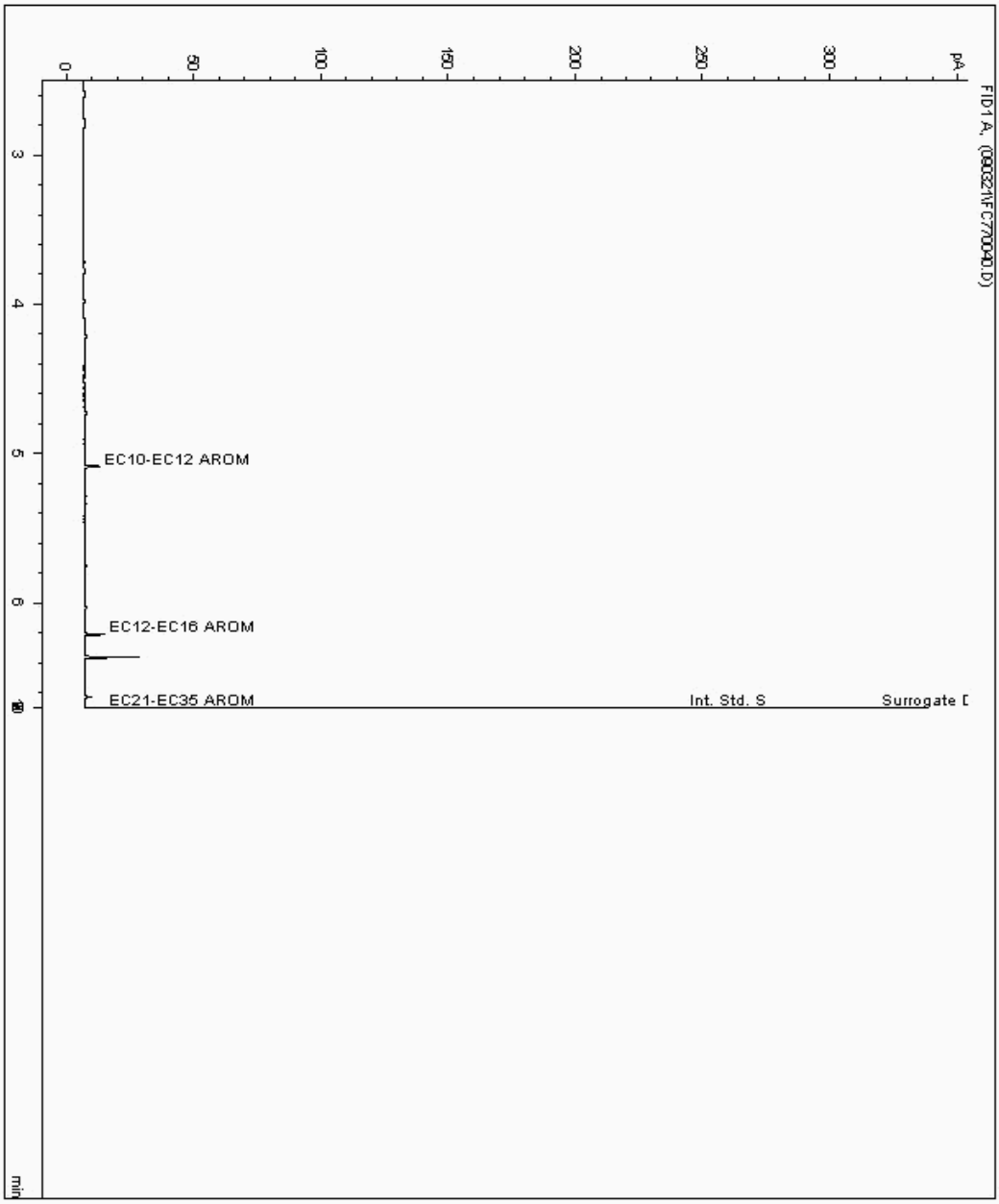
SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24894278 **Depth :** 0.00 - 0.00
Sample ID : BH07

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23277404-
Date Acquired : 9/4/2021 6:43:20 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

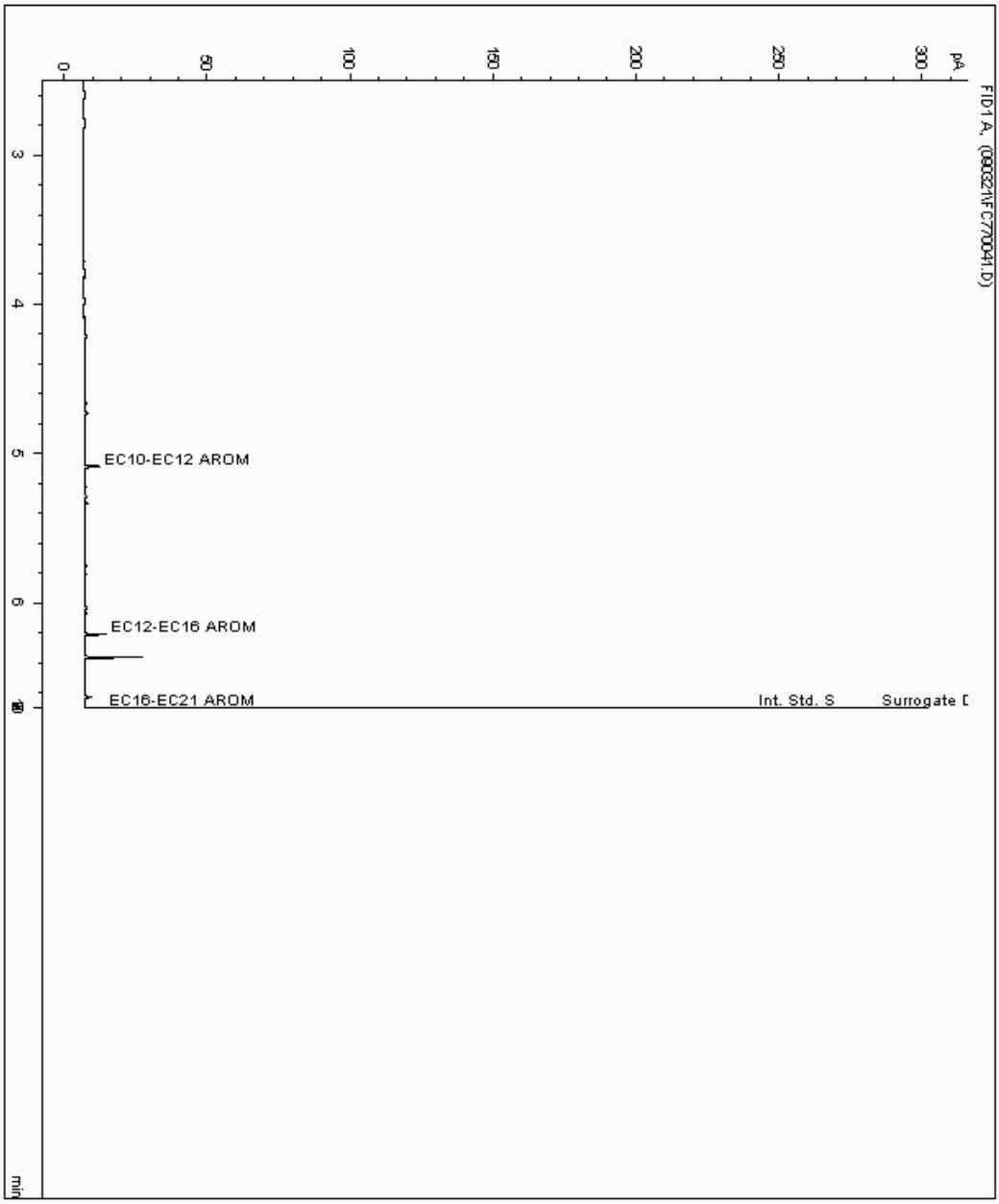
SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24894324 **Depth :** 0.00 - 0.00
Sample ID : BH60

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23277422-
Date Acquired : 9/4/2021 7:07:14 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

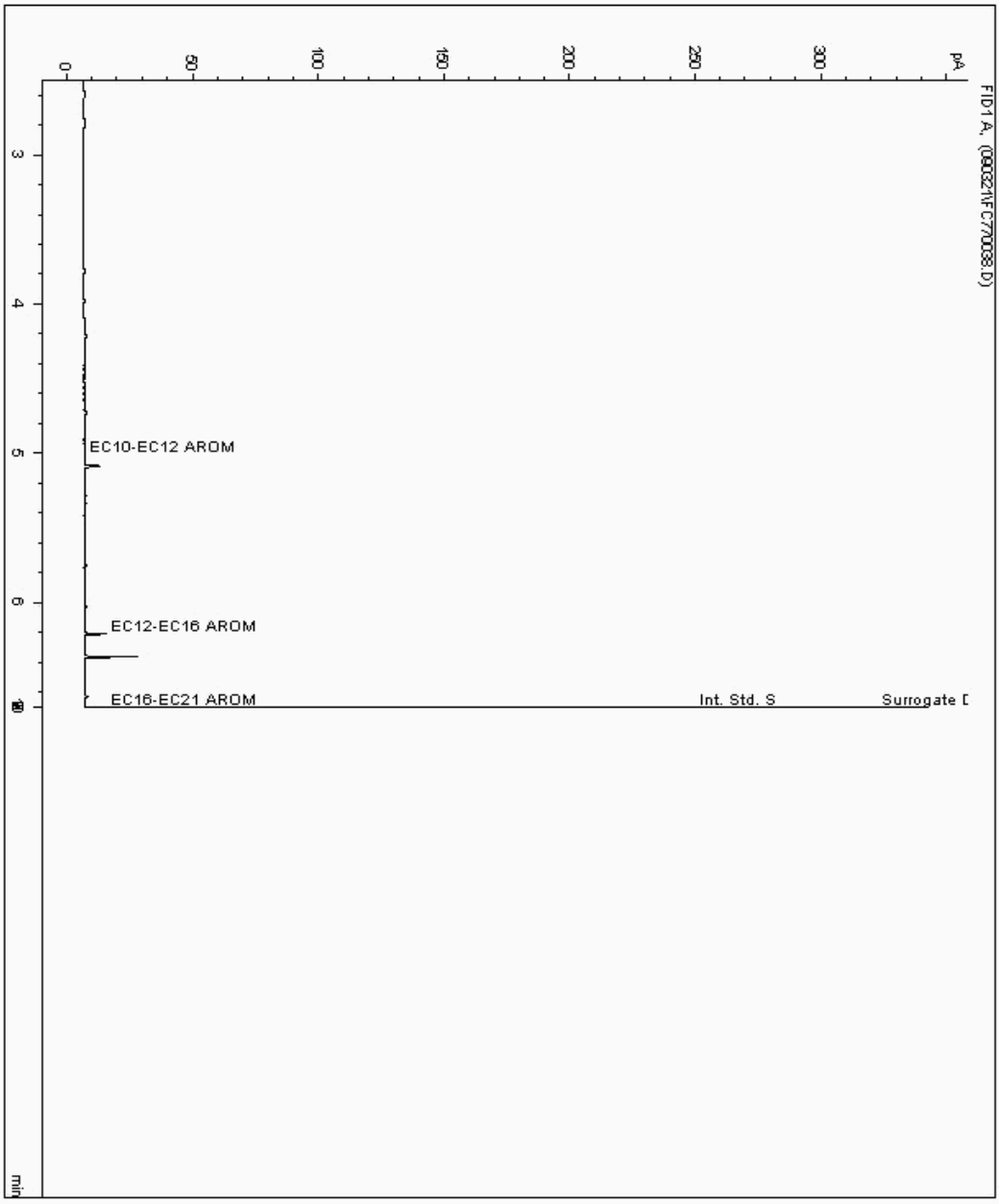
SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24894398 **Depth :** 0.00 - 0.00
Sample ID : BH09

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23277365-
Date Acquired : 9/4/2021 5:55:28 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

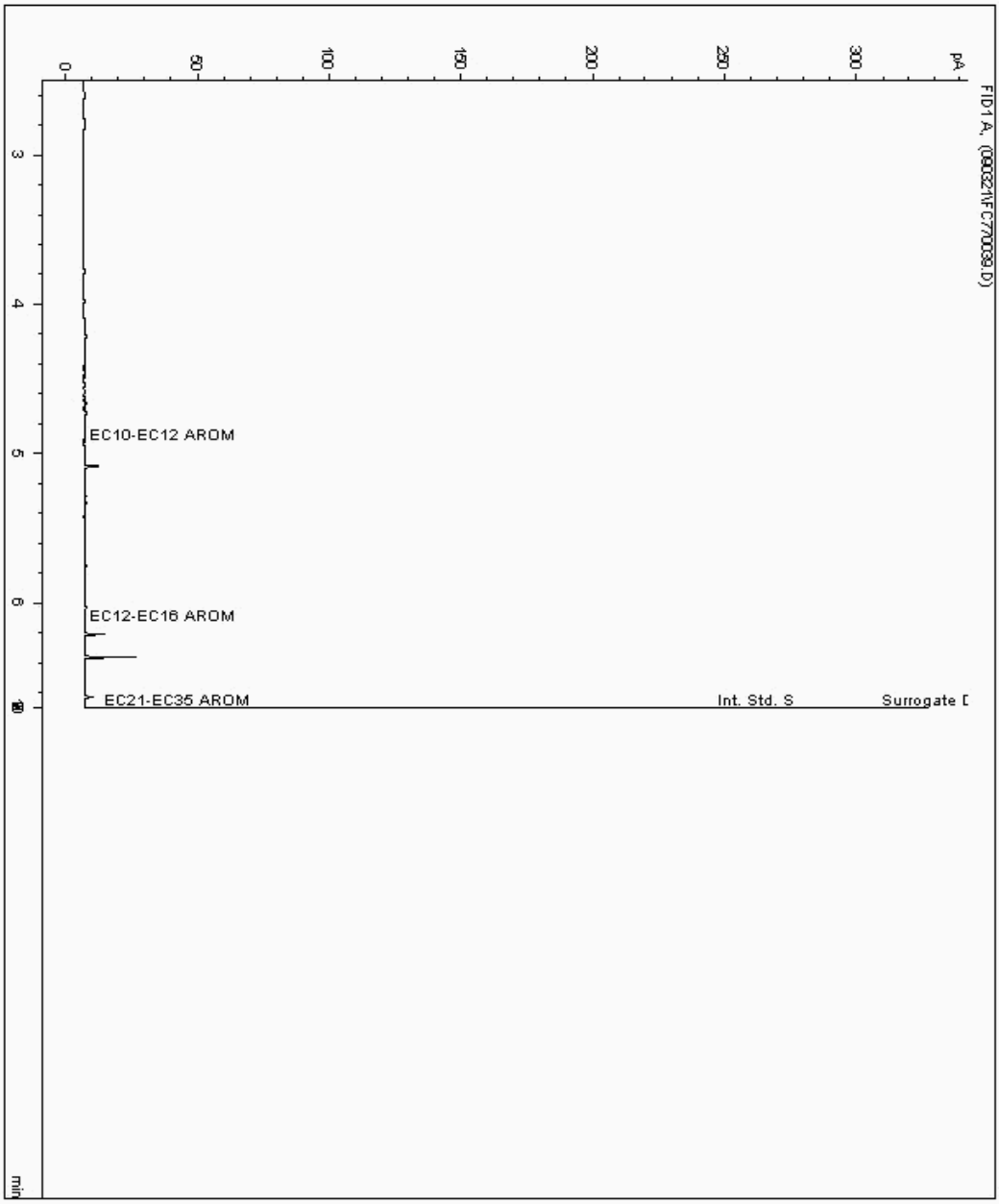
SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24894452 **Depth :** 0.00 - 0.00
Sample ID : BH61

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23277440-
Date Acquired : 9/4/2021 6:19:28 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

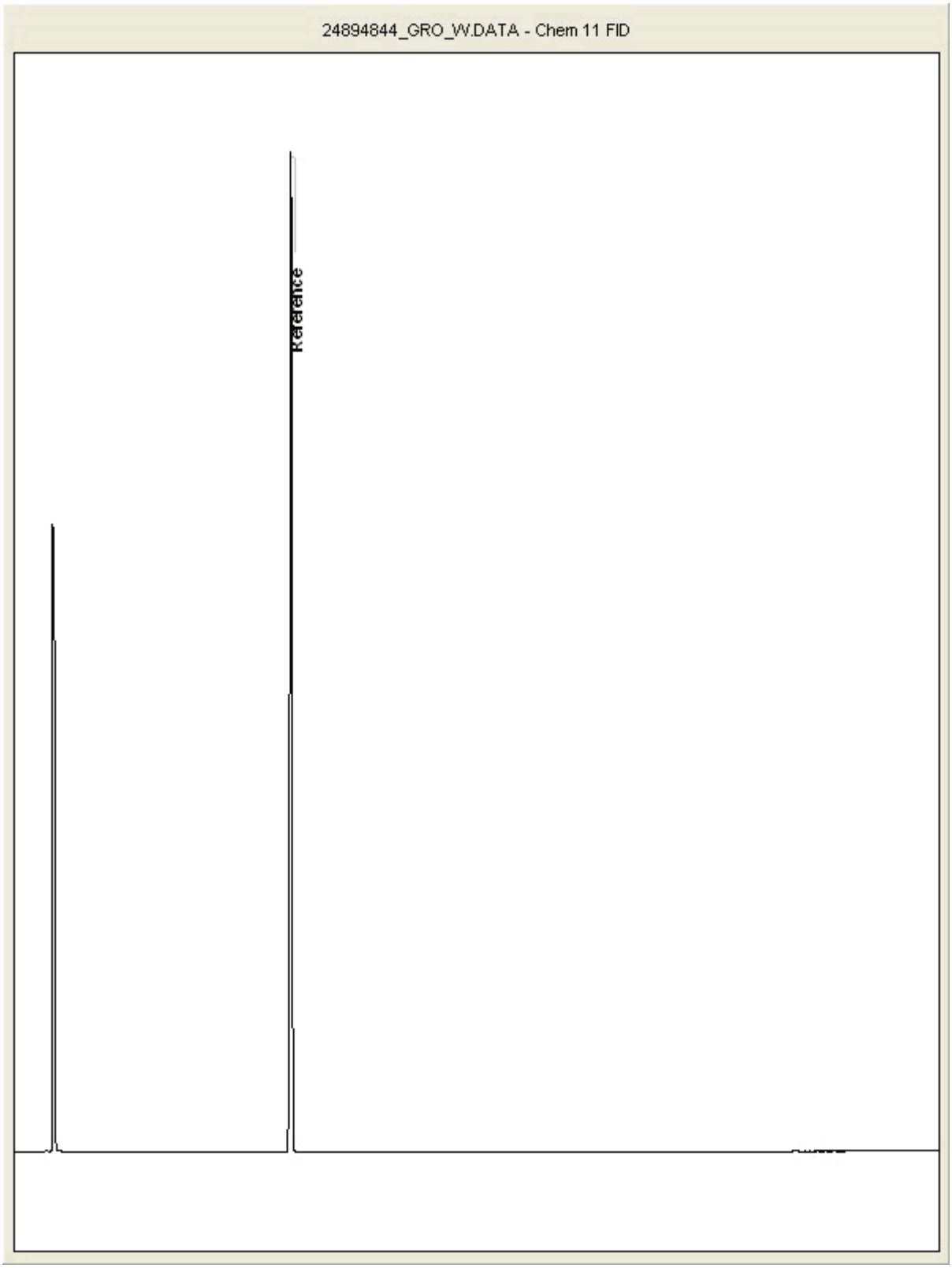
SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 24894844
Sample ID : BH09

Depth : 0.00 - 0.00



CERTIFICATE OF ANALYSIS

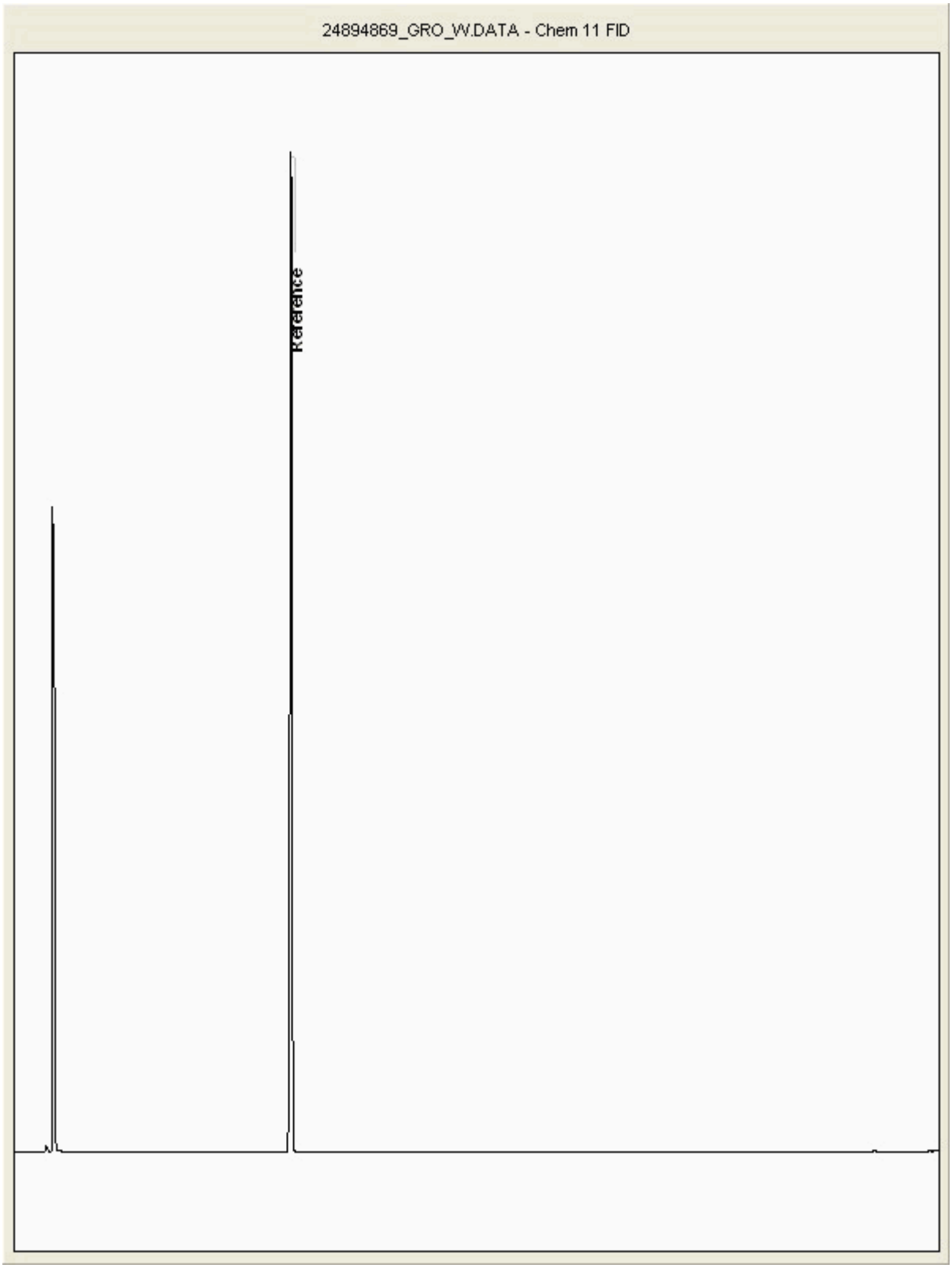
SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 24894869
Sample ID : BH60

Depth : 0.00 - 0.00



CERTIFICATE OF ANALYSIS

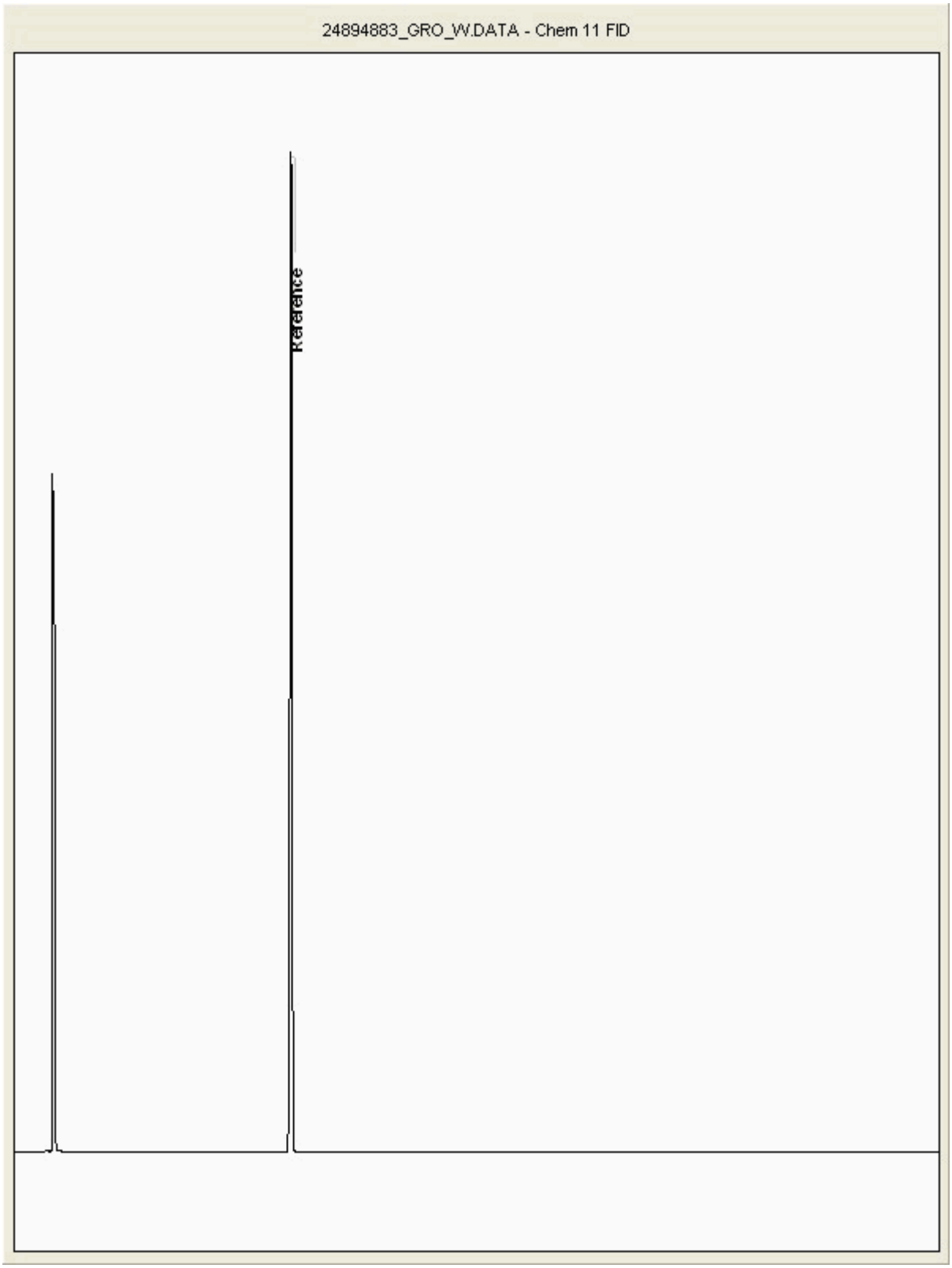
SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 24894883
Sample ID : BH10

Depth : 0.00 - 0.00



CERTIFICATE OF ANALYSIS

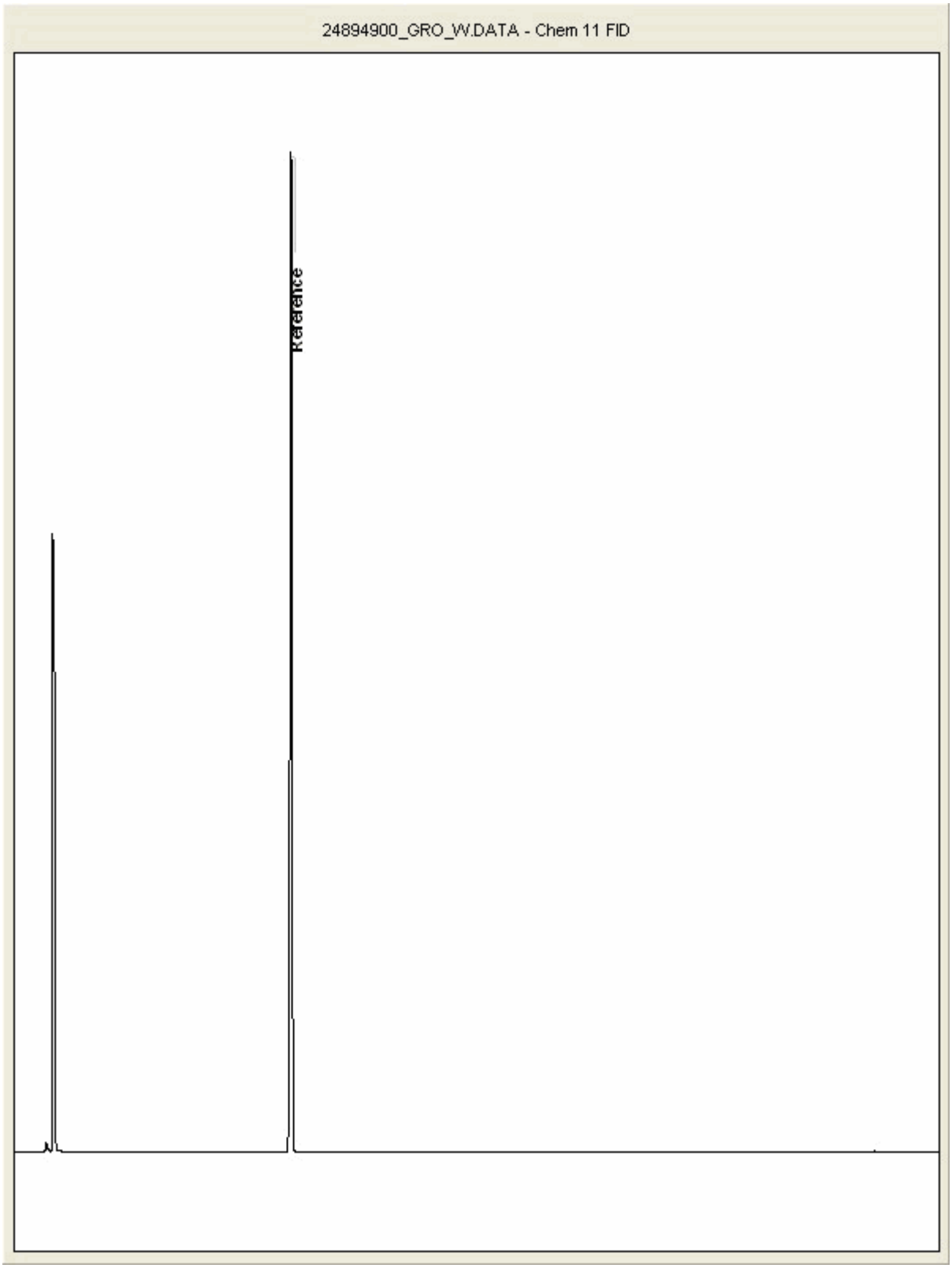
SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 24894900
Sample ID : BH61

Depth : 0.00 - 0.00



CERTIFICATE OF ANALYSIS

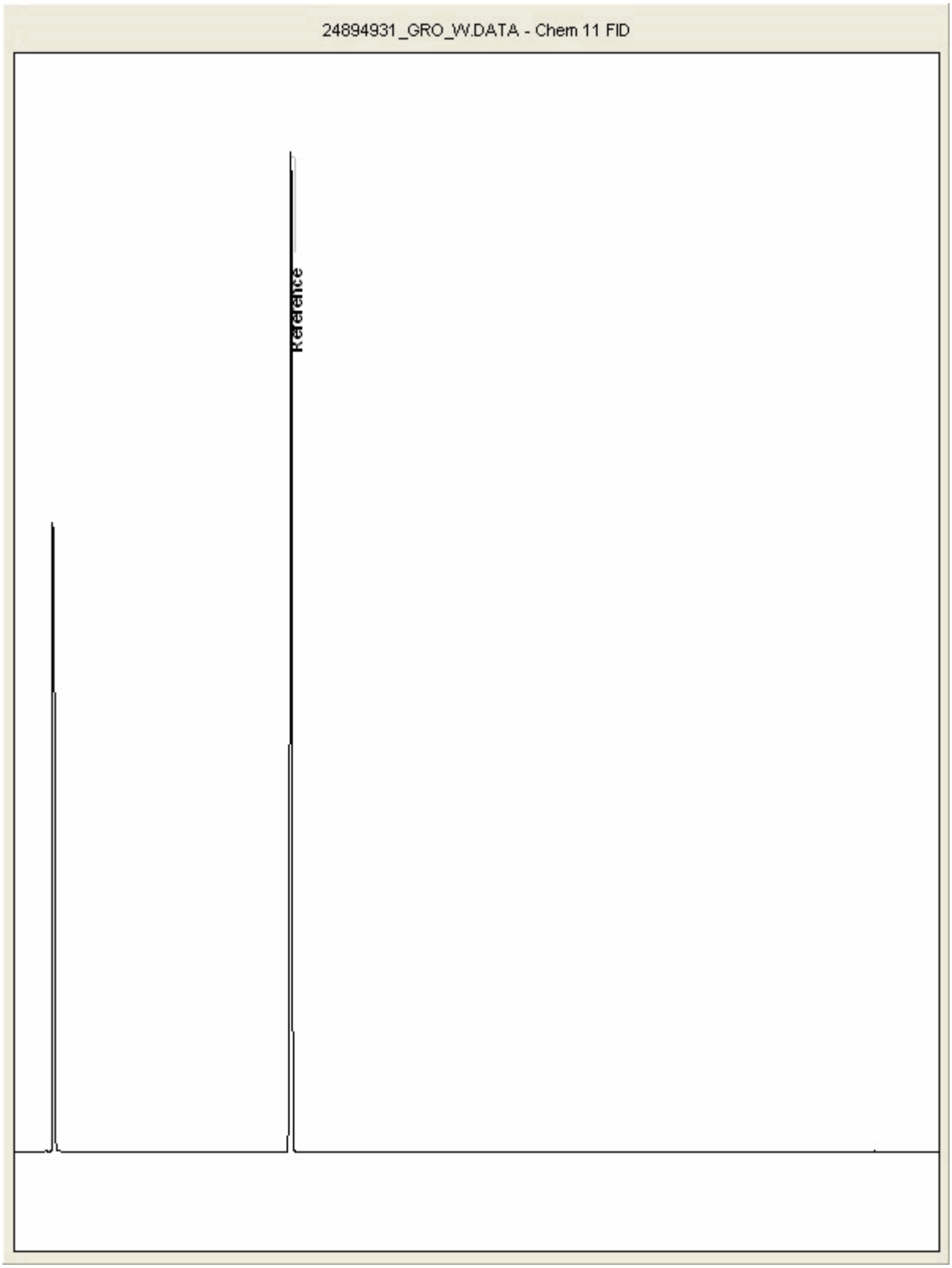
SDG:	210828-19	**Client Reference:**	784-B026948	**Report Number:**	611996
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 24894931
Sample ID : BH07

Depth : 0.00 - 0.00



Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

19. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	08 September 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210901-35
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	612244

This report has been revised and directly supersedes 611978 in its entirety.

We received 4 samples on Saturday August 28, 2021 and 4 of these samples were scheduled for analysis which was completed on Wednesday September 08, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	210901-35	**Client Reference:**	784-B026948	**Report Number:**	612244
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	611978

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24898462	BH05	ES1	0.00 - 0.00	27/08/2021
24898480	BH56	ES1	0.00 - 0.00	27/08/2021
24898443	WS15	ES1	0.00 - 0.00	27/08/2021
24898497	WS25	ES1	0.00 - 0.00	27/08/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210901-35	**Client Reference:**	784-B026948	**Report Number:**	612244
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	611978

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)								24898462							24898480							24898443					24898497				
Customer Sample Reference								BH05							BH56							WS15					WS25				
AGS Reference								ES1							ES1							ES1					ES1				
Depth (m)								0.00 - 0.00							0.00 - 0.00							0.00 - 0.00					0.00 - 0.00				
Container								0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)		0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)		0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	
Sample Type								GW	GW	GW	GW	GW	GW		GW	GW	GW	GW	GW	GW		GW	GW	GW	GW	GW	GW	GW	GW	GW	
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 1															X														
Ammonium Low	All	NDPs: 0 Tests: 4				X										X							X						X		
Anions by Kone (w)	All	NDPs: 0 Tests: 4			X											X							X						X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 4					X													X					X						
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 4						X										X													X
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 4	X												X							X							X		
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 4	X												X							X							X		
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 4	X												X							X							X		
GRO by GC-FID (W)	All	NDPs: 0 Tests: 4							X												X					X					
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 4		X												X							X						X		
Mercury Dissolved	All	NDPs: 0 Tests: 4					X											X													X
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 4	X												X							X							X		
Pesticides (Suite I) by GCMS	All	NDPs: 0 Tests: 1															X														
Pesticides (Suite II) by GCMS	All	NDPs: 0 Tests: 1															X														
pH Value	All	NDPs: 0 Tests: 4		X												X							X						X		

24898497	WS25	ES1	0.00 - 0.00	Vial (ALE297)	NaOH (ALE245)
				GW	GW
					X
				X	

CERTIFICATE OF ANALYSIS

Validated

SDG:	210901-35	**Client Reference:**	784-B026948	**Report Number:**	612244
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	611978

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)								24898462							24898480							24898443					24898497
Customer Sample Reference								BH05							BH56							WS15					WS25
AGS Reference								ES1							ES1							ES1					ES1
Depth (m)								0.00 - 0.00							0.00 - 0.00							0.00 - 0.00					0.00 - 0.00
Container								0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)
Sample Type								GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
Phenols by HPLC (W)	All	NDPs: 0 Tests: 4								X						X						X						X	
Sulphide	All	NDPs: 0 Tests: 4							X						X						X						X		
Total Metals by ICP-MS	All	NDPs: 0 Tests: 4							X						X						X						X		
TPH CWG (W)	All	NDPs: 0 Tests: 4	X							X						X						X							

24898497	WS25	ES1	0.00 - 0.00	Vial (ALE297)	GW
				NaOH (ALE245)	GW

CERTIFICATE OF ANALYSIS

SDG:	210901-35	**Client Reference:**	784-B026948	**Report Number:**	612244
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	611978

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH05	BH56	WS15	WS25		
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)		
			Date Sampled	27/08/2021	27/08/2021	27/08/2021	27/08/2021		
			Sampled Time	.	.	.	.		
			Date Received	28/08/2021	28/08/2021	28/08/2021	28/08/2021		
			SDG Ref	210901-35	210901-35	210901-35	210901-35		
			Lab Sample No.(s)	24898462	24898480	24898443	24898497		
			AGS Reference	ES1	ES1	ES1	ES1		
Carbon, Organic (diss.filt)	<3 mg/l	TM090		6.11	6.06	4.97	4.73		
Ammoniacal Nitrogen as N (low level)	<0.01 mg/l	TM099		0.998 #	0.785 #	0.59 #	0.552 #		
Ammoniacal Nitrogen Low as NH4	<0.01 mg/l	TM099		1.28 #	1.01 #	0.759 #	0.71 #		
Sulphide	<0.01 mg/l	TM101		<0.01 2 #	<0.01 2 #	<0.01 2 #	<0.01 2 #		
Arsenic (diss.filt)	<0.5 µg/l	TM152		0.984 #	11.3 #	1.67 2 #	8.09 #		
Boron (diss.filt)	<10 µg/l	TM152		454 #	126 #	121 2 #	126 #		
Cadmium (diss.filt)	<0.08 µg/l	TM152		<0.08 #	<0.08 #	<0.08 2 #	<0.08 #		
Chromium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	<1 2 #	<1 #		
Copper (diss.filt)	<0.3 µg/l	TM152		<0.3 #	0.518 #	<0.3 2 #	<0.3 #		
Lead (diss.filt)	<0.2 µg/l	TM152		<0.2 #	<0.2 #	<0.2 2 #	<0.2 #		
Manganese (diss.filt)	<3 µg/l	TM152		2560 #	2750 #	2640 2 #	2750 #		
Nickel (diss.filt)	<0.4 µg/l	TM152		10.3 #	8.77 #	17.5 2 #	5.54 #		
Selenium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	<1 2 #	<1 #		
Vanadium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	<1 2 #	<1 #		
Zinc (diss.filt)	<1 µg/l	TM152		2.41 #	5.14 #	7.81 2 #	6.16 #		
Calcium (Dis.Filt)	<0.2 mg/l	TM152		516 #	120 #	125 2 #	117 #		
Iron (Dis.Filt)	<0.019 mg/l	TM152		0.0558 #	14.4 #	<0.019 2 #	16.2 #		
Hardness, Total as CaCO3 unfiltered	<0.35 mg/l	TM152		4280 2	2110 2	765 2	737 2		
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 #	0.0125 2 #	<0.01 #		
Sulphate	<2 mg/l	TM184		2240 #	208 #	189 #	637 #		
Nitrate as NO3	<0.3 mg/l	TM184		<0.3	<0.3	<0.3	<0.3		
Cyanide, Total	<0.05 mg/l	TM227		<0.05 @ #	<0.05 @ #	<0.05 @ #	<0.05 @ #		
Cyanide, Free	<0.05 mg/l	TM227		<0.05 @ #	<0.05 @ #	<0.05 @ #	<0.05 @ #		
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.03 #	<0.03 #	<0.03 #	<0.03 #		
pH	<1 pH Units	TM256		7.7 #	7 #	7.1 #	7.14 #		
Phenol	<0.002 mg/l	TM259		<0.002 #	<0.002 #	<0.002 #	<0.002 #		
Cresols	<0.006 mg/l	TM259		<0.006 #	<0.006 #	<0.006 #	<0.006 #		
Xylenols	<0.008 mg/l	TM259		<0.008 #	<0.008 #	<0.008 #	<0.008 #		
Phenols, Total Detected monohydric	<0.016 mg/l	TM259		<0.016 #	<0.016 #	<0.016 #	<0.016 #		
Trifluralin	<0.01 µg/l	TM343				<0.02			
alpha-HCH	<0.01 µg/l	TM343				<0.02			
gamma-HCH (Lindane)	<0.01 µg/l	TM343				<0.02			

CERTIFICATE OF ANALYSIS

SDG:	210901-35	**Client Reference:**	784-B026948	**Report Number:**	612244
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	611978

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH05	BH56	WS15	WS25		
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)		
			Date Sampled	27/08/2021	27/08/2021	27/08/2021	27/08/2021		
			Sampled Time	.	.	.	.		
			Date Received	28/08/2021	28/08/2021	28/08/2021	28/08/2021		
			SDG Ref	210901-35	210901-35	210901-35	210901-35		
			Lab Sample No.(s)	24898462	24898480	24898443	24898497		
			AGS Reference	ES1	ES1	ES1	ES1		
Heptachlor	<0.01 µg/l	TM343				<0.02			
Aldrin	<0.01 µg/l	TM343				<0.02			
beta-HCH	<0.01 µg/l	TM343				<0.02			
Isodrin	<0.01 µg/l	TM343				<0.02			
delta-HCH	<0.01 µg/l	TM343				<0.02			
Heptachlor epoxide	<0.01 µg/l	TM343				<0.02			
o,p'-DDE	<0.01 µg/l	TM343				<0.02			
Endosulphan I	<0.01 µg/l	TM343				<0.02			
trans-Chlordane	<0.01 µg/l	TM343				<0.02			
cis-Chlordane	<0.01 µg/l	TM343				<0.02			
p,p'-DDE	<0.01 µg/l	TM343				<0.02			
Dieldrin	<0.01 µg/l	TM343				<0.02			
o,p'-DDD (TDE)	<0.01 µg/l	TM343				<0.02			
Endrin	<0.01 µg/l	TM343				<0.04			
o,p'-DDT	<0.01 µg/l	TM343				<0.04			
p,p'-DDD (TDE)	<0.01 µg/l	TM343				<0.02			
Endosulphan II	<0.02 µg/l	TM343				<0.04			
p,p'-DDT	<0.01 µg/l	TM343				<0.04			
o,p'-Methoxychlor	<0.01 µg/l	TM343				<0.04			
p,p'-Methoxychlor	<0.01 µg/l	TM343				<0.04			
Endosulphan Sulphate	<0.02 µg/l	TM343				<0.08			
Permethrin I	<0.01 µg/l	TM343				<0.02			
Permethrin II	<0.01 µg/l	TM343				<0.02			
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344				<0.1			
Hexachlorobutadiene	<0.01 µg/l	TM344				<0.1			
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344				<0.1			
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344				<0.1			
Dichlorvos	<0.01 µg/l	TM344				<0.1			
Dichlobenil	<0.01 µg/l	TM344				<0.1			
Mevinphos	<0.01 µg/l	TM344				<0.1			
Tecnazene	<0.01 µg/l	TM344				<0.1			
Hexachlorobenzene	<0.01 µg/l	TM344				<0.1			

CERTIFICATE OF ANALYSIS

SDG:	210901-35	**Client Reference:**	784-B026948	**Report Number:**	612244
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	611978

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH05	BH56	WS15	WS25		
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)		
			Date Sampled	27/08/2021	27/08/2021	27/08/2021	27/08/2021		
			Sampled Time	.	.	.	.		
			Date Received	28/08/2021	28/08/2021	28/08/2021	28/08/2021		
			SDG Ref	210901-35	210901-35	210901-35	210901-35		
			Lab Sample No.(s)	24898462	24898480	24898443	24898497		
			AGS Reference	ES1	ES1	ES1	ES1		
Demeton-S-methyl	<0.01 µg/l	TM344				<0.1			
Phorate	<0.01 µg/l	TM344				<0.1			
Diazinon	<0.01 µg/l	TM344				<0.1			
Triallate	<0.01 µg/l	TM344				<0.1			
Atrazine	<0.01 µg/l	TM344				<0.1			
Simazine	<0.01 µg/l	TM344				<0.1			
Disulfoton	<0.01 µg/l	TM344				<0.1			
Propetamphos	<0.01 µg/l	TM344				<0.1			
Chlorpyriphos-methyl	<0.01 µg/l	TM344				<0.1			
Dimethoate	<0.01 µg/l	TM344				<0.1			
Pirimiphos-methyl	<0.01 µg/l	TM344				<0.1			
Chlorpyriphos	<0.01 µg/l	TM344				0.25			
Methyl Parathion	<0.01 µg/l	TM344				<0.1			
Malathion	<0.01 µg/l	TM344				<0.1			
Fenthion	<0.01 µg/l	TM344				<0.1			
Fenitrothion	<0.01 µg/l	TM344				<0.1			
Triadimefon	<0.01 µg/l	TM344				<0.1			
Pendimethalin	<0.01 µg/l	TM344				<0.1			
Parathion	<0.01 µg/l	TM344				<0.1			
Chlorfenvinphos	<0.01 µg/l	TM344				<0.1			
trans-Chlordane	<0.01 µg/l	TM344				<0.1			
cis-Chlordane	<0.01 µg/l	TM344				<0.1			
Ethion	<0.01 µg/l	TM344				<0.1			
Carbophenothion	<0.01 µg/l	TM344				<0.1			
Triazophos	<0.01 µg/l	TM344				<0.1			
Phosalone	<0.01 µg/l	TM344				<0.1			
Azinphos methyl	<0.02 µg/l	TM344				<0.2			
Azinphos ethyl	<0.02 µg/l	TM344				<0.2			
Dinitro-o-cresol	<0.1 µg/l	TM411				<1			
Clopyralid	<0.04 µg/l	TM411				<0.4			
MCPA	<0.05 µg/l	TM411				<0.5			
Mecoprop	<0.04 µg/l	TM411				<0.4			

CERTIFICATE OF ANALYSIS

SDG:	210901-35	**Client Reference:**	784-B026948	**Report Number:**	612244
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	611978

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH05	BH56	WS15	WS25		
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)		
			Date Sampled	27/08/2021	27/08/2021	27/08/2021	27/08/2021		
			Sampled Time	.	.	.	.		
			Date Received	28/08/2021	28/08/2021	28/08/2021	28/08/2021		
			SDG Ref	210901-35	210901-35	210901-35	210901-35		
			Lab Sample No.(s)	24898462	24898480	24898443	24898497		
			AGS Reference	ES1	ES1	ES1	ES1		
Dicamba	<0.04 µg/l	TM411				<0.4			
MCPB	<0.05 µg/l	TM411				<0.5			
2,4-DB	<0.1 µg/l	TM411				<1			
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411				<0.5			
Dichlorprop	<0.1 µg/l	TM411				<1			
Triclopyr	<0.05 µg/l	TM411				<0.5			
Fenoprop (Silvex)	<0.1 µg/l	TM411				<1			
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411				<0.5			
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411				<0.5			
Bromoxynil	<0.04 µg/l	TM411				<0.4			
Benazolin	<0.04 µg/l	TM411				<0.4			
Ioxynil	<0.05 µg/l	TM411				<0.5			
Pentachlorophenol	<0.04 µg/l	TM411				<0.4			
Fluoroxypyr	<0.1 µg/l	TM411				<1			

CERTIFICATE OF ANALYSIS

SDG:	210901-35	**Client Reference:**	784-B026948	**Report Number:**	612244
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	611978

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	BH05	BH56	WS15	WS25		
Customer Sample Ref.			BH05	BH56	WS15	WS25		
Depth (m)			0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
Sample Type			Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)		
Date Sampled			27/08/2021	27/08/2021	27/08/2021	27/08/2021		
Sampled Time			.	.	.	.		
Date Received			28/08/2021	28/08/2021	28/08/2021	28/08/2021		
SDG Ref			210901-35	210901-35	210901-35	210901-35		
Lab Sample No.(s)			24898462	24898480	24898443	24898497		
AGS Reference			ES1	ES1	ES1	ES1		
Naphthalene (aq)	<0.01 µg/l	TM178	<0.01 #	<0.2 #	<0.01 #	<0.01 #		
Acenaphthene (aq)	<0.005 µg/l	TM178	0.0126 #	<0.1 #	<0.005 #	<0.005 #		
Acenaphthylene (aq)	<0.005 µg/l	TM178	0.00694 #	<0.1 #	<0.005 #	<0.005 #		
Fluoranthene (aq)	<0.005 µg/l	TM178	0.459 #	0.395 #	0.177 #	0.113 #		
Anthracene (aq)	<0.005 µg/l	TM178	0.0316 #	<0.1 #	0.0153 #	0.00984 #		
Phenanthrene (aq)	<0.005 µg/l	TM178	0.113 #	0.264 #	0.0796 #	0.039 #		
Fluorene (aq)	<0.005 µg/l	TM178	0.0119 #	<0.1 #	0.00798 #	<0.005 #		
Chrysene (aq)	<0.005 µg/l	TM178	0.282 #	0.216 #	0.0849 #	0.0579 #		
Pyrene (aq)	<0.005 µg/l	TM178	0.497 #	0.345 #	0.169 #	0.104 #		
Benzo(a)anthracene (aq)	<0.005 µg/l	TM178	0.243 #	0.347 #	0.0791 #	0.0525 #		
Benzo(b)fluoranthene (aq)	<0.005 µg/l	TM178	0.465 #	0.252 #	0.128 #	0.0777 #		
Benzo(k)fluoranthene (aq)	<0.005 µg/l	TM178	0.233 #	<0.1 #	0.0524 #	0.0362 #		
Benzo(a)pyrene (aq)	<0.002 µg/l	TM178	0.352 #	0.189 #	0.0989 #	0.0668 #		
Dibenzo(a,h)anthracene (aq)	<0.005 µg/l	TM178	0.0518 #	<0.1 #	0.0201 #	0.0115 #		
Benzo(g,h,i)perylene (aq)	<0.005 µg/l	TM178	0.253 #	<0.1 #	0.0821 #	0.0559 #		
Indeno(1,2,3-cd)pyrene (aq)	<0.005 µg/l	TM178	0.252 #	0.251 #	0.075 #	0.0474 #		
PAH, Total Detected USEPA 16 (aq)	<0.082 µg/l	TM178	3.26 #	2.26 #	1.07 #	0.671 #		

CERTIFICATE OF ANALYSIS

SDG:	210901-35	**Client Reference:**	784-B026948	**Report Number:**	612244
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	611978

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
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*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH05	BH56	WS15	WS25		
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)		
			Date Sampled	27/08/2021	27/08/2021	27/08/2021	27/08/2021		
			Sampled Time	.	.	.	.		
			Date Received	28/08/2021	28/08/2021	28/08/2021	28/08/2021		
			SDG Ref	210901-35	210901-35	210901-35	210901-35		
			Lab Sample No.(s)	24898462	24898480	24898443	24898497		
			AGS Reference	ES1	ES1	ES1	ES1		
GRO Surrogate % recovery**	%	TM245		103	104	109	98		
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #	<50 #	<50 #		
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #		
Benzene	<7 µg/l	TM245		<7 #	<7 #	<7 #	<7 #		
Toluene	<4 µg/l	TM245		<4 #	<4 #	<4 #	<4 #		
Ethylbenzene	<5 µg/l	TM245		<5 #	<5 #	<5 #	<5 #		
m,p-Xylene	<8 µg/l	TM245		<8 #	<8 #	<8 #	<8 #		
o-Xylene	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #		
Sum of detected Xylenes	<11 µg/l	TM245		<11	<11	<11	<11		
Sum of detected BTEX	<28 µg/l	TM245		<28	<28	<28	<28		
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	<10		
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10	<10		
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	<10	<10		
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	<10	<10		
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10		
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10		
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		2410	<10	56	<10		
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		2410	<10	56	<10		
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10	<10		
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10	<10		
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	<10	<10		
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	<10	<10		
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10		
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10		
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		572	<10	<10	<10		
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		572	<10	<10	<10		
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		2980	<10	56	<10		
Aliphatics >C16-C35 Aqueous	<10 µg/l	TM174		2410	<10	56	<10		

Table of Results - Appendix

Method No	Reference	Description
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM343	EPA 8270D - Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of Selected Pesticides (Suite I) in Liquids by GCMS
TM344	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite II) by GCMS
TM411	Acid_Herbs_GCMS	Acid Herbs in Water by GCMS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG:	210901-35	**Client Reference:**	784-B026948	**Report Number:**	612244
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	611978

Test Completion Dates

Lab Sample No(s)	24898462	24898480	24898443	24898497
Customer Sample Ref.	BH05	BH56	WS15	WS25
AGS Ref.	ES1	ES1	ES1	ES1
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water
Acid Herbicides by GCMS			06-Sep-2021	
Ammonium Low	07-Sep-2021	07-Sep-2021	08-Sep-2021	07-Sep-2021
Anions by Kone (w)	06-Sep-2021	06-Sep-2021	06-Sep-2021	06-Sep-2021
Cyanide Comp/Free/Total/Thiocyanate	07-Sep-2021	07-Sep-2021	07-Sep-2021	07-Sep-2021
Dissolved Metals by ICP-MS	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021
Dissolved Organic/Inorganic Carbon	07-Sep-2021	08-Sep-2021	08-Sep-2021	07-Sep-2021
EPH CWG (Aliphatic) Aqueous GC (W)	06-Sep-2021	07-Sep-2021	07-Sep-2021	07-Sep-2021
EPH CWG (Aromatic) Aqueous GC (W)	06-Sep-2021	07-Sep-2021	07-Sep-2021	07-Sep-2021
GRO by GC-FID (W)	06-Sep-2021	06-Sep-2021	06-Sep-2021	06-Sep-2021
Hexavalent Chromium (w)	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021
Mercury Dissolved	03-Sep-2021	03-Sep-2021	02-Sep-2021	03-Sep-2021
Nitrite by Kone (w)	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021
PAH Spec MS - Aqueous (W)	07-Sep-2021	08-Sep-2021	07-Sep-2021	07-Sep-2021
Pesticides (Suite I) by GCMS			07-Sep-2021	
Pesticides (Suite II) by GCMS			03-Sep-2021	
pH Value	02-Sep-2021	02-Sep-2021	02-Sep-2021	02-Sep-2021
Phenols by HPLC (W)	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021
Sulphide	07-Sep-2021	07-Sep-2021	07-Sep-2021	07-Sep-2021
Total Metals by ICP-MS	02-Sep-2021	02-Sep-2021	02-Sep-2021	02-Sep-2021
TPH CWG (W)	06-Sep-2021	07-Sep-2021	07-Sep-2021	07-Sep-2021

ASSOCIATED AQC DATA

Acid Herbicides by GCMS

Component	Method Code	QC 2451
2,3,6-TBA (Raw)	TM411	**99.05** 72.24 : 118.28
2,4,5-T (Raw)	TM411	**90.0** 66.88 : 130.00
2,4-D (Raw)	TM411	**106.38** 68.29 : 133.58
2,4-DB (Raw)	TM411	**105.14** 57.23 : 133.50
Benazolin (Raw)	TM411	**110.42** 78.76 : 146.78
Bromoxynil (Raw)	TM411	**105.09** 77.69 : 118.97
Clopyralid (Raw)	TM411	**93.03** 64.11 : 124.08
Dicamba (Raw)	TM411	**102.85** 77.45 : 123.02
Dichloroprop (Raw)	TM411	**99.31** 74.86 : 126.35
DNOC (Raw)	TM411	**98.02** 65.53 : 129.07
Fenoprop (Raw)	TM411	**102.23** 74.33 : 126.19
Fluroxypyr (Raw)	TM411	**112.27** 80.51 : 140.78
Ioxynil (Raw)	TM411	**83.62** 42.19 : 122.44
MCPA (Raw)	TM411	**99.36** 79.83 : 124.11
MCPB (Raw)	TM411	**99.97** 33.12 : 147.97
Mecoprop (Raw)	TM411	**102.34** 80.77 : 125.74
Pentachlorophenol (Raw)	TM411	**111.17** 76.67 : 131.12
Triclopyr (Raw)	TM411	**105.87** 69.64 : 132.21

Ammonium Low

Component	Method Code	QC 2473	QC 2438
Ammoniacal Nitrogen as N	TM099	**97.6** 88.02 : 104.70	**98.8** 88.02 : 104.70

Anions by Kone (w)

CERTIFICATE OF ANALYSIS

SDG:	210901-35	**Client Reference:**	784-B026948	**Report Number:**	612244
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	611978

Anions by Kone (w)

Component	Method Code	QC 2498
Sulphate (soluble)	TM184	**105.6** 91.99 : 109.30
TON as NO3	TM184	**101.5** 90.35 : 108.35

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2467
Free Cyanide (W)	TM227	**81.25** 90.67 : 122.67
Thiocyanate (W)	TM227	**109.5** 92.25 : 117.75
Total Cyanide (W)	TM227	**104.75** 96.25 : 112.75

Dissolved Metals by ICP-MS

Component	Method Code	QC 2448	QC 2403
Aluminium	TM152	**101.33** 90.98 : 111.82	**100.33** 90.98 : 111.82
Antimony	TM152	**99.67** 90.44 : 113.04	**99.33** 90.44 : 113.04
Arsenic	TM152	**101.0** 88.00 : 112.00	**99.17** 88.00 : 112.00
Barium	TM152	**102.0** 90.20 : 111.19	**100.83** 90.20 : 111.19
Beryllium	TM152	**100.83** 87.77 : 113.97	**101.33** 87.77 : 113.97
Bismuth	TM152	**103.83** 91.90 : 112.20	**102.67** 91.90 : 112.20
Borate	TM152	**102.47** 88.00 : 112.00	**102.47** 88.00 : 112.00
Boron	TM152	**102.33** 96.48 : 114.93	**102.33** 96.48 : 114.93
Cadmium	TM152	**102.33** 96.43 : 110.53	**103.67** 96.43 : 110.53
Calcium	TM152	**104.0** 93.36 : 108.97	**101.33** 93.36 : 108.97
Chromium	TM152	**99.17** 91.84 : 108.67	**96.5** 91.84 : 108.67
Cobalt	TM152	**100.5** 88.00 : 112.00	**97.33** 88.00 : 112.00
Copper	TM152	**100.83** 92.47 : 118.11	**98.0** 92.47 : 118.11
Iron	TM152	**100.67** 93.23 : 106.27	**98.67** 93.23 : 106.27
Lead	TM152	**98.5** 88.00 : 112.00	**97.67** 88.00 : 112.00
Lithium	TM152	**101.17** 91.62 : 113.12	**101.5** 91.62 : 113.12
Magnesium	TM152	**100.0** 87.77 : 110.48	**98.0** 87.77 : 110.48

Dissolved Metals by ICP-MS

		QC 2448	QC 2403
Manganese	TM152	**100.83** 95.03 : 110.58	**98.83** 95.03 : 110.58
Molybdenum	TM152	**99.83** 88.00 : 112.00	**98.67** 88.00 : 112.00
Nickel	TM152	**100.17** 88.00 : 112.00	**98.33** 88.00 : 112.00
Phosphorus	TM152	**98.83** 91.54 : 107.12	**95.17** 91.54 : 107.12
Potassium	TM152	**103.33** 92.16 : 109.93	**100.67** 92.16 : 109.93
Selenium	TM152	**105.5** 91.58 : 115.98	**101.0** 91.58 : 115.98
Silver	TM152	**102.67** 88.80 : 122.30	**102.0** 88.80 : 122.30
Sodium	TM152	**100.67** 89.47 : 109.62	**98.67** 89.47 : 109.62
Strontium	TM152	**102.0** 88.00 : 112.00	**101.33** 88.00 : 112.00
Tellurium	TM152	**104.5** 93.32 : 114.66	**103.5** 93.32 : 114.66
Thallium	TM152	**103.17** 88.00 : 112.00	**102.17** 88.00 : 112.00
Tin	TM152	**100.5** 92.63 : 109.70	**100.67** 92.63 : 109.70
Titanium	TM152	**100.0** 95.58 : 111.68	**98.5** 95.58 : 111.68
Tungsten	TM152	**103.17** 81.32 : 124.72	**101.67** 81.32 : 124.72
Uranium	TM152	**102.83** 88.00 : 112.00	**102.17** 88.00 : 112.00
Vanadium	TM152	**102.0** 88.00 : 112.00	**98.17** 88.00 : 112.00
Zinc	TM152	**102.0** 92.98 : 118.95	**100.0** 92.98 : 118.95

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2412	QC 2481
Dissolved Inorganic Carbon	TM090	**112.67** 93.58 : 112.28	**107.0** 93.58 : 112.28
Dissolved Organic Carbon	TM090	**102.67** 97.80 : 107.10	**101.5** 97.80 : 107.10

EPH CWG (Aliphatic) Aqueous GC (W)

Component	Method Code	QC 2477	QC 2424
Total Aliphatics >C10-C40	TM174	**103.14** 69.79 : 134.39	**96.37** 68.59 : 134.82

EPH CWG (Aromatic) Aqueous GC (W)

Component	Method Code	QC 2484	QC 2417
Total Aromatics >EC10-EC40	TM174	**97.32** 59.92 : 128.54	**94.15** 60.75 : 129.09

GRO by GC-FID (W)

Component	Method Code	QC 2478
Benzene by GC	TM245	**109.5** 81.54 : 119.70
Ethylbenzene by GC	TM245	**107.0** 80.99 : 121.09
m & p Xylene by GC	TM245	**105.5** 82.77 : 123.19
MTBE GC-FID	TM245	**106.0** 80.06 : 123.27
o Xylene by GC	TM245	**108.0** 84.26 : 121.50
QC	TM245	**98.48** 67.65 : 138.14
Toluene by GC	TM245	**108.5** 82.78 : 121.99

Hexavalent Chromium (w)

Component	Method Code	QC 2440
Hexavalent Chromium	TM241	**102.0** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2488	QC 2464
Mercury Dissolved (CVAF)	TM183	**95.9** 69.30 : 128.70	**99.2** 69.30 : 128.70

PAH Spec MS - Aqueous (W)

Component	Method Code	QC 2489	QC 2440
Acenaphthene by GCMS	TM178	**110.8** 90.45 : 118.63	**105.6** 97.60 : 116.80
Acenaphthylene by GCMS	TM178	**111.6** 90.13 : 116.27	**97.6** 89.20 : 113.20
Anthracene by GCMS	TM178	**107.6** 92.40 : 114.00	**102.4** 92.40 : 116.40
Benz(a)anthracene by GCMS	TM178	**108.8** 89.51 : 117.69	**97.6** 84.40 : 110.80

PAH Spec MS - Aqueous (W)

		QC 2489	QC 2440
Benzo(a)pyrene by GCMS	TM178	**109.2** 89.43 : 118.57	**98.8** 88.40 : 110.00
Benzo(b)fluoranthene by GCMS	TM178	**108.4** 87.80 : 121.80	**94.0** 81.20 : 114.80
Benzo(ghi)perylene by GCMS	TM178	**109.2** 87.10 : 119.30	**104.8** 93.60 : 112.80
Benzo(k)fluoranthene by GCMS	TM178	**111.2** 93.23 : 123.57	**100.0** 90.40 : 119.20
Chrysene by GCMS	TM178	**108.8** 88.68 : 116.92	**105.6** 96.80 : 113.60
Dibenzo(ah)anthracene by GCMS	TM178	**104.8** 86.24 : 118.56	**105.6** 88.00 : 112.00
Fluoranthene by GCMS	TM178	**108.4** 86.04 : 121.96	**106.8** 93.49 : 118.20
Fluorene by GCMS	TM178	**110.8** 90.76 : 121.24	**105.6** 94.39 : 118.66
Indeno(123cd)pyrene by GCMS	TM178	**105.2** 88.39 : 119.61	**97.2** 90.40 : 114.40
Naphthalene by GCMS	TM178	**112.4** 89.40 : 121.80	**108.0** 94.00 : 115.60
Phenanthrene by GCMS	TM178	**109.6** 90.41 : 119.19	**104.0** 94.80 : 114.00
Pyrene by GCMS	TM178	**107.6** 91.00 : 120.20	**108.4** 96.40 : 115.60

Pesticides (Suite I) by GCMS

Component	Method Code	QC 2482
Aldrin - (Inst.)	TM343	**90.16** 59.75 : 143.00
alpha-HCH - (Inst.)	TM343	**92.03** 75.13 : 166.63
beta-HCH - (Inst.)	TM343	**93.67** 85.48 : 166.48
cis-Chlordane - (Inst.)	TM343	**92.98** 71.70 : 156.00
delta-HCH - (Inst.)	TM343	**81.01** 83.98 : 156.58
Dieldrin - (Inst.)	TM343	**103.13** 77.45 : 154.10
Endosulphan I - (Inst.)	TM343	**95.95** 91.30 : 168.70
Endosulphan II - (Inst.)	TM343	**94.67** 82.68 : 161.13
Endosulphan Sulphate - (Inst.)	TM343	**56.51** 69.65 : 165.95
Endrin - (Inst.)	TM343	**90.78** 81.33 : 178.68
gamma-HCH (Lindane) - (Inst.)	TM343	**83.18** 83.15 : 175.40
Heptachlor - (Inst.)	TM343	**95.99** 63.65 : 167.80
Heptachlor epoxide - (Inst.)	TM343	**87.61** 73.28 : 159.38

Pesticides (Suite I) by GCMS

		QC 2482
Isodrin - (Inst.)	TM343	**89.44** 58.34 : 153.81
o,p-DDD (TDE) - (Inst.)	TM343	**95.16** 66.93 : 162.03
o,p-DDE - (Inst.)	TM343	**92.38** 64.68 : 156.78
o,p-DDT - (Inst.)	TM343	**108.51** 72.20 : 170.15
o,p-Methoxychlor - (Inst.)	TM343	**104.17** 73.33 : 171.13
p,p-DDD (TDE) - (Inst.)	TM343	**90.95** 67.95 : 160.20
p,p-DDE - (Inst.)	TM343	**95.8** 67.80 : 159.45
p,p-DDT - (Inst.)	TM343	**118.73** 68.30 : 178.25
p,p-Methoxychlor - (Inst.)	TM343	**121.56** 66.94 : 176.47
Permethrin I - (Inst.)	TM343	**110.28** 63.25 : 146.35
Permethrin II - (Inst.)	TM343	**114.22** 66.00 : 151.80
trans-Chlordane - (Inst.)	TM343	**89.88** 71.68 : 165.88
Trifluralin - (Inst.)	TM343	**95.25** 64.73 : 161.48

pH Value

Component	Method Code	QC 2442	QC 2445
pH	TM256	**99.87** 99.33 : 102.54	**100.0** 99.33 : 102.54

Phenols by HPLC (W)

Component	Method Code	QC 2489
2.3.5 Trimethyl-Phenol by HPLC (W)	TM259	**93.75** 76.00 : 124.00
2-Isopropyl Phenol by HPLC (W)	TM259	**91.78** 76.00 : 124.00
Cresols by HPLC (W)	TM259	**96.71** 76.00 : 124.00
Napthol by HPLC (W)	TM259	**87.89** 76.00 : 124.00
Phenol by HPLC (W)	TM259	**92.63** 76.00 : 124.00
Xylenols by HPLC (W)	TM259	**93.99** 76.00 : 124.00

Sulphide

Sulphide

Component	Method Code	QC 2471
Sulphide	TM101	**99.33** 88.90 : 112.50

Total Metals by ICP-MS

Component	Method Code	QC 2430
Aluminium	TM152	**101.33** 88.99 : 114.16
Antimony	TM152	**100.67** 93.05 : 123.32
Arsenic	TM152	**101.0** 97.95 : 112.90
Barium	TM152	**103.17** 95.11 : 116.80
Beryllium	TM152	**102.5** 96.06 : 116.39
Bismuth	TM152	**101.5** 93.21 : 113.89
Boron	TM152	**102.0** 86.68 : 117.67
Cadmium	TM152	**101.33** 96.08 : 112.92
Calcium	TM152	**106.0** 95.17 : 121.17
Chromium	TM152	**101.0** 97.65 : 111.90
Cobalt	TM152	**101.33** 96.52 : 113.04
Copper	TM152	**101.83** 97.32 : 113.53
Iron	TM152	**101.33** 96.27 : 111.69
Lead	TM152	**100.5** 96.90 : 113.51
Lithium	TM152	**101.67** 94.68 : 116.74
Magnesium	TM152	**101.33** 92.42 : 114.10
Manganese	TM152	**102.33** 97.04 : 112.45
Molybdenum	TM152	**99.67** 87.00 : 108.89
Nickel	TM152	**102.33** 97.57 : 113.15
Phosphorus	TM152	**101.67** 96.28 : 113.79
Potassium	TM152	**104.67** 96.14 : 114.83
Selenium	TM152	**99.5** 96.70 : 113.86

Total Metals by ICP-MS

		QC 2430
Silver	TM152	**101.0** 82.13 : 120.33
Sodium	TM152	**101.33** 92.77 : 115.64
Strontium	TM152	**101.0** 90.72 : 114.82
Tellurium	TM152	**103.17** 95.55 : 115.82
Thallium	TM152	**100.33** 80.92 : 114.72
Tin	TM152	**100.33** 96.04 : 111.04
Titanium	TM152	**101.83** 96.48 : 114.94
Uranium	TM152	**100.17** 95.56 : 112.07
Vanadium	TM152	**99.83** 88.43 : 114.30
Zinc	TM152	**102.33** 97.95 : 113.95

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

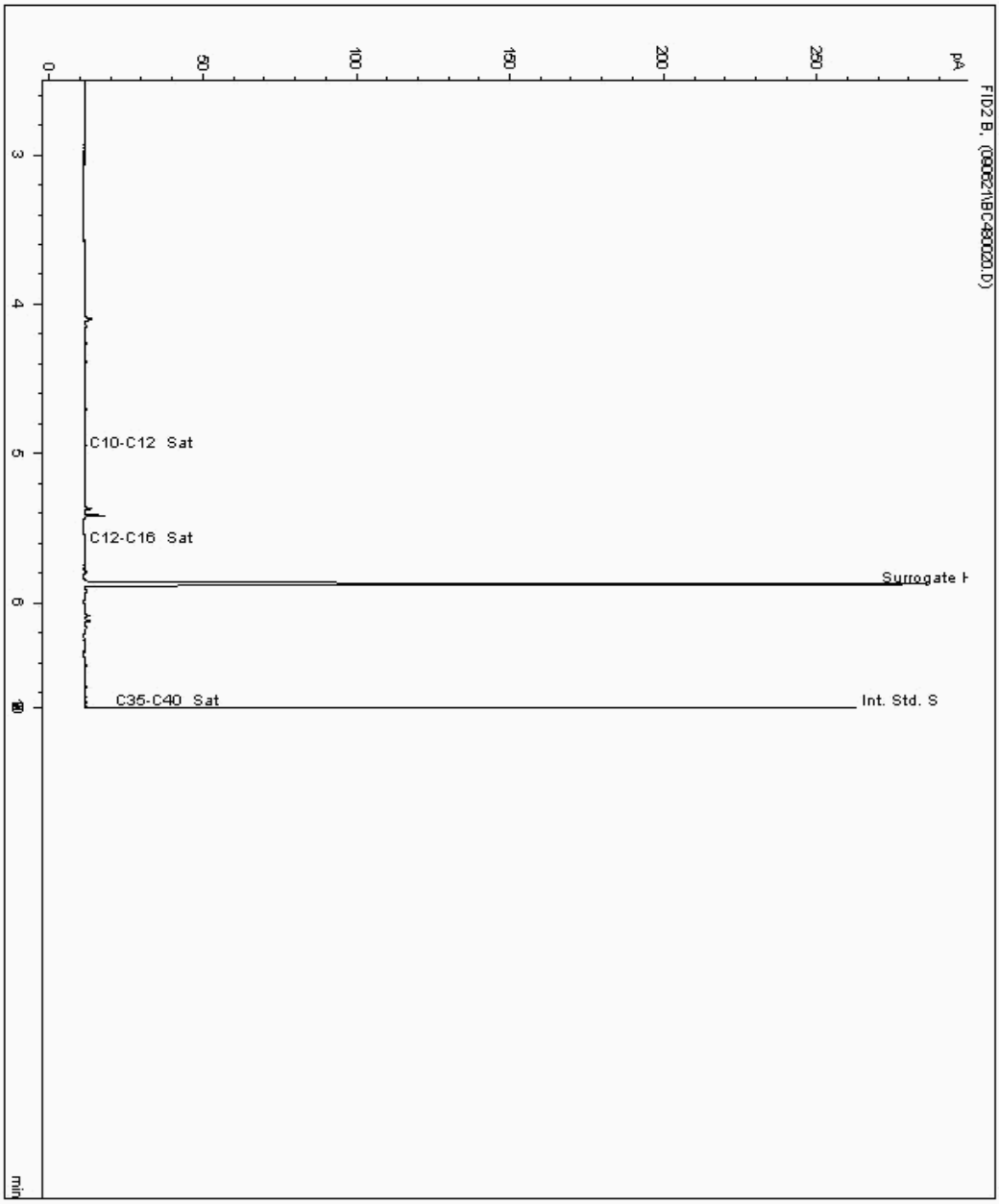
SDG:	210901-35	**Client Reference:**	784-B026948	**Report Number:**	612244
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	611978

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24901195 **Sample ID :** BH05 **Depth :** 0.00 - 0.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23284736-
Date Acquired : 06/09/2021 18:28:58 PM
Units : ppb
Dilution : SE BH05[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

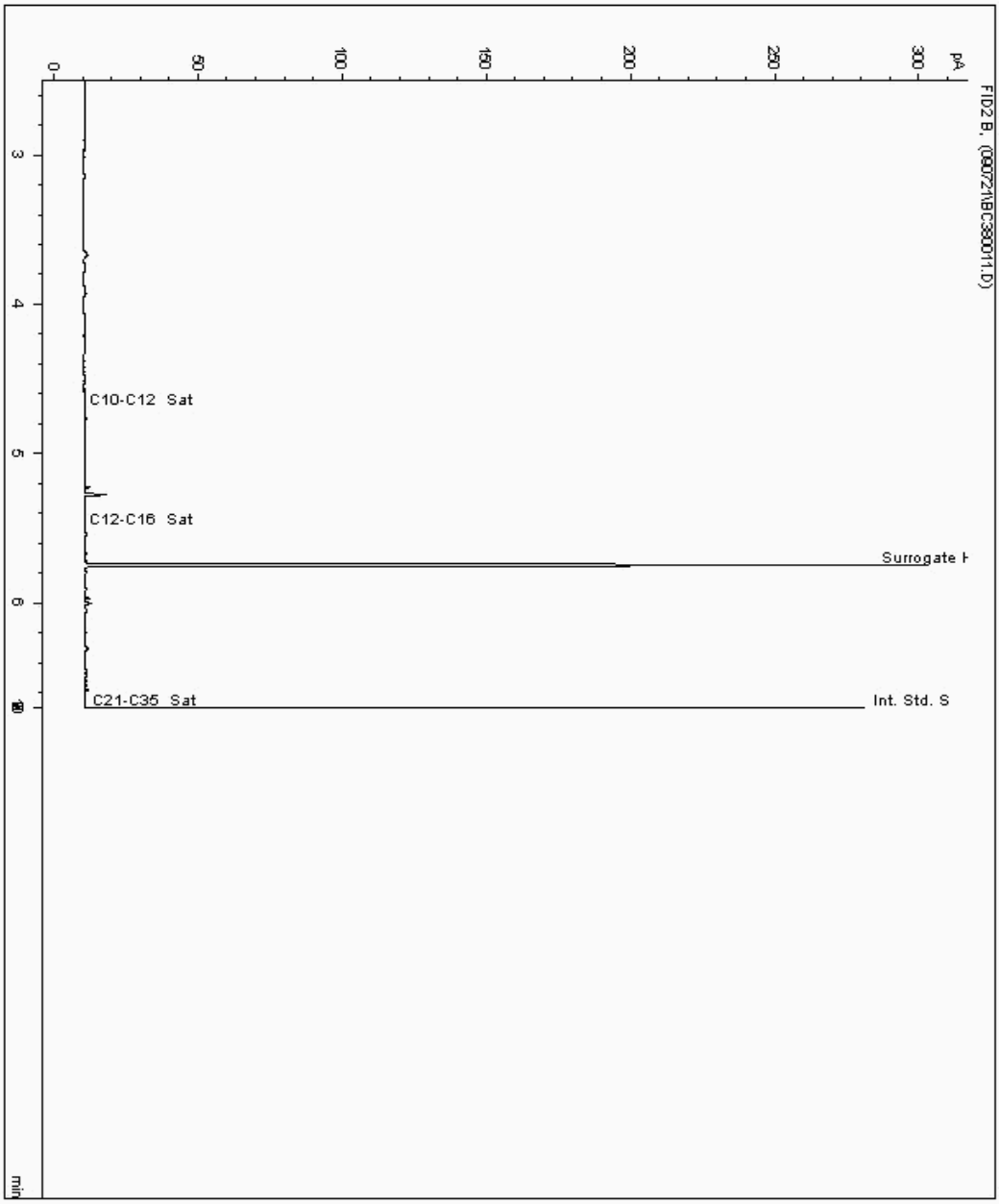
SDG:	210901-35	**Client Reference:**	784-B026948	**Report Number:**	612244
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	611978

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24901367 **Sample ID :** BH56 **Depth :** 0.00 - 0.00

Speciated TPH - SATS (C12 - C40)

Sample Identity: 23284772-
Date Acquired : 07/09/21 20:06:08 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

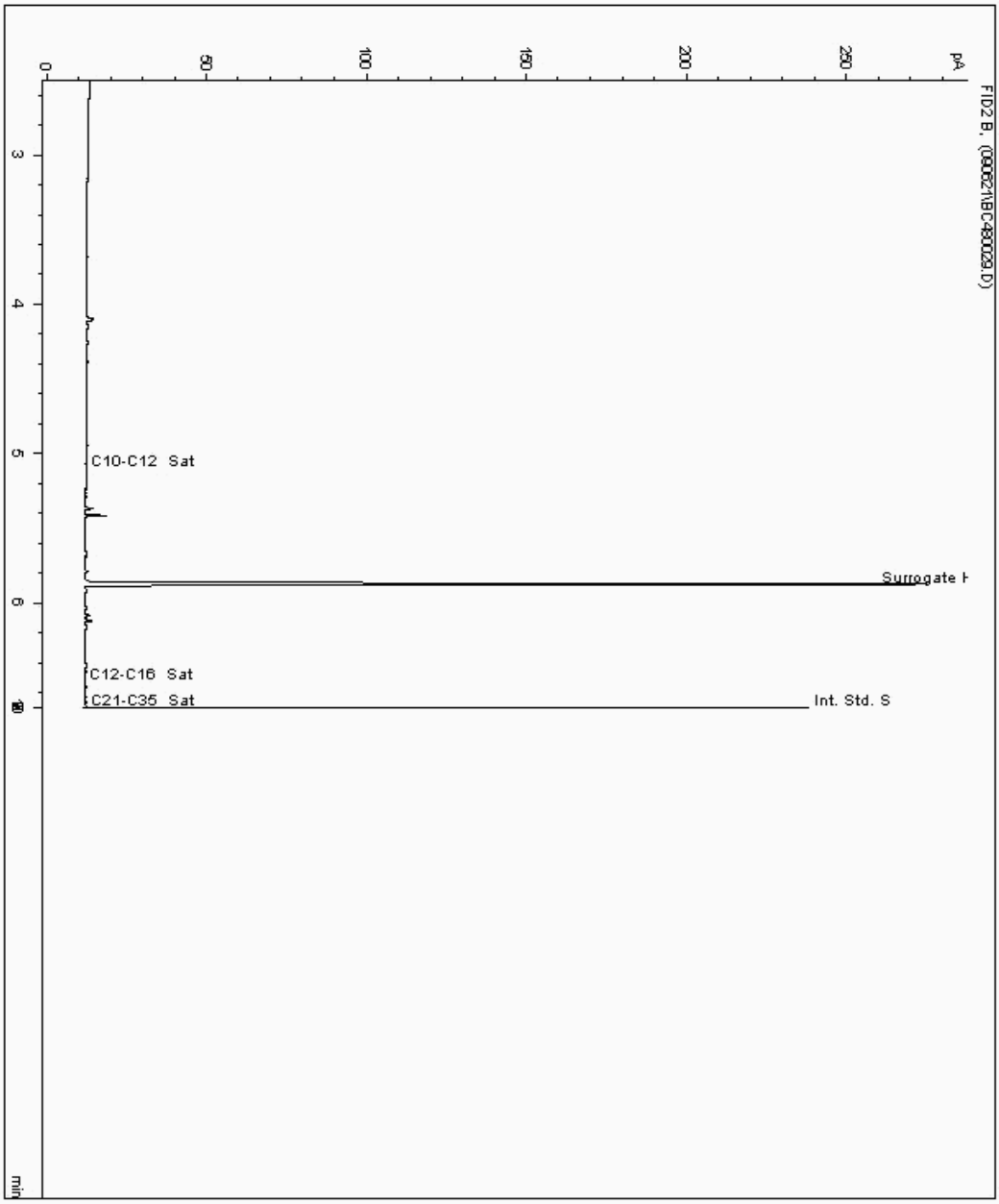
SDG:	210901-35	**Client Reference:**	784-B026948	**Report Number:**	612244
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	611978

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24901382 **Sample ID :** WS25 **Depth :** 0.00 - 0.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23284808-
Date Acquired : 06/09/2021 21:52:47 PM
Units : ppb
Dilution : SE WS25[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

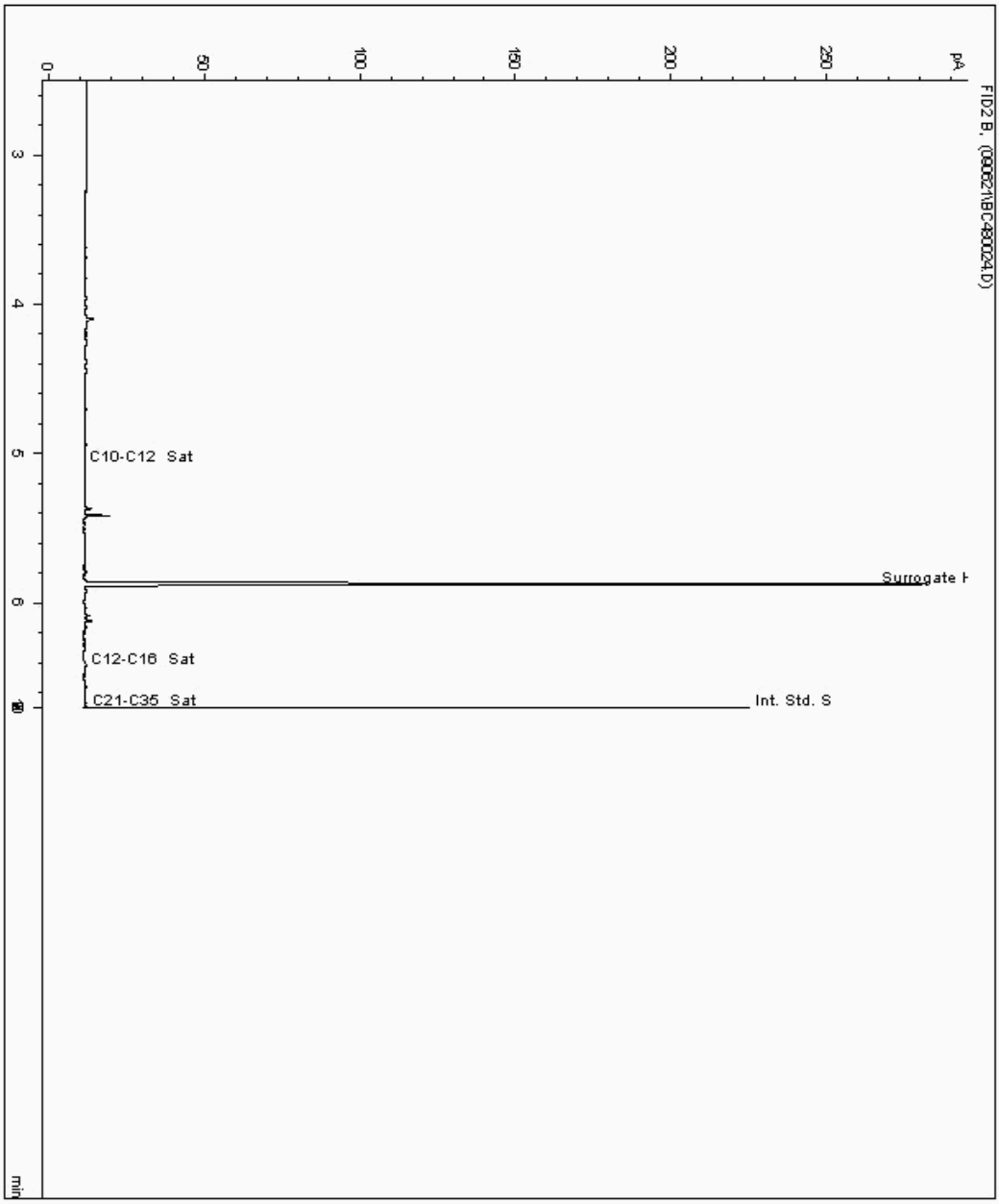
SDG:	210901-35	**Client Reference:**	784-B026948	**Report Number:**	612244
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	611978

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24901411 **Sample ID :** WS15 **Depth :** 0.00 - 0.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23284715-
Date Acquired : 06/09/2021 19:59:04 PM
Units : ppb
Dilution : SE WS15[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

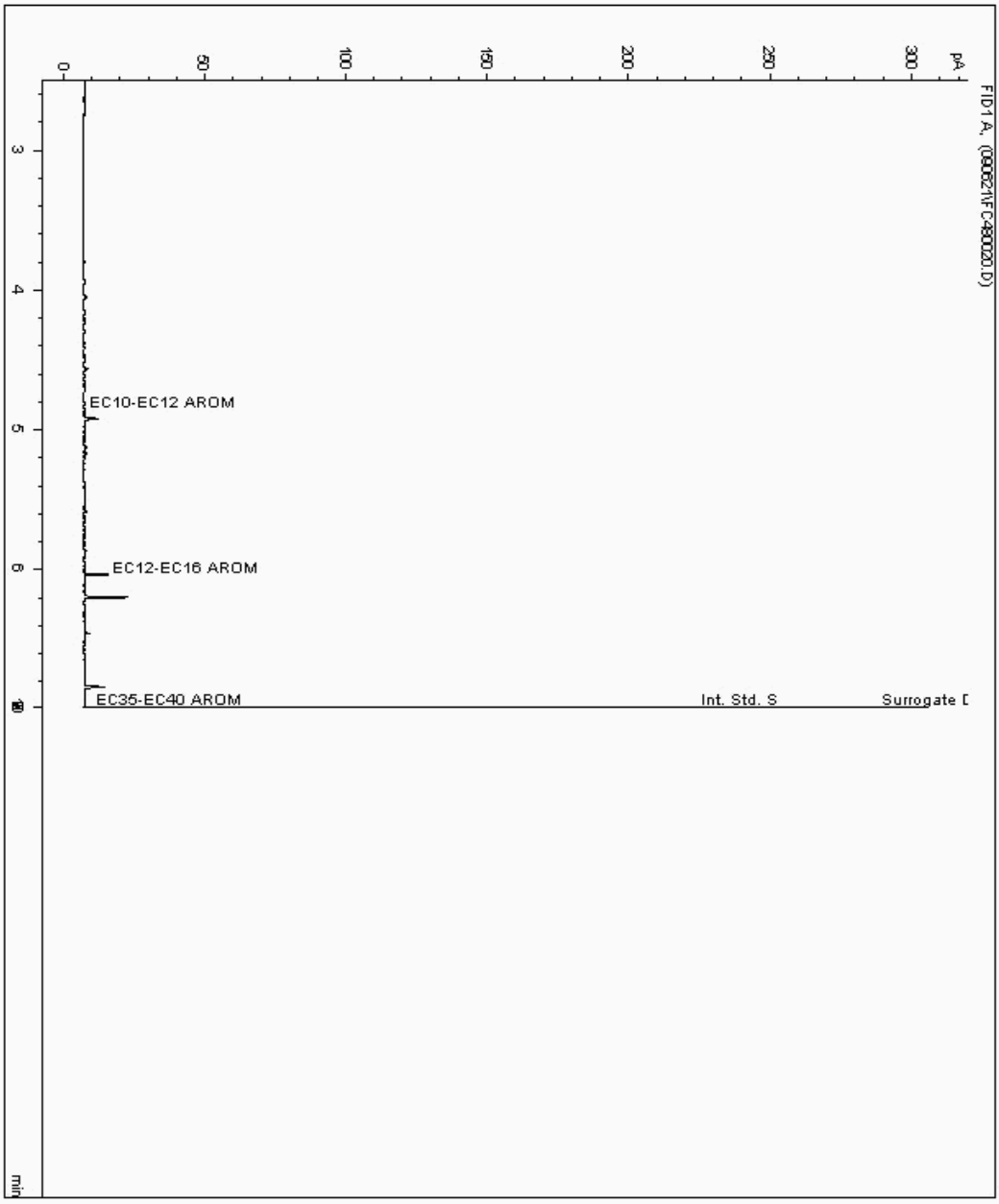
SDG:	210901-35	**Client Reference:**	784-B026948	**Report Number:**	612244
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	611978

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24901195 **Sample ID :** BH05 **Depth :** 0.00 - 0.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 23284737-
Date Acquired : 06/09/2021 18:28:58 PM
Units : ppb
Dilution : SE BH05[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

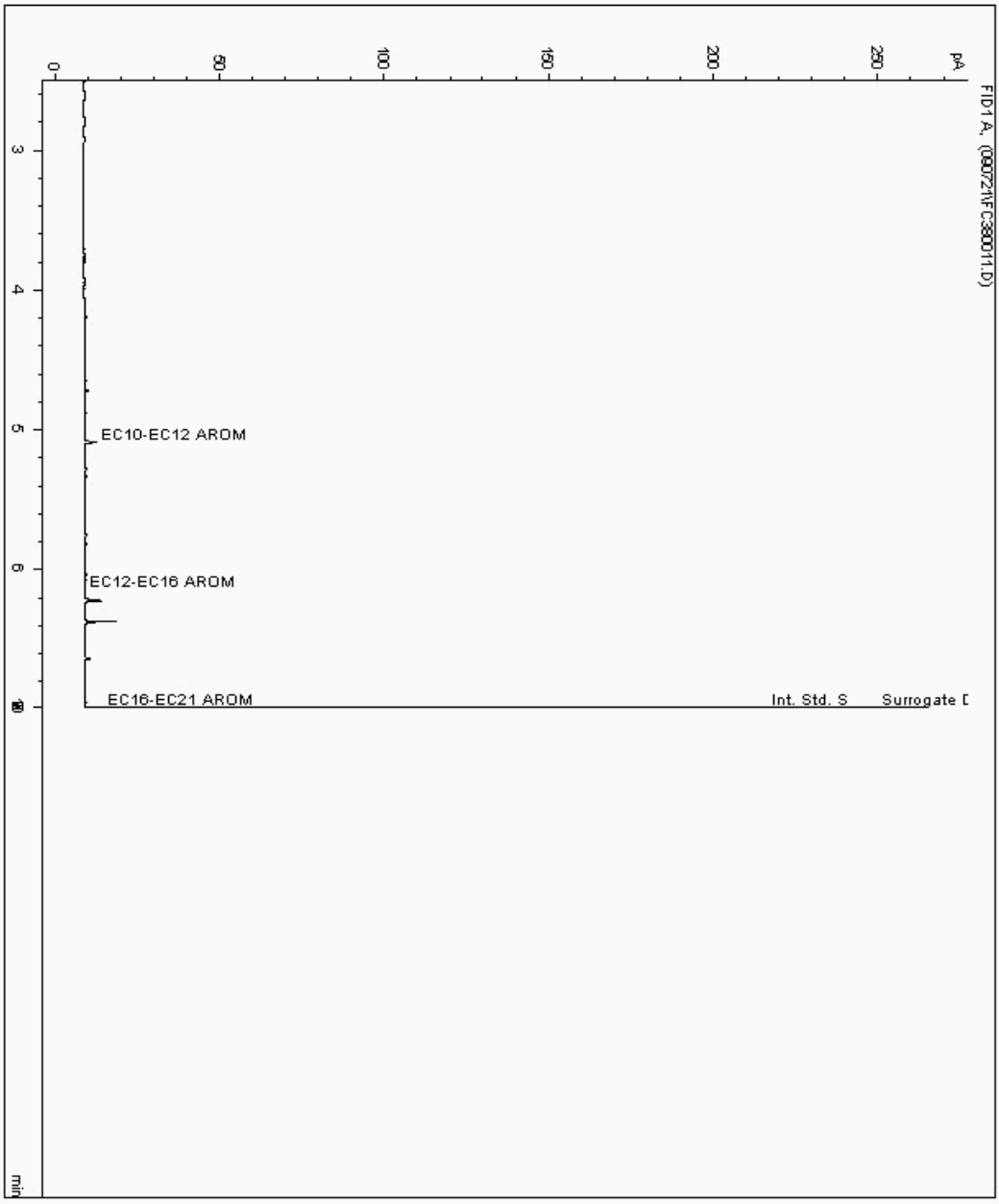
SDG:	210901-35	**Client Reference:**	784-B026948	**Report Number:**	612244
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	611978

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24901367 **Sample ID :** BH56 **Depth :** 0.00 - 0.00

Speciated TPH - AROM (C12 - C40)

Sample Identity: 23284773-
Date Acquired : 07/09/21 20:06:08 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

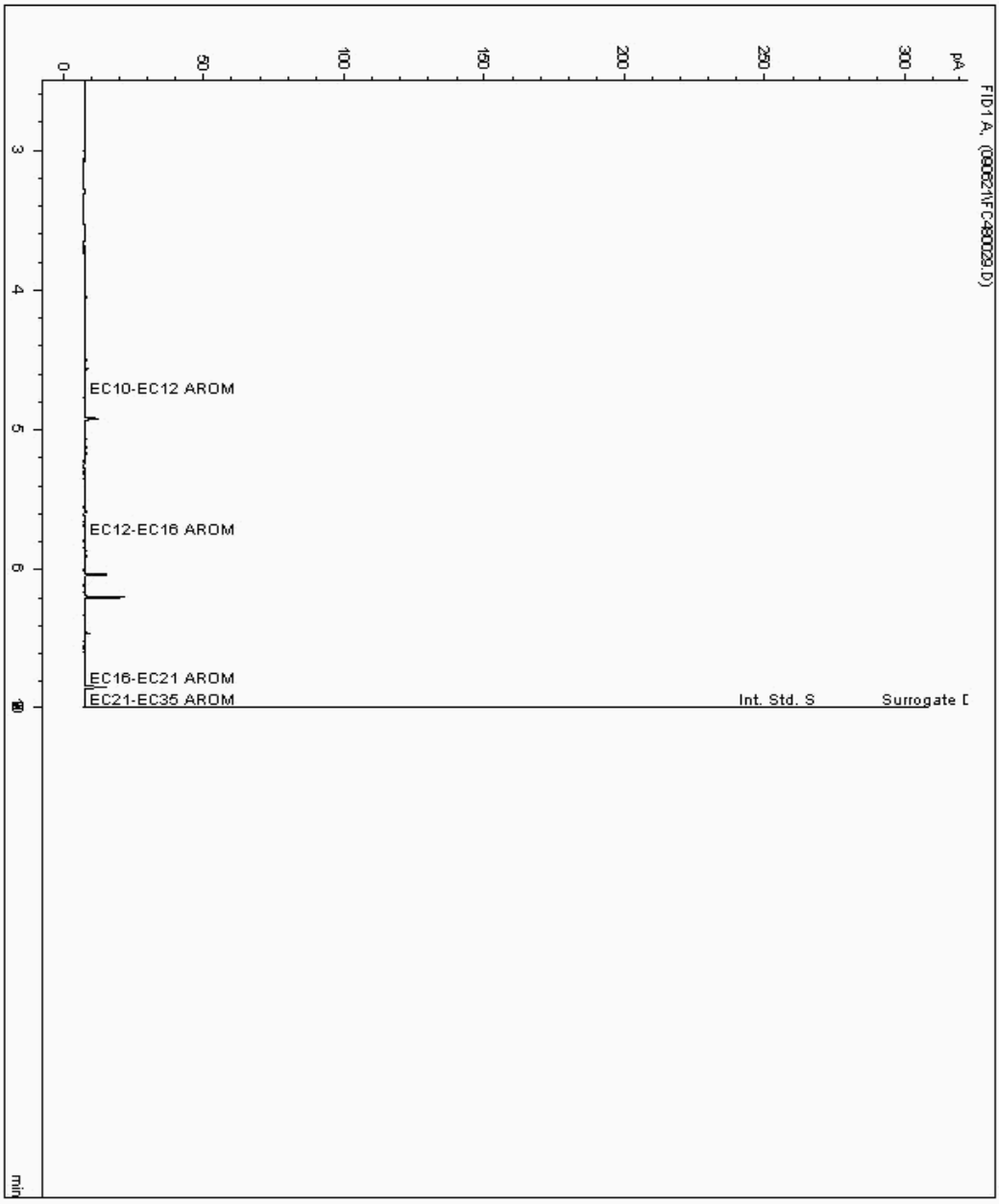
SDG:	210901-35	**Client Reference:**	784-B026948	**Report Number:**	612244
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	611978

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24901382 **Sample ID :** WS25 **Depth :** 0.00 - 0.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 23284809-
Date Acquired : 06/09/2021 21:52:47 PM
Units : ppb
Dilution : SE WS25[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

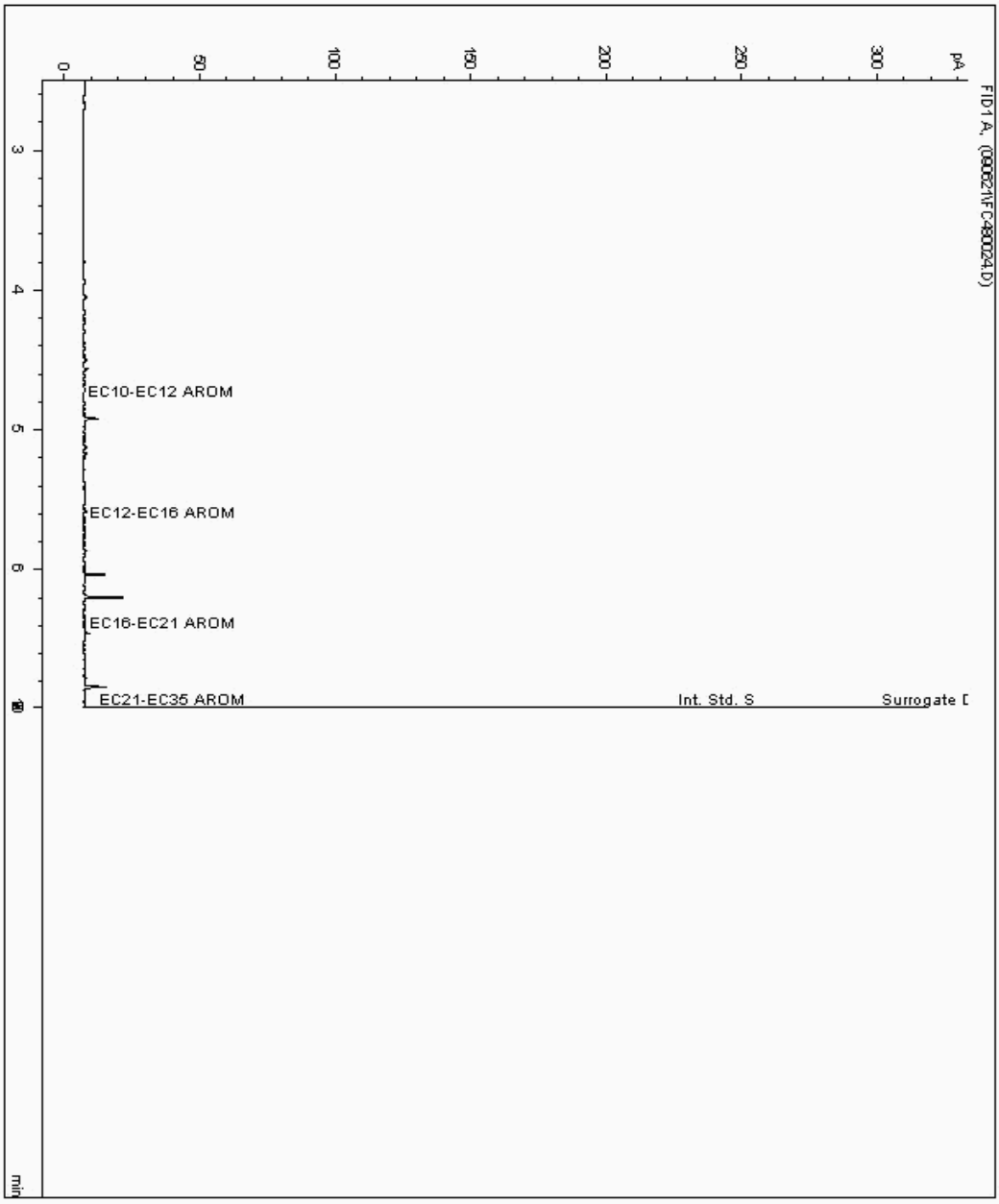
SDG:	210901-35	**Client Reference:**	784-B026948	**Report Number:**	612244
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	611978

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24901411 **Sample ID :** WS15 **Depth :** 0.00 - 0.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 23284716-
Date Acquired : 06/09/2021 19:59:04 PM
Units : ppb
Dilution : SE WS15[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

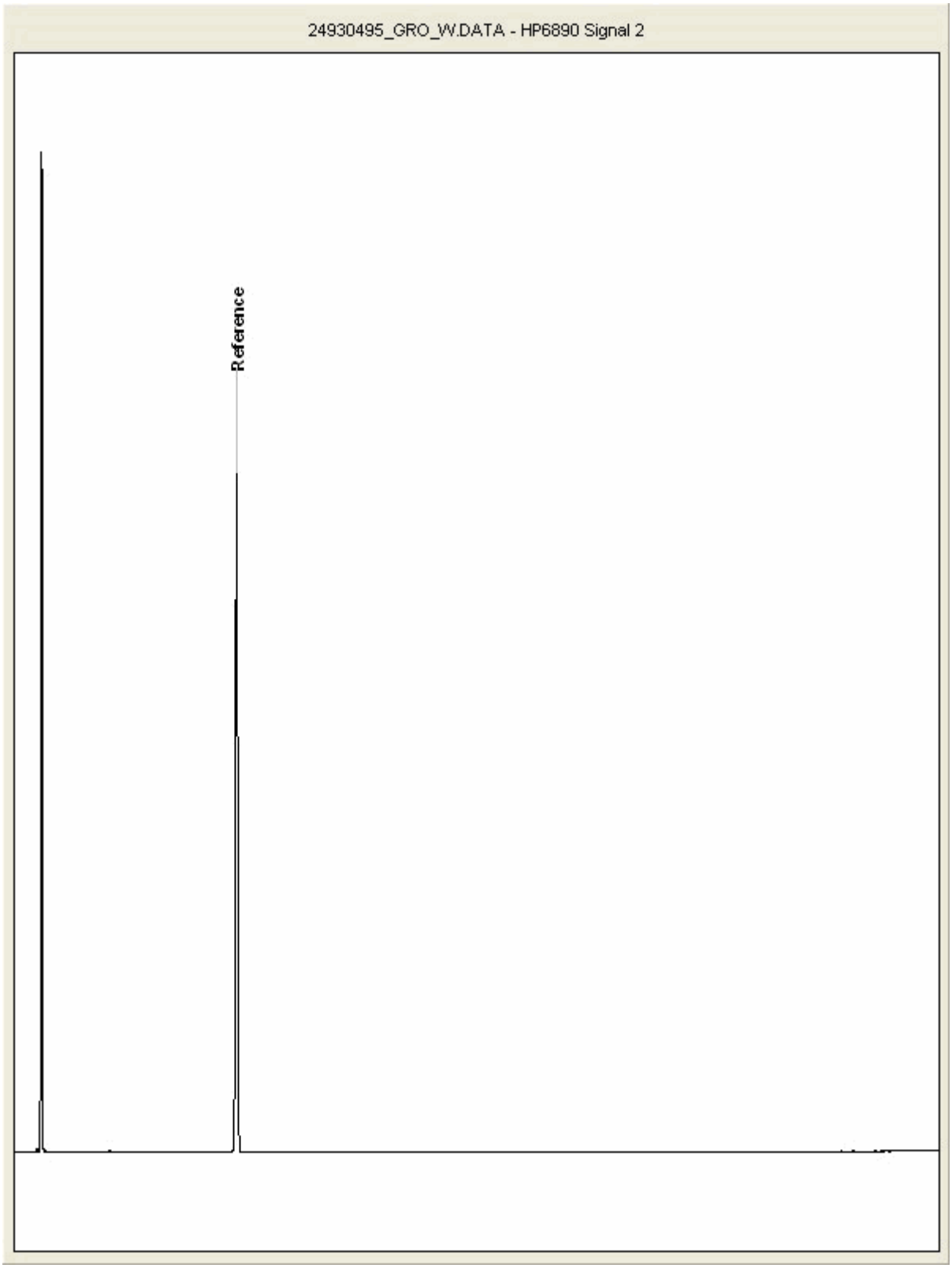
SDG:	210901-35	**Client Reference:**	784-B026948	**Report Number:**	612244
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	611978

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 24930495
Sample ID : BH05

Depth : 0.00 - 0.00



CERTIFICATE OF ANALYSIS

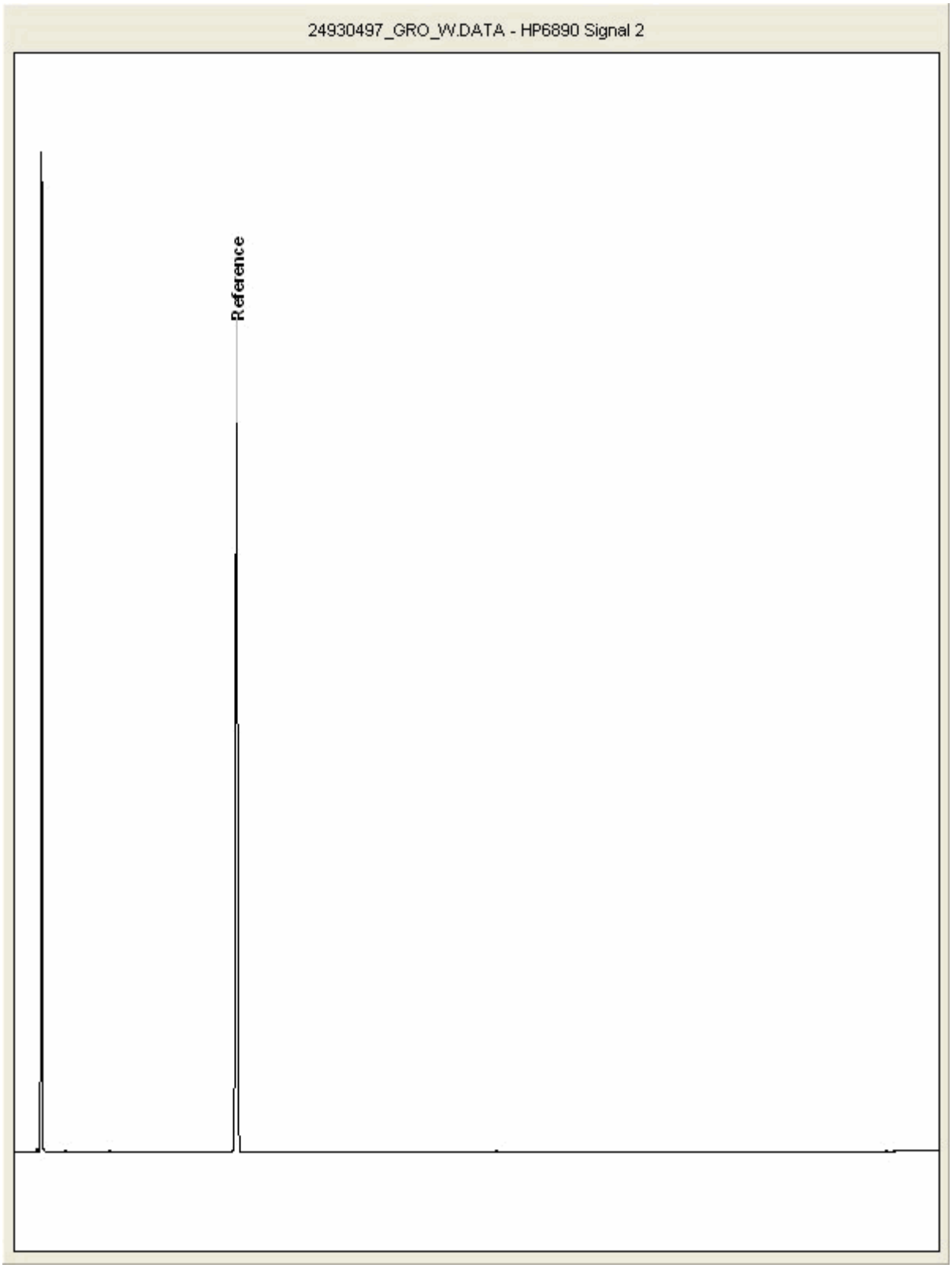
SDG:	210901-35	**Client Reference:**	784-B026948	**Report Number:**	612244
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	611978

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 24930497
Sample ID : BH56

Depth : 0.00 - 0.00



CERTIFICATE OF ANALYSIS

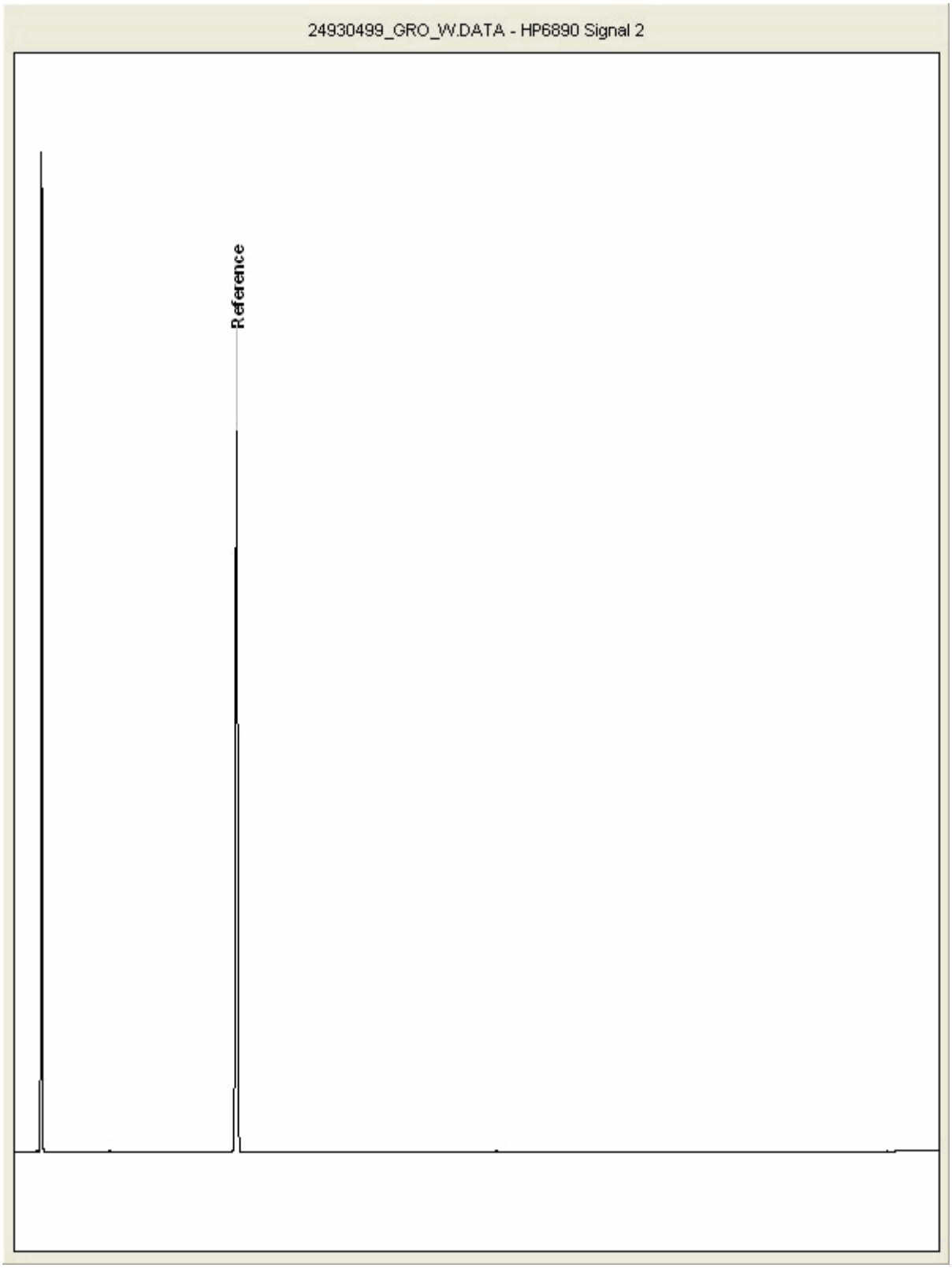
SDG:	210901-35	**Client Reference:**	784-B026948	**Report Number:**	612244
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	611978

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 24930499
Sample ID : WS15

Depth : 0.00 - 0.00



CERTIFICATE OF ANALYSIS

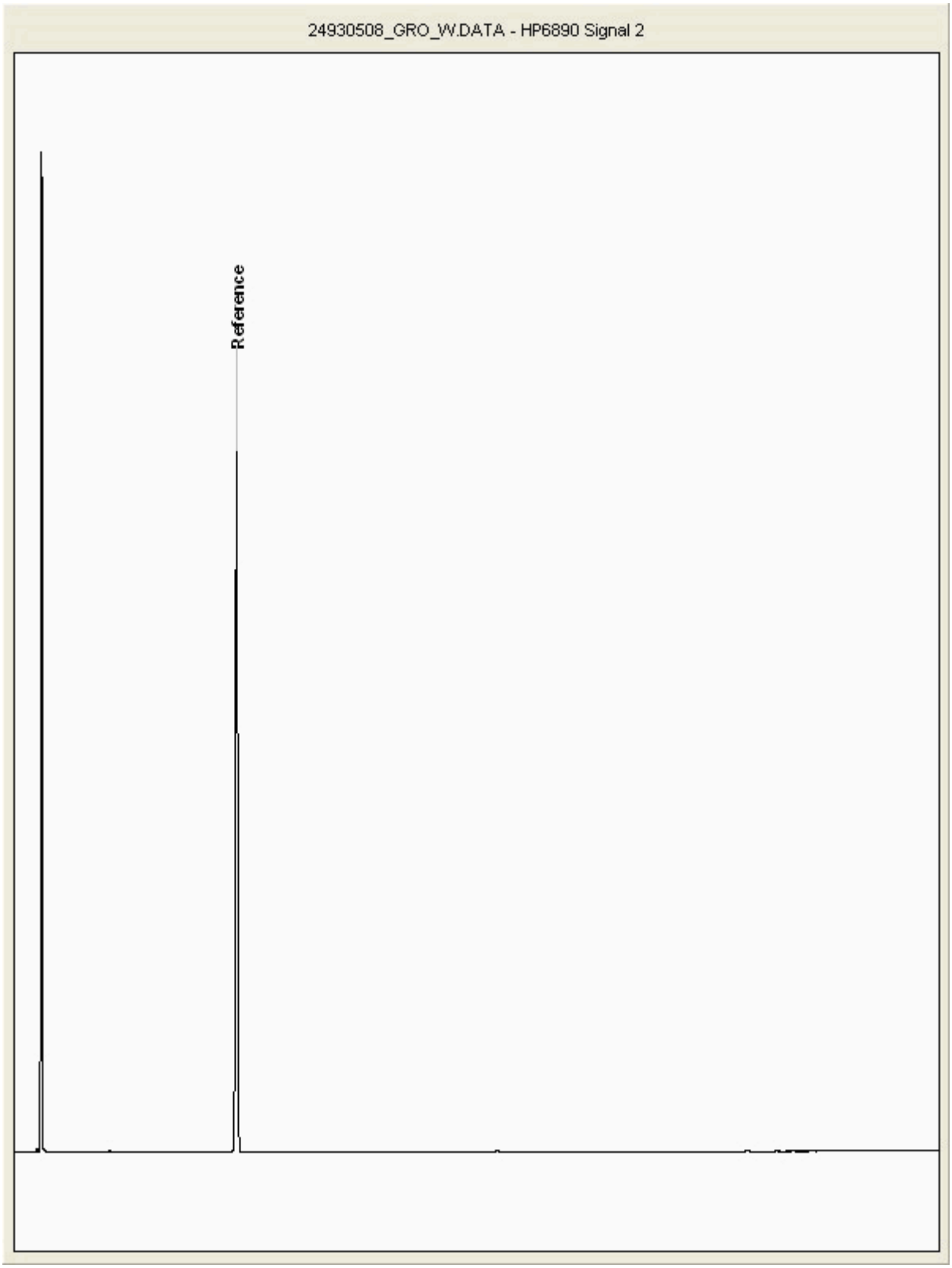
SDG:	210901-35	**Client Reference:**	784-B026948	**Report Number:**	612244
Location:	A46 Newark Northern Byp	**Order Number:**	7001649	**Superseded Report:**	611978

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 24930508
Sample ID : WS25

Depth : 0.00 - 0.00



Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	01 October 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	210901-37
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	615527
Order Number:	

This report has been revised and directly supersedes 612113 in its entirety.

We received 9 samples on Saturday August 28, 2021 and 9 of these samples were scheduled for analysis which was completed on Wednesday September 08, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.

Approved By:

[redacted]

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24898668	BH06	ES1	0.00 - 0.00	26/08/2021
24898686	BH11	ES1	0.00 - 0.00	26/08/2021
24898695	BH12	ES1	0.00 - 0.00	26/08/2021
24898704	SW1	ES1	0.00 - 0.00	26/08/2021
24898713	SW2	ES1	0.00 - 0.00	26/08/2021
24898660	SW5	ES1	0.00 - 0.00	26/08/2021
24898652	SW6	ES1	0.00 - 0.00	26/08/2021
24898677	WS26	ES1	0.00 - 0.00	26/08/2021
24898721	WS31	ES1	0.00 - 0.00	26/08/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
			24898668	BH06	ES1	0.00 - 0.00	0.5l glass bottle (ALE227)	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Filtered (ALE204)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
			24898686	BH11	ES1	0.00 - 0.00	0.5l glass bottle (ALE227)	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Filtered (ALE204)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
			24898695	BH12	ES1	0.00 - 0.00	0.5l glass bottle (ALE227)	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
			24898704	SW1	ES1	0.00 - 0.00	500ml Plastic (ALE208)	SW
							H2SO4 (ALE244)	SW
							HNO3 Filtered (ALE204)	SW
							NaOH (ALE245)	SW
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 1						
Ammonium Low	All	NDPs: 0 Tests: 9					X	
								X
								X
								X
Anions by Kone (w)	All	NDPs: 0 Tests: 9						
				X				
							X	
								X
								X
BOD True Total	All	NDPs: 0 Tests: 1						
								X
COD Unfiltered	All	NDPs: 0 Tests: 1						
							X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 9						
					X			
							X	
								X
								X
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 9						
					X			
							X	
								X
								X
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 9						
			X				X	
							X	
							X	
							X	
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 9						
			X				X	
							X	
							X	
							X	
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 9						
			X				X	
							X	
							X	
							X	
GRO by GC-FID (W)	All	NDPs: 0 Tests: 9						
						X		
							X	
								X
								X
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 9						
				X				
							X	
								X
								X
Mercury Dissolved	All	NDPs: 0 Tests: 9						
					X			
							X	
								X
								X
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 9						
			X				X	
							X	
								X
								X
Pesticides (Suite I) by GCMS	All	NDPs: 0 Tests: 1						

24898677	WS26	ES1	0.00 - 0.00	500ml Plastic (ALE208)	GW			X									X			
				0.5l glass bottle (ALE227)	GW	X							X	X	X				X	X
24898652	SW6	ES1	0.00 - 0.00	Vial (ALE297)	SW											X				
				NaOH (ALE245)	SW						X									
				HNO3 Filtered (ALE204)	SW							X						X		
				H2SO4 (ALE244)	SW		X													
				500ml Plastic (ALE208)	SW			X									X			
				0.5l glass bottle (ALE227)	SW								X	X	X				X	
24898660	SW5	ES1	0.00 - 0.00	Vial (ALE297)	SW											X				
				NaOH (ALE245)	SW						X									
				HNO3 Filtered (ALE204)	SW							X						X		
				H2SO4 (ALE244)	SW		X													
				500ml Plastic (ALE208)	SW			X					X	X	X		X		X	
24898713	SW2	ES1	0.00 - 0.00	Vial (ALE297)	SW											X				
				NaOH (ALE245)	SW						X									
				H2SO4 (ALE244)	SW		X													
				500ml Plastic (ALE208)	SW			X				X					X	X		
				0.5l glass bottle (ALE227)	SW								X	X	X				X	
24898704	SW1	ES1	0.00 - 0.00	Vial (ALE297)	SW											X				

CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
			24898668	BH06	ES1	0.00 - 0.00	0.5l glass bottle (ALE227)	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Filtered (ALE204)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
			24898686	BH11	ES1	0.00 - 0.00	0.5l glass bottle (ALE227)	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Filtered (ALE204)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
			24898695	BH12	ES1	0.00 - 0.00	0.5l glass bottle (ALE227)	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
			24898704	SW1	ES1	0.00 - 0.00	500ml Plastic (ALE208)	SW
							H2SO4 (ALE244)	SW
							HNO3 Filtered (ALE204)	SW
							NaOH (ALE245)	SW
Pesticides (Suite II) by GCMS	All	NDPs: 0 Tests: 1						
pH Value	All	NDPs: 0 Tests: 9						
				X				
				X				
				X				
				X				
Phenols by HPLC (W)	All	NDPs: 0 Tests: 9						
					X			
					X			
					X			
					X			
Phosphate by Kone (w)	All	NDPs: 0 Tests: 1						
Sulphide	All	NDPs: 0 Tests: 9						
				X				
				X				
				X				
				X				
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 2						
Total Metals by ICP-MS	All	NDPs: 0 Tests: 9						
				X				
				X				
				X				
				X				
TPH CWG (W)	All	NDPs: 0 Tests: 9						
			X					
			X					
			X					
			X					
VOC MS (W)	All	NDPs: 0 Tests: 2						

24898677	WS26	ES1	0.00 - 0.00	500ml Plastic (ALE208)	GW	
				0.5l glass bottle (ALE227)	GW	X
24898652	SW6	ES1	0.00 - 0.00	Vial (ALE297)	SW	
				NaOH (ALE245)	SW	
				HNO3 Filtered (ALE204)	SW	
				H2SO4 (ALE244)	SW	X
				500ml Plastic (ALE208)	SW	X
				0.5l glass bottle (ALE227)	SW	
24898660	SW5	ES1	0.00 - 0.00	Vial (ALE297)	SW	
				NaOH (ALE245)	SW	
				HNO3 Filtered (ALE204)	SW	
				H2SO4 (ALE244)	SW	X
				500ml Plastic (ALE208)	SW	X
24898713	SW2	ES1	0.00 - 0.00	Vial (ALE297)	SW	
				NaOH (ALE245)	SW	
				H2SO4 (ALE244)	SW	X
				500ml Plastic (ALE208)	SW	X
				0.5l glass bottle (ALE227)	SW	X
24898704	SW1	ES1	0.00 - 0.00	Vial (ALE297)	SW	

CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24898677									24898721
Customer Sample Reference			WS26									WS31
AGS Reference			ES1									ES1
Depth (m)			0.00 - 0.00									0.00 - 0.00
Container			H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)
Sample Type			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
Ammonium Low	All	NDPs: 0 Tests: 9	X						X			
Anions by Kone (w)	All	NDPs: 0 Tests: 9						X				
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 9			X						X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 9		X						X		
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 9					X					
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 9					X					
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 9					X					
GRO by GC-FID (W)	All	NDPs: 0 Tests: 9				X						X
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 9						X				
Mercury Dissolved	All	NDPs: 0 Tests: 9		X						X		
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 9					X					
pH Value	All	NDPs: 0 Tests: 9						X				
Phenols by HPLC (W)	All	NDPs: 0 Tests: 9	X						X			
Sulphide	All	NDPs: 0 Tests: 9						X				
Total Metals by ICP-MS	All	NDPs: 0 Tests: 9						X				

Validated

CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			24898677								24898721
Customer Sample Reference			WS26								WS31
AGS Reference			ES1								ES1
Depth (m)			0.00 - 0.00								0.00 - 0.00
Container			H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)
Sample Type			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
TPH CWG (W)	All	NDPs: 0 Tests: 9					X					

CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH06	BH11	BH12	SW1	SW2	SW5
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	28/08/2021	28/08/2021	28/08/2021	28/08/2021	28/08/2021	28/08/2021
			SDG Ref	210901-37	210901-37	210901-37	210901-37	210901-37	210901-37
			Lab Sample No.(s)	24898668	24898686	24898695	24898704	24898713	24898660
			AGS Reference	ES1	ES1	ES1	ES1	ES1	ES1
BOD, unfiltered	<1 mg/l	TM045				16.3 @ #			
Carbon, Organic (diss.filt)	<3 mg/l	TM090		7.6	8.39	14.2	6.73	7.66	6.84
Ammoniacal Nitrogen as N (low level)	<0.01 mg/l	TM099		0.26 #	0.558 #	0.827 #	0.082 #	0.088 #	0.097 #
Ammoniacal Nitrogen Low as NH4	<0.01 mg/l	TM099		0.334 #	0.717 #	1.06 #	0.105 #	0.113 #	0.125 #
Sulphide	<0.01 mg/l	TM101		<0.01 2 #	0.0933 2 #	<0.01 2 #	0.0143 2	<0.01 2	0.0125 2
COD, unfiltered	<7 mg/l	TM107				1100 #			
Arsenic (diss.filt)	<0.5 µg/l	TM152		1.39 #	1.3 #	1.89 2 #	1.56 #	1.53 2 #	1.73 #
Boron (diss.filt)	<10 µg/l	TM152		873 #	299 #	812 2 #	144 #	141 2 #	149 #
Cadmium (diss.filt)	<0.08 µg/l	TM152		<0.08 #	0.152 #	<0.08 2 #	<0.08 #	<0.08 2 #	0.091 #
Chromium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	<1 2 #	<1 #	<1 2 #	<1 #
Copper (diss.filt)	<0.3 µg/l	TM152		0.636 #	1.98 #	16.4 2 #	4.19 #	4.29 2 #	4.86 #
Lead (diss.filt)	<0.2 µg/l	TM152		<0.2 #	<0.2 #	<0.2 2 #	0.279 #	<0.2 2 #	0.485 #
Manganese (diss.filt)	<3 µg/l	TM152		1250 #	499 #	546 2 #	9.08 #	<3 2 #	12 #
Nickel (diss.filt)	<0.4 µg/l	TM152		3.4 #	3.19 #	4.74 2 #	4.87 #	6.02 2 #	4.44 #
Phosphorus (diss.filt)	<10 µg/l	TM152				60.2 2 #			
Selenium (diss.filt)	<1 µg/l	TM152		<1 #	11.1 #	<1 2 #	<1 #	<1 2 #	<1 #
Vanadium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	1.08 2 #	1.62 #	1.41 2 #	1.47 #
Zinc (diss.filt)	<1 µg/l	TM152		7.49 #	3.35 #	30.4 2 #	14.7 #	13.8 2 #	15.4 #
Calcium (Dis.Filt)	<0.2 mg/l	TM152		468 #	182 #	545 2 #	83.3 #	83.2 2 #	90.7 #
Iron (Dis.Filt)	<0.019 mg/l	TM152		0.627 #	0.331 #	<0.019 2 #	<0.019 #	<0.019 2 #	<0.019 #
Hardness, Total as CaCO3 unfiltered	<0.35 mg/l	TM152		2460 2	913 2	19200 2	294 2	304 2	333 2
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 #	<0.01 2 #	<0.01	<0.01 2	<0.01
Sulphate	<2 mg/l	TM184		2570 #	168 #	1770 #	124 #	124 #	145 #
Phosphate (Ortho as P)	<0.02 mg/l	TM184				<0.02 #			
Nitrate as NO3	<0.3 mg/l	TM184		<0.3	29.5	2.05	39	39.2	38.8
Cyanide, Total	<0.05 mg/l	TM227		<0.05 @ #	0.9 @ #	<0.05 @ #	<0.05 @	<0.05 @	<0.05 @
Cyanide, Free	<0.05 mg/l	TM227		<0.05 @ #	<0.05 @ #	<0.05 @ #	<0.05 @	<0.05 @	<0.05 @
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.03 #	<0.03 #	<0.03 #	<0.03	<0.03	<0.03
pH	<1 pH Units	TM256		7.36 #	7.18 #	7.72 #	8.04 #	8.03 #	7.91 #
Phenol	<0.002 mg/l	TM259		<0.002 #	<0.002 #	0.16 #	<0.002	<0.002	<0.002
Cresols	<0.006 mg/l	TM259		<0.006 #	<0.006 #	0.01 #	<0.006	<0.006	<0.006
Xylenols	<0.008 mg/l	TM259		<0.008 #	<0.008 #	<0.008 #	<0.008	<0.008	<0.008

CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH06	BH11	BH12	SW1	SW2	SW5
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	28/08/2021	28/08/2021	28/08/2021	28/08/2021	28/08/2021	28/08/2021
			SDG Ref	210901-37	210901-37	210901-37	210901-37	210901-37	210901-37
			Lab Sample No.(s)	24898668	24898686	24898695	24898704	24898713	24898660
			AGS Reference	ES1	ES1	ES1	ES1	ES1	ES1
Phenols, Total Detected monohydric	<0.016 mg/l	TM259		<0.016 #	<0.016 #	0.17 #	<0.016	<0.016	<0.016

CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	SW6	WS26	WS31			
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Surface Water (SW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	26/08/2021	26/08/2021	26/08/2021			
			Sampled Time	.	.	.			
			Date Received	28/08/2021	28/08/2021	28/08/2021			
			SDG Ref	210901-37	210901-37	210901-37			
			Lab Sample No.(s)	24898652	24898677	24898721			
			AGS Reference	ES1	ES1	ES1			
Carbon, Organic (diss.filt)	<3 mg/l	TM090		6.84	<3	3.85			
Ammoniacal Nitrogen as N (low level)	<0.01 mg/l	TM099		0.093 #	0.022 #	0.145 #			
Ammoniacal Nitrogen Low as NH4	<0.01 mg/l	TM099		0.12 #	0.0283 #	0.186 #			
Sulphide	<0.01 mg/l	TM101		<0.01 2	<0.01 2 #	<0.01 2 #			
Arsenic (diss.filt)	<0.5 µg/l	TM152		1.7 #	<0.5 #	1.15 #			
Boron (diss.filt)	<10 µg/l	TM152		148 #	94.8 #	67.3 #			
Cadmium (diss.filt)	<0.08 µg/l	TM152		0.0952 #	<0.08 #	<0.08 #			
Chromium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	<1 #			
Copper (diss.filt)	<0.3 µg/l	TM152		4.66 #	0.668 #	<0.3 #			
Lead (diss.filt)	<0.2 µg/l	TM152		0.615 #	<0.2 #	<0.2 #			
Manganese (diss.filt)	<3 µg/l	TM152		13.4 #	23.6 #	1790 #			
Nickel (diss.filt)	<0.4 µg/l	TM152		4.3 #	<0.4 #	2.49 #			
Selenium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	<1 #			
Vanadium (diss.filt)	<1 µg/l	TM152		1.7 #	<1 #	<1 #			
Zinc (diss.filt)	<1 µg/l	TM152		15.9 #	4.39 #	2.33 #			
Calcium (Dis.Filt)	<0.2 mg/l	TM152		90.9 #	56.7 #	152 #			
Iron (Dis.Filt)	<0.019 mg/l	TM152		0.0218 #	0.0224 #	<0.019 #			
Hardness, Total as CaCO3 unfiltered	<0.35 mg/l	TM152		330 2	217 2	810 2			
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01	<0.01 #	<0.01 #			
Sulphate	<2 mg/l	TM184		149 #	79.2 #	166 #			
Nitrate as NO3	<0.3 mg/l	TM184		38.5	0.871	<0.3			
Cyanide, Total	<0.05 mg/l	TM227		<0.05 @	<0.05 @ #	<0.05 @ #			
Cyanide, Free	<0.05 mg/l	TM227		<0.05 @	<0.05 @ #	<0.05 @ #			
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.03	<0.03 #	<0.03 #			
pH	<1 pH Units	TM256		8 #	6.99 #	7.28 #			
Phenol	<0.002 mg/l	TM259		<0.002	<0.002 #	<0.002 #			
Cresols	<0.006 mg/l	TM259		<0.006	<0.006 #	<0.006 #			
Xylenols	<0.008 mg/l	TM259		0.01	<0.008 #	<0.008 #			
Phenols, Total Detected monohydric	<0.016 mg/l	TM259		<0.016	<0.016 #	<0.016 #			
Trifluralin	<0.01 µg/l	TM343			<0.01				
alpha-HCH	<0.01 µg/l	TM343			<0.01				
gamma-HCH (Lindane)	<0.01 µg/l	TM343			<0.01				

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	SW6	WS26	WS31			
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Surface Water (SW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	26/08/2021	26/08/2021	26/08/2021			
			Sampled Time	.	.	.			
			Date Received	28/08/2021	28/08/2021	28/08/2021			
			SDG Ref	210901-37	210901-37	210901-37			
			Lab Sample No.(s)	24898652	24898677	24898721			
			AGS Reference	ES1	ES1	ES1			
Heptachlor	<0.01 µg/l	TM343			<0.01				
Aldrin	<0.01 µg/l	TM343			<0.01				
beta-HCH	<0.01 µg/l	TM343			<0.01				
Isodrin	<0.01 µg/l	TM343			<0.01				
delta-HCH	<0.01 µg/l	TM343			<0.01				
Heptachlor epoxide	<0.01 µg/l	TM343			<0.01				
o,p'-DDE	<0.01 µg/l	TM343			<0.01				
Endosulphan I	<0.01 µg/l	TM343			<0.01				
trans-Chlordane	<0.01 µg/l	TM343			<0.01				
cis-Chlordane	<0.01 µg/l	TM343			<0.01				
p,p'-DDE	<0.01 µg/l	TM343			<0.01				
Dieldrin	<0.01 µg/l	TM343			<0.01				
o,p'-DDD (TDE)	<0.01 µg/l	TM343			<0.01				
Endrin	<0.01 µg/l	TM343			<0.02				
o,p'-DDT	<0.01 µg/l	TM343			<0.02				
p,p'-DDD (TDE)	<0.01 µg/l	TM343			<0.01				
Endosulphan II	<0.02 µg/l	TM343			<0.02				
p,p'-DDT	<0.01 µg/l	TM343			<0.03				
o,p'-Methoxychlor	<0.01 µg/l	TM343			<0.02				
p,p'-Methoxychlor	<0.01 µg/l	TM343			<0.03				
Endosulphan Sulphate	<0.02 µg/l	TM343			<0.04				
Permethrin I	<0.01 µg/l	TM343			<0.01				
Permethrin II	<0.01 µg/l	TM343			<0.01				
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344			<0.01				
Hexachlorobutadiene	<0.01 µg/l	TM344			<0.01				
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344			<0.01				
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344			<0.01				
Dichlorvos	<0.01 µg/l	TM344			<0.01				
Dichlobenil	<0.01 µg/l	TM344			<0.01				
Mevinphos	<0.01 µg/l	TM344			<0.01				
Tecnazene	<0.01 µg/l	TM344			<0.01				
Hexachlorobenzene	<0.01 µg/l	TM344			<0.01				

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	SW6	WS26	WS31			
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Surface Water (SW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	26/08/2021	26/08/2021	26/08/2021			
			Sampled Time	.	.	.			
			Date Received	28/08/2021	28/08/2021	28/08/2021			
			SDG Ref	210901-37	210901-37	210901-37			
			Lab Sample No.(s)	24898652	24898677	24898721			
			AGS Reference	ES1	ES1	ES1			
Demeton-S-methyl	<0.01 µg/l	TM344			<0.01				
Phorate	<0.01 µg/l	TM344			<0.01				
Diazinon	<0.01 µg/l	TM344			<0.01				
Triallate	<0.01 µg/l	TM344			<0.01				
Atrazine	<0.01 µg/l	TM344			<0.01				
Simazine	<0.01 µg/l	TM344			<0.01				
Disulfoton	<0.01 µg/l	TM344			<0.01				
Propetamphos	<0.01 µg/l	TM344			<0.01				
Chlorpyriphos-methyl	<0.01 µg/l	TM344			<0.01				
Dimethoate	<0.01 µg/l	TM344			<0.01				
Pirimiphos-methyl	<0.01 µg/l	TM344			<0.01				
Chlorpyriphos	<0.01 µg/l	TM344			<0.01				
Methyl Parathion	<0.01 µg/l	TM344			<0.01				
Malathion	<0.01 µg/l	TM344			<0.01				
Fenthion	<0.01 µg/l	TM344			<0.01				
Fenitrothion	<0.01 µg/l	TM344			<0.01				
Triadimefon	<0.01 µg/l	TM344			<0.01				
Pendimethalin	<0.01 µg/l	TM344			<0.01				
Parathion	<0.01 µg/l	TM344			<0.01				
Chlorfenvinphos	<0.01 µg/l	TM344			<0.01				
trans-Chlordane	<0.01 µg/l	TM344			<0.01				
cis-Chlordane	<0.01 µg/l	TM344			<0.01				
Ethion	<0.01 µg/l	TM344			<0.01				
Carbophenothion	<0.01 µg/l	TM344			<0.01				
Triazophos	<0.01 µg/l	TM344			<0.01				
Phosalone	<0.01 µg/l	TM344			<0.01				
Azinphos methyl	<0.02 µg/l	TM344			<0.02				
Azinphos ethyl	<0.02 µg/l	TM344			<0.02				
Dinitro-o-cresol	<0.1 µg/l	TM411			<0.5				
Clopyralid	<0.04 µg/l	TM411			<0.2				
MCPA	<0.05 µg/l	TM411			<0.25				
Mecoprop	<0.04 µg/l	TM411			<0.2				

CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	SW6	WS26	WS31			
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Surface Water (SW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	26/08/2021	26/08/2021	26/08/2021			
			Sampled Time	.	.	.			
			Date Received	28/08/2021	28/08/2021	28/08/2021			
			SDG Ref	210901-37	210901-37	210901-37			
			Lab Sample No.(s)	24898652	24898677	24898721			
			AGS Reference	ES1	ES1	ES1			
Dicamba	<0.04 µg/l	TM411			<0.2				
MCPB	<0.05 µg/l	TM411			<0.25				
2,4-DB	<0.1 µg/l	TM411			<0.5				
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411			<0.25				
Dichlorprop	<0.1 µg/l	TM411			<0.5				
Triclopyr	<0.05 µg/l	TM411			<0.25				
Fenoprop (Silvex)	<0.1 µg/l	TM411			<0.5				
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411			<0.25				
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411			<0.25				
Bromoxynil	<0.04 µg/l	TM411			<0.2				
Benazolin	<0.04 µg/l	TM411			<0.2				
Ioxynil	<0.05 µg/l	TM411			<0.25				
Pentachlorophenol	<0.04 µg/l	TM411			<0.2				
Fluoroxypyr	<0.1 µg/l	TM411			<0.5				

CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

PAH Spec MS - Aqueous (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH06	BH11	BH12	SW1	SW2	SW5
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	28/08/2021	28/08/2021	28/08/2021	28/08/2021	28/08/2021	28/08/2021
			SDG Ref	210901-37	210901-37	210901-37	210901-37	210901-37	210901-37
			Lab Sample No.(s)	24898668	24898686	24898695	24898704	24898713	24898660
			AGS Reference	ES1	ES1	ES1	ES1	ES1	ES1
Naphthalene (aq)	<0.01 µg/l	TM178		<0.01 @ #	<0.01 @ #	<0.2 @ #	<0.01 #	<0.01 #	<0.01 @ #
Acenaphthene (aq)	<0.005 µg/l	TM178		<0.005 @ #	<0.005 @ #	<0.1 @ #	<0.005 #	<0.005 #	<0.005 @ #
Acenaphthylene (aq)	<0.005 µg/l	TM178		<0.005 @ #	<0.005 @ #	<0.1 @ #	<0.005 #	<0.005 #	<0.005 @ #
Fluoranthene (aq)	<0.005 µg/l	TM178		0.0333 @ #	0.0479 @ #	2 @ #	0.0307 #	0.0183 #	0.0207 @ #
Anthracene (aq)	<0.005 µg/l	TM178		<0.005 @ #	0.00575 @ #	0.197 @ #	<0.005 #	<0.005 #	<0.005 @ #
Phenanthrene (aq)	<0.005 µg/l	TM178		0.0134 @ #	0.0211 @ #	0.738 @ #	0.0195 #	0.013 #	0.0088 @ #
Fluorene (aq)	<0.005 µg/l	TM178		<0.005 @ #	<0.005 @ #	<0.1 @ #	<0.005 #	<0.005 #	<0.005 @ #
Chrysene (aq)	<0.005 µg/l	TM178		0.0184 @ #	0.0384 @ #	1.32 @ #	<0.005 #	<0.005 #	0.0159 @ #
Pyrene (aq)	<0.005 µg/l	TM178		0.0467 @ #	0.0495 @ #	2.06 @ #	0.0233 #	0.0166 #	0.0218 @ #
Benzo(a)anthracene (aq)	<0.005 µg/l	TM178		0.0248 @ #	0.0347 @ #	1.23 @ #	<0.005 #	<0.005 #	0.0169 @ #
Benzo(b)fluoranthene (aq)	<0.005 µg/l	TM178		0.041 @ #	0.0446 @ #	1.88 @ #	<0.005 #	<0.005 #	0.0202 @ #
Benzo(k)fluoranthene (aq)	<0.005 µg/l	TM178		0.0163 @ #	0.0193 @ #	0.746 @ #	<0.005 #	<0.005 #	0.0084 @ #
Benzo(a)pyrene (aq)	<0.002 µg/l	TM178		0.0292 @ #	0.0361 @ #	1.51 @ #	<0.002 #	<0.002 #	0.0135 @ #
Dibenzo(a,h)anthracene (aq)	<0.005 µg/l	TM178		<0.005 @ #	0.00533 @ #	0.261 @ #	<0.005 #	<0.005 #	<0.005 @ #
Benzo(g,h,i)perylene (aq)	<0.005 µg/l	TM178		0.0305 @ #	0.0491 @ #	1.37 @ #	<0.005 #	<0.005 #	0.0246 @ #
Indeno(1,2,3-cd)pyrene (aq)	<0.005 µg/l	TM178		0.0262 @ #	0.0303 @ #	1.33 @ #	<0.005 #	<0.005 #	0.0154 @ #
PAH, Total Detected USEPA 16 (aq)	<0.082 µg/l	TM178		0.28 @ #	0.382 @ #	14.6 @ #	<0.082 #	<0.082 #	0.166 @ #

CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	SW6	WS26	WS31
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Surface Water (SW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	26/08/2021	26/08/2021	26/08/2021
			Sampled Time	.	.	.
			Date Received	28/08/2021	28/08/2021	28/08/2021
			SDG Ref	210901-37	210901-37	210901-37
			Lab Sample No.(s)	24898652	24898677	24898721
			AGS Reference	ES1	ES1	ES1
Naphthalene (aq)	<0.01 µg/l	TM178		<0.01 #	<0.01 #	<0.01 @ #
Acenaphthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 @ #
Acenaphthylene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 @ #
Fluoranthene (aq)	<0.005 µg/l	TM178		0.0778 #	0.0113 #	0.0149 @ #
Anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 @ #
Phenanthrene (aq)	<0.005 µg/l	TM178		0.0265 #	<0.005 #	0.00905 @ #
Fluorene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 @ #
Chrysene (aq)	<0.005 µg/l	TM178		0.0403 #	<0.005 #	0.0132 @ #
Pyrene (aq)	<0.005 µg/l	TM178		0.0793 #	0.00995 #	0.0153 @ #
Benzo(a)anthracene (aq)	<0.005 µg/l	TM178		0.0325 #	<0.005 #	0.0167 @ #
Benzo(b)fluoranthene (aq)	<0.005 µg/l	TM178		0.0636 #	<0.005 #	0.0107 @ #
Benzo(k)fluoranthene (aq)	<0.005 µg/l	TM178		0.031 #	<0.005 #	<0.005 @ #
Benzo(a)pyrene (aq)	<0.002 µg/l	TM178		0.0456 #	<0.002 #	0.00794 @ #
Dibenzo(a,h)anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 @ #
Benzo(g,h,i)perylene (aq)	<0.005 µg/l	TM178		0.0444 #	<0.005 #	0.0121 @ #
Indeno(1,2,3-cd)pyrene (aq)	<0.005 µg/l	TM178		0.038 #	<0.005 #	<0.005 @ #
PAH, Total Detected USEPA 16 (aq)	<0.082 µg/l	TM178		0.479 #	<0.082 #	0.0999 @ #

CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

SVOC MS (W) - Aqueous

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH11	BH12
Depth (m)	0.00 - 0.00	0.00 - 0.00
Sample Type	Ground Water (GW)	Ground Water (GW)
Date Sampled	26/08/2021	26/08/2021
Sampled Time	.	.
Date Received	28/08/2021	28/08/2021
SDG Ref	210901-37	210901-37
Lab Sample No.(s)	24898686	24898695
AGS Reference	ES1	ES1

Component	LOD/Units	Method		
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176	<1 #	<40 @ #
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176	<1 #	<40 @ #
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176	<1 #	<40 @ #
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176	<1 #	<40 @ #
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176	<1 #	<40 @ #
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176	<1 #	<40 @ #
2,4-Dichlorophenol (aq)	<1 µg/l	TM176	<1 #	<40 @ #
2,4-Dimethylphenol (aq)	<1 µg/l	TM176	<1 #	<40 @ #
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176	<1 #	<40 @ #
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176	<1 #	<40 @ #
2-Chloronaphthalene (aq)	<1 µg/l	TM176	<1 #	<40 @ #
2-Chlorophenol (aq)	<1 µg/l	TM176	<1 #	<40 @ #
2-Methylnaphthalene (aq)	<1 µg/l	TM176	<1 #	<40 @ #
2-Methylphenol (aq)	<1 µg/l	TM176	<1 #	<40 @ #
2-Nitroaniline (aq)	<1 µg/l	TM176	<1 #	<40 @ #
2-Nitrophenol (aq)	<1 µg/l	TM176	<1 #	<40 @ #
3-Nitroaniline (aq)	<1 µg/l	TM176	<1 #	<40 @ #
4-Bromophenylphenylether (aq)	<1 µg/l	TM176	<1 #	<40 @ #
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176	<1 #	<40 @ #
4-Chloroaniline (aq)	<1 µg/l	TM176	<1	<40
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176	<1 #	<40 @ #
4-Methylphenol (aq)	<1 µg/l	TM176	<1 #	<40 @ #
4-Nitroaniline (aq)	<1 µg/l	TM176	<1 #	<40 @ #
4-Nitrophenol (aq)	<1 µg/l	TM176	<1	<40
Azobenzene (aq)	<1 µg/l	TM176	<1 #	<40 @ #
Acenaphthylene (aq)	<1 µg/l	TM176	<1 #	<40 @ #
Acenaphthene (aq)	<1 µg/l	TM176	<1 #	<40 @ #
Anthracene (aq)	<1 µg/l	TM176	<1 #	<40 @ #
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176	<1 #	<40 @ #
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176	<1 #	<40 @ #
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176	<2 #	<80 @ #
Butylbenzyl phthalate (aq)	<1 µg/l	TM176	<1 #	<40 @ #

CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

SVOC MS (W) - Aqueous

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH11	BH12				
			Depth (m)	0.00 - 0.00	0.00 - 0.00				
			Sample Type	Ground Water (GW)	Ground Water (GW)				
			Date Sampled	26/08/2021	26/08/2021				
			Sampled Time	.	.				
			Date Received	28/08/2021	28/08/2021				
			SDG Ref	210901-37	210901-37				
			Lab Sample No.(s)	24898686	24898695				
			AGS Reference	ES1	ES1				
Benzo(a)anthracene (aq)	<1 µg/l	TM176		<1 #	<40 @ #				
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176		<1 #	<40 @ #				
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176		<1 #	<40 @ #				
Benzo(a)pyrene (aq)	<1 µg/l	TM176		<1 #	<40 @ #				
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176		<1 #	<40 @ #				
Carbazole (aq)	<1 µg/l	TM176		<1 #	<40 @ #				
Chrysene (aq)	<1 µg/l	TM176		<1 #	<40 @ #				
Dibenzofuran (aq)	<1 µg/l	TM176		<1 #	<40 @ #				
n-Dibutyl phthalate (aq)	<1 µg/l	TM176		<1 #	<40 @ #				
Diethyl phthalate (aq)	<1 µg/l	TM176		<1 #	<40 @ #				
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176		<1 #	<40 @ #				
Dimethyl phthalate (aq)	<1 µg/l	TM176		<1 #	<40 @ #				
n-Dioctyl phthalate (aq)	<5 µg/l	TM176		<5 #	<200 @ #				
Fluoranthene (aq)	<1 µg/l	TM176		<1 #	<40 @ #				
Fluorene (aq)	<1 µg/l	TM176		<1 #	<40 @ #				
Hexachlorobenzene (aq)	<1 µg/l	TM176		<1 #	<40 @ #				
Hexachlorobutadiene (aq)	<1 µg/l	TM176		<1 #	<40 @ #				
Pentachlorophenol (aq)	<1 µg/l	TM176		<1	<40				
Phenol (aq)	<1 µg/l	TM176		<1	<40				
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176		<1 #	<40 @ #				
Hexachloroethane (aq)	<1 µg/l	TM176		<1 #	<40 @ #				
Nitrobenzene (aq)	<1 µg/l	TM176		<1 #	<40 @ #				
Naphthalene (aq)	<1 µg/l	TM176		<1 #	<40 @ #				
Isophorone (aq)	<1 µg/l	TM176		<1 #	<40 @ #				
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176		<1	<40				
Phenanthrene (aq)	<1 µg/l	TM176		<1 #	<40 @ #				
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176		<1 #	<40 @ #				
Pyrene (aq)	<1 µg/l	TM176		<1 #	<40 @ #				

CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH06	BH11	BH12	SW1	SW2	SW5
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	28/08/2021	28/08/2021	28/08/2021	28/08/2021	28/08/2021	28/08/2021
			SDG Ref	210901-37	210901-37	210901-37	210901-37	210901-37	210901-37
			Lab Sample No.(s)	24898668	24898686	24898695	24898704	24898713	24898660
			AGS Reference	ES1	ES1	ES1	ES1	ES1	ES1
GRO Surrogate % recovery**	%	TM245		105	92	88	101	107	93
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #	359 #	<50 #	<50 #	<50 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Benzene	<7 µg/l	TM245		<7 #	<7 #	<7 #	<7 #	<7 #	<7 #
Toluene	<4 µg/l	TM245		<4 #	<4 #	<4 #	<4 #	<4 #	<4 #
Ethylbenzene	<5 µg/l	TM245		<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
m,p-Xylene	<8 µg/l	TM245		<8 #	<8 #	<8 #	<8 #	<8 #	<8 #
o-Xylene	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Sum of detected Xylenes	<11 µg/l	TM245		<11	<11	<11	<11	<11	<11
Sum of detected BTEX	<28 µg/l	TM245		<28	<28	<28	<28	<28	<28
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	14	<10	<10	<10
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	93	<10	<10	<10
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	113	<10	<10	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	68	<10	<10	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		74	<10	513	<10	<10	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		674	<10	11400	<10	<10	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		748	<10	12000	<10	<10	<10
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	63	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	75	<10	<10	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	<10	<20	<10	<10	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	<10	140	<10	<10	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	<10	1370	<10	<10	<10
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	<10	1510	<10	<10	<10
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		748	<10	13900	<10	<10	<10
Aliphatics >C16-C35 Aqueous	<10 µg/l	TM174		748	<10	11900	<10	<10	<10

CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	SW6	WS26	WS31			
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00			
			Sample Type	Surface Water (SW)	Ground Water (GW)	Ground Water (GW)			
			Date Sampled	26/08/2021	26/08/2021	26/08/2021			
			Sampled Time	.	.	.			
			Date Received	28/08/2021	28/08/2021	28/08/2021			
			SDG Ref	210901-37	210901-37	210901-37			
			Lab Sample No.(s)	24898652	24898677	24898721			
			AGS Reference	ES1	ES1	ES1			
GRO Surrogate % recovery**	%	TM245		105	102	94			
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #	<50 #			
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #			
Benzene	<7 µg/l	TM245		<7 #	<7 #	<7 #			
Toluene	<4 µg/l	TM245		<4 #	<4 #	<4 #			
Ethylbenzene	<5 µg/l	TM245		<5 #	<5 #	<5 #			
m,p-Xylene	<8 µg/l	TM245		<8 #	<8 #	<8 #			
o-Xylene	<3 µg/l	TM245		<3 #	<3 #	<3 #			
Sum of detected Xylenes	<11 µg/l	TM245		<11	<11	<11			
Sum of detected BTEX	<28 µg/l	TM245		<28	<28	<28			
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10			
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10			
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	<10			
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	<10			
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10			
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	<10			
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	<10	<10			
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	<10	<10			
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10			
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10			
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	<10			
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	<10			
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		10	<10	<10			
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	<10	<10			
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10			
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		10	<10	<10			
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		10	<10	<10			
Aliphatics >C16-C35 Aqueous	<10 µg/l	TM174		<10	<10	<10			

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH11	BH12				
			Depth (m)	0.00 - 0.00	0.00 - 0.00				
			Sample Type	Ground Water (GW)	Ground Water (GW)				
			Date Sampled	26/08/2021	26/08/2021				
			Sampled Time	.	.				
			Date Received	28/08/2021	28/08/2021				
			SDG Ref	210901-37	210901-37				
			Lab Sample No.(s)	24898686	24898695				
			AGS Reference	ES1	ES1				
Dibromofluoromethane**	%	TM208		110	117				
Toluene-d8**	%	TM208		99.5	93				
4-Bromofluorobenzene**	%	TM208		99.3	87.3				
Dichlorodifluoromethane	µg/l	TM208		<1 #	<1 #				
Chloromethane	µg/l	TM208		<1 #	<1 #				
Vinyl chloride	µg/l	TM208		<1 #	<1 #				
Bromomethane	µg/l	TM208		<1 #	<1 #				
Chloroethane	µg/l	TM208		<1 #	<1 #				
Trichlorofluoromethane	µg/l	TM208		<1 #	<1 #				
1,1-Dichloroethene	µg/l	TM208		<1 #	<1 #				
Carbon disulphide	µg/l	TM208		<1 #	1.82 #				
Dichloromethane	µg/l	TM208		<3 #	<3 #				
Methyl tertiary butyl ether (MTBE)	µg/l	TM208		<1 #	<1 #				
trans-1,2-Dichloroethene	µg/l	TM208		<1 #	<1 #				
1,1-Dichloroethane	µg/l	TM208		<1 #	<1 #				
cis-1,2-Dichloroethene	µg/l	TM208		<1 #	1.68 #				
2,2-Dichloropropane	µg/l	TM208		<1	<1				
Bromochloromethane	µg/l	TM208		<1 #	<1 #				
Chloroform	µg/l	TM208		<1 #	<1 #				
1,1,1-Trichloroethane	µg/l	TM208		<1 #	<1 #				
1,1-Dichloropropene	µg/l	TM208		<1 #	<1 #				
Carbontetrachloride	µg/l	TM208		<1 #	<1 #				
1,2-Dichloroethane	µg/l	TM208		<1 #	<1 #				
Benzene	µg/l	TM208		<1 #	<1 #				
Trichloroethene	µg/l	TM208		<1 #	<1 #				
1,2-Dichloropropane	µg/l	TM208		<1 #	<1 #				
Dibromomethane	µg/l	TM208		<1 #	<1 #				
Bromodichloromethane	µg/l	TM208		<1 #	<1 #				
cis-1,3-Dichloropropene	µg/l	TM208		<1 #	<1 #				
Toluene	µg/l	TM208		<1 #	<1 #				
trans-1,3-Dichloropropene	µg/l	TM208		<1 #	<1 #				
1,1,2-Trichloroethane	µg/l	TM208		<1 #	<1 #				

CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH11	BH12				
			Depth (m)	0.00 - 0.00	0.00 - 0.00				
			Sample Type	Ground Water (GW)	Ground Water (GW)				
			Date Sampled	26/08/2021	26/08/2021				
			Sampled Time	.	.				
			Date Received	28/08/2021	28/08/2021				
			SDG Ref	210901-37	210901-37				
			Lab Sample No.(s)	24898686	24898695				
			AGS Reference	ES1	ES1				
1,3-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #				
Tetrachloroethene	<1 µg/l	TM208		<1 #	1.79 #				
Dibromochloromethane	<1 µg/l	TM208		<1 #	<1 #				
1,2-Dibromoethane	<1 µg/l	TM208		<1 #	<1 #				
Chlorobenzene	<1 µg/l	TM208		<1 #	<1 #				
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #				
Ethylbenzene	<1 µg/l	TM208		<1 #	<1 #				
m,p-Xylene	<1 µg/l	TM208		<1 #	<1 #				
o-Xylene	<1 µg/l	TM208		<1 #	<1 #				
Styrene	<1 µg/l	TM208		<1 #	<1 #				
Bromoform	<1 µg/l	TM208		<1 #	<1 #				
Isopropylbenzene	<1 µg/l	TM208		<1 #	<1 #				
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #				
1,2,3-Trichloropropane	<1 µg/l	TM208		<1 #	<1 #				
Bromobenzene	<1 µg/l	TM208		<1 #	<1 #				
Propylbenzene	<1 µg/l	TM208		<1 #	<1 #				
2-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #				
1,3,5-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #				
4-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #				
tert-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #				
1,2,4-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #				
sec-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #				
4-iso-Propyltoluene	<1 µg/l	TM208		<1 #	<1 #				
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #				
1,4-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #				
n-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #				
1,2-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #				
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208		<1	<1				
1,2,4-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #				
Hexachlorobutadiene	<1 µg/l	TM208		<1 #	<1 #				
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #				
Naphthalene	<1 µg/l	TM208		<1 #	<1 #				

CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH11	BH12
			Depth (m)	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)
			Date Sampled	26/08/2021	26/08/2021
			Sampled Time	.	.
			Date Received	28/08/2021	28/08/2021
			SDG Ref	210901-37	210901-37
			Lab Sample No.(s)	24898686	24898695
			AGS Reference	ES1	ES1
1,2,3-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #
1,3,5-Trichlorobenzene	<1 µg/l	TM208		<1	<1

Table of Results - Appendix

Method No	Reference	Description
TM045	MEWAM BOD5 2nd Ed.HMSO 1988 / Method 5210B, AWWA/APHA, 20th Ed., 1999; SCA Blue Book 130	Determination of BOD5 (ATU) Filtered by Oxygen Meter on liquids
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM107	ISO 6060-1989	Determination of Chemical Oxygen Demand using COD Dr Lange Kit
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM343	EPA 8270D - Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of Selected Pesticides (Suite I) in Liquids by GCMS
TM344	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite II) by GCMS
TM411	Acid_Herbs_GCMS	Acid Herbs in Water by GCMS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Test Completion Dates

Lab Sample No(s)	24898668	24898686	24898695	24898704	24898713	24898660	24898652	24898677	24898721
Customer Sample Ref.	BH06	BH11	BH12	SW1	SW2	SW5	SW6	WS26	WS31
AGS Ref.	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1	ES1
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Surface Water	Surface Water	Surface Water	Surface Water	Ground Water	Ground Water
Acid Herbicides by GCMS								06-Sep-2021	
Ammonium Low	07-Sep-2021	07-Sep-2021	07-Sep-2021	07-Sep-2021	07-Sep-2021	07-Sep-2021	07-Sep-2021	08-Sep-2021	08-Sep-2021
Anions by Kone (w)	06-Sep-2021	06-Sep-2021	06-Sep-2021	06-Sep-2021	06-Sep-2021	06-Sep-2021	06-Sep-2021	06-Sep-2021	06-Sep-2021
BOD True Total			06-Sep-2021						
COD Unfiltered			05-Sep-2021						
Cyanide Comp/Free/Total/Thiocyanate	07-Sep-2021	07-Sep-2021	07-Sep-2021	07-Sep-2021	07-Sep-2021	07-Sep-2021	07-Sep-2021	07-Sep-2021	07-Sep-2021
Dissolved Metals by ICP-MS	03-Sep-2021	03-Sep-2021	02-Sep-2021	03-Sep-2021	02-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021
Dissolved Organic/Inorganic Carbon	07-Sep-2021	08-Sep-2021	07-Sep-2021	07-Sep-2021	07-Sep-2021	07-Sep-2021	07-Sep-2021	07-Sep-2021	07-Sep-2021
EPH CWG (Aliphatic) Aqueous GC (W)	07-Sep-2021	08-Sep-2021	07-Sep-2021	06-Sep-2021	06-Sep-2021	08-Sep-2021	06-Sep-2021	07-Sep-2021	08-Sep-2021
EPH CWG (Aromatic) Aqueous GC (W)	07-Sep-2021	08-Sep-2021	07-Sep-2021	06-Sep-2021	06-Sep-2021	08-Sep-2021	06-Sep-2021	07-Sep-2021	08-Sep-2021
GRO by GC-FID (W)	06-Sep-2021	06-Sep-2021	06-Sep-2021	06-Sep-2021	06-Sep-2021	06-Sep-2021	06-Sep-2021	06-Sep-2021	06-Sep-2021
Hexavalent Chromium (w)	08-Sep-2021	08-Sep-2021	08-Sep-2021	08-Sep-2021	08-Sep-2021	08-Sep-2021	08-Sep-2021	08-Sep-2021	08-Sep-2021
Mercury Dissolved	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021
Nitrite by Kone (w)	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021
PAH Spec MS - Aqueous (W)	08-Sep-2021	08-Sep-2021	08-Sep-2021	07-Sep-2021	07-Sep-2021	08-Sep-2021	07-Sep-2021	07-Sep-2021	08-Sep-2021
Pesticides (Suite I) by GCMS								07-Sep-2021	
Pesticides (Suite II) by GCMS								03-Sep-2021	
pH Value	02-Sep-2021	02-Sep-2021	02-Sep-2021	02-Sep-2021	02-Sep-2021	02-Sep-2021	02-Sep-2021	02-Sep-2021	02-Sep-2021
Phenols by HPLC (W)	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021
Phosphate by Kone (w)			03-Sep-2021						
Sulphide	07-Sep-2021	06-Sep-2021	06-Sep-2021	07-Sep-2021	06-Sep-2021	06-Sep-2021	06-Sep-2021	07-Sep-2021	06-Sep-2021
SVOC MS (W) - Aqueous		06-Sep-2021	07-Sep-2021						
Total Metals by ICP-MS	03-Sep-2021	03-Sep-2021	06-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021	03-Sep-2021
TPH CWG (W)	07-Sep-2021	08-Sep-2021	07-Sep-2021	07-Sep-2021	07-Sep-2021	08-Sep-2021	07-Sep-2021	07-Sep-2021	08-Sep-2021
VOC MS (W)		06-Sep-2021	06-Sep-2021						

ASSOCIATED AQC DATA

Acid Herbicides by GCMS

Component	Method Code	QC 2451
2,3,6-TBA (Raw)	TM411	**99.05** 72.24 : 118.28
2,4,5-T (Raw)	TM411	**90.0** 66.88 : 130.00
2,4-D (Raw)	TM411	**106.38** 68.29 : 133.58
2,4-DB (Raw)	TM411	**105.14** 57.23 : 133.50
Benazolin (Raw)	TM411	**110.42** 78.76 : 146.78
Bromoxynil (Raw)	TM411	**105.09** 77.69 : 118.97
Clopyralid (Raw)	TM411	**93.03** 64.11 : 124.08
Dicamba (Raw)	TM411	**102.85** 77.45 : 123.02
Dichloroprop (Raw)	TM411	**99.31** 74.86 : 126.35
DNOC (Raw)	TM411	**98.02** 65.53 : 129.07
Fenoprop (Raw)	TM411	**102.23** 74.33 : 126.19
Fluroxypyr (Raw)	TM411	**112.27** 80.51 : 140.78
Ioxynil (Raw)	TM411	**83.62** 42.19 : 122.44
MCPA (Raw)	TM411	**99.36** 79.83 : 124.11
MCPB (Raw)	TM411	**99.97** 33.12 : 147.97
Mecoprop (Raw)	TM411	**102.34** 80.77 : 125.74
Pentachlorophenol (Raw)	TM411	**111.17** 76.67 : 131.12
Triclopyr (Raw)	TM411	**105.87** 69.64 : 132.21

Ammonium Low

Component	Method Code	QC 2492	QC 2496	QC 2412
Ammoniacal Nitrogen as N	TM099	**96.8** 88.02 : 104.70	**103.2** 94.00 : 106.00	**103.8** 94.00 : 106.00

Anions by Kone (w)

Anions by Kone (w)

Component	Method Code	QC 2498
Sulphate (soluble)	TM184	**105.6** 91.99 : 109.30
TON as NO3	TM184	**101.5** 90.35 : 108.35

BOD True Total

Component	Method Code	QC 2425
BOD	TM045	**89.86** 72.19 : 121.74

COD Unfiltered

Component	Method Code	QC 2455
COD	TM107	**101.52** 97.45 : 103.77

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2467
Free Cyanide (W)	TM227	**81.25** 90.67 : 122.67
Thiocyanate (W)	TM227	**109.5** 92.25 : 117.75
Total Cyanide (W)	TM227	**104.75** 96.25 : 112.75

Dissolved Metals by ICP-MS

Component	Method Code	QC 2403	QC 2445
Aluminium	TM152	**100.33** 90.98 : 111.82	**101.33** 90.98 : 111.82
Antimony	TM152	**99.33** 90.44 : 113.04	**100.67** 90.44 : 113.04
Arsenic	TM152	**99.17** 88.00 : 112.00	**101.0** 88.00 : 112.00
Barium	TM152	**100.83** 90.20 : 111.19	**100.83** 90.20 : 111.19
Beryllium	TM152	**101.33** 87.77 : 113.97	**100.83** 87.77 : 113.97
Bismuth	TM152	**102.67** 91.90 : 112.20	**104.5** 91.90 : 112.20
Borate	TM152	**102.47** 88.00 : 112.00	**100.0** 88.00 : 112.00
Boron	TM152	**102.33** 96.48 : 114.93	**100.0** 96.48 : 114.93

Dissolved Metals by ICP-MS

		QC 2403	QC 2445
Cadmium	TM152	**103.67** 96.43 : 110.53	**102.5** 96.43 : 110.53
Calcium	TM152	**101.33** 93.36 : 108.97	**104.67** 93.36 : 108.97
Chromium	TM152	**96.5** 91.84 : 108.67	**100.5** 91.84 : 108.67
Cobalt	TM152	**97.33** 88.00 : 112.00	**100.17** 88.00 : 112.00
Copper	TM152	**98.0** 92.47 : 118.11	**101.83** 92.47 : 118.11
Iron	TM152	**98.67** 93.23 : 106.27	**100.0** 93.23 : 106.27
Lead	TM152	**97.67** 88.00 : 112.00	**97.83** 88.00 : 112.00
Lithium	TM152	**101.5** 91.62 : 113.12	**101.5** 91.62 : 113.12
Magnesium	TM152	**98.0** 87.77 : 110.48	**100.67** 87.77 : 110.48
Manganese	TM152	**98.83** 95.03 : 110.58	**100.17** 95.03 : 110.58
Molybdenum	TM152	**98.67** 88.00 : 112.00	**100.83** 88.00 : 112.00
Nickel	TM152	**98.33** 88.00 : 112.00	**100.33** 88.00 : 112.00
Phosphorus	TM152	**95.17** 91.54 : 107.12	**100.17** 91.54 : 107.12
Potassium	TM152	**100.67** 92.16 : 109.93	**103.33** 92.16 : 109.93
Selenium	TM152	**101.0** 91.58 : 115.98	**101.67** 91.58 : 115.98
Silver	TM152	**102.0** 88.80 : 122.30	**102.5** 88.80 : 122.30
Sodium	TM152	**98.67** 89.47 : 109.62	**100.0** 89.47 : 109.62
Strontium	TM152	**101.33** 88.00 : 112.00	**99.67** 88.00 : 112.00
Tellurium	TM152	**103.5** 93.32 : 114.66	**102.33** 93.32 : 114.66
Thallium	TM152	**102.17** 88.00 : 112.00	**101.67** 88.00 : 112.00
Tin	TM152	**100.67** 92.63 : 109.70	**101.67** 92.63 : 109.70
Titanium	TM152	**98.5** 95.58 : 111.68	**102.17** 95.58 : 111.68
Tungsten	TM152	**101.67** 81.32 : 124.72	**104.67** 81.32 : 124.72
Uranium	TM152	**102.17** 88.00 : 112.00	**101.5** 88.00 : 112.00
Vanadium	TM152	**98.17** 88.00 : 112.00	**99.0** 88.00 : 112.00
Zinc	TM152	**100.0** 92.98 : 118.95	**101.67** 92.98 : 118.95

Dissolved Organic/Inorganic Carbon

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2412	QC 2454
Dissolved Inorganic Carbon	TM090	**112.67** 93.58 : 112.28	**100.17** 93.58 : 112.28
Dissolved Organic Carbon	TM090	**102.67** 97.80 : 107.10	**101.17** 97.80 : 107.10

EPH CWG (Aliphatic) Aqueous GC (W)

Component	Method Code	QC 2477	QC 2424	QC 2415
Total Aliphatics >C10-C40	TM174	**103.14** 69.79 : 134.39	**96.37** 68.59 : 134.82	**88.78** 69.79 : 134.39

EPH CWG (Aromatic) Aqueous GC (W)

Component	Method Code	QC 2484	QC 2417	QC 2420
Total Aromatics >EC10-EC40	TM174	**97.32** 59.92 : 128.54	**94.15** 60.75 : 129.09	**91.46** 59.92 : 128.54

GRO by GC-FID (W)

Component	Method Code	QC 2478
Benzene by GC	TM245	**109.5** 81.54 : 119.70
Ethylbenzene by GC	TM245	**107.0** 80.99 : 121.09
m & p Xylene by GC	TM245	**105.5** 82.77 : 123.19
MTBE GC-FID	TM245	**106.0** 80.06 : 123.27
o Xylene by GC	TM245	**108.0** 84.26 : 121.50
QC	TM245	**98.48** 67.65 : 138.14
Toluene by GC	TM245	**108.5** 82.78 : 121.99

Hexavalent Chromium (w)

Component	Method Code	QC 2430
Hexavalent Chromium	TM241	**97.2** 94.17 : 106.17

Mercury Dissolved

Mercury Dissolved

Component	Method Code	QC 2493	QC 2464
Mercury Dissolved (CVAF)	TM183	**98.1** 69.30 : 128.70	**99.2** 69.30 : 128.70

PAH Spec MS - Aqueous (W)

Component	Method Code	QC 2489	QC 2440	QC 2411
Acenaphthene by GCMS	TM178	**110.8** 90.45 : 118.63	**105.6** 97.60 : 116.80	**107.6** 97.60 : 116.80
Acenaphthylene by GCMS	TM178	**111.6** 90.13 : 116.27	**97.6** 89.20 : 113.20	**96.0** 89.20 : 113.20
Anthracene by GCMS	TM178	**107.6** 92.40 : 114.00	**102.4** 92.40 : 116.40	**103.2** 92.40 : 116.40
Benz(a)anthracene by GCMS	TM178	**108.8** 89.51 : 117.69	**97.6** 84.40 : 110.80	**98.4** 84.40 : 110.80
Benzo(a)pyrene by GCMS	TM178	**109.2** 89.43 : 118.57	**98.8** 88.40 : 110.00	**98.4** 88.40 : 110.00
Benzo(b)fluoranthene by GCMS	TM178	**108.4** 87.80 : 121.80	**94.0** 81.20 : 114.80	**92.4** 81.20 : 114.80
Benzo(ghi)perylene by GCMS	TM178	**109.2** 87.10 : 119.30	**104.8** 93.60 : 112.80	**110.0** 93.60 : 112.80
Benzo(k)fluoranthene by GCMS	TM178	**111.2** 93.23 : 123.57	**100.0** 90.40 : 119.20	**104.0** 90.40 : 119.20
Chrysene by GCMS	TM178	**108.8** 88.68 : 116.92	**105.6** 96.80 : 113.60	**107.2** 96.80 : 113.60
Dibenzo(ah)anthracene by GCMS	TM178	**104.8** 86.24 : 118.56	**105.6** 88.00 : 112.00	**106.8** 88.00 : 112.00
Fluoranthene by GCMS	TM178	**108.4** 86.04 : 121.96	**106.8** 93.49 : 118.20	**107.6** 93.49 : 118.20
Fluorene by GCMS	TM178	**110.8** 90.76 : 121.24	**105.6** 94.39 : 118.66	**106.0** 94.39 : 118.66
Indeno(123cd)pyrene by GCMS	TM178	**105.2** 88.39 : 119.61	**97.2** 90.40 : 114.40	**96.4** 90.40 : 114.40
Naphthalene by GCMS	TM178	**112.4** 89.40 : 121.80	**108.0** 94.00 : 115.60	**110.0** 94.00 : 115.60
Phenanthrene by GCMS	TM178	**109.6** 90.41 : 119.19	**104.0** 94.80 : 114.00	**107.2** 94.80 : 114.00
Pyrene by GCMS	TM178	**107.6** 91.00 : 120.20	**108.4** 96.40 : 115.60	**110.0** 96.40 : 115.60

Pesticides (Suite I) by GCMS

Component	Method Code	QC 2482
Aldrin - (Inst.)	TM343	**90.16** 59.75 : 143.00
alpha-HCH - (Inst.)	TM343	**92.03** 75.13 : 166.63
beta-HCH - (Inst.)	TM343	**93.67** 85.48 : 166.48
cis-Chlordane - (Inst.)	TM343	**92.98** 71.70 : 156.00

Pesticides (Suite I) by GCMS

		QC 2482
delta-HCH - (Inst.)	TM343	**81.01** 83.98 : 156.58
Dieldrin - (Inst.)	TM343	**103.13** 77.45 : 154.10
Endosulphan I - (Inst.)	TM343	**95.95** 91.30 : 168.70
Endosulphan II - (Inst.)	TM343	**94.67** 82.68 : 161.13
Endosulphan Sulphate - (Inst.)	TM343	**56.51** 69.65 : 165.95
Endrin - (Inst.)	TM343	**90.78** 81.33 : 178.68
gamma-HCH (Lindane) - (Inst.)	TM343	**83.18** 83.15 : 175.40
Heptachlor - (Inst.)	TM343	**95.99** 63.65 : 167.80
Heptachlor epoxide - (Inst.)	TM343	**87.61** 73.28 : 159.38
Isodrin - (Inst.)	TM343	**89.44** 58.34 : 153.81
o,p-DDD (TDE) - (Inst.)	TM343	**95.16** 66.93 : 162.03
o,p-DDE - (Inst.)	TM343	**92.38** 64.68 : 156.78
o,p-DDT - (Inst.)	TM343	**108.51** 72.20 : 170.15
o,p-Methoxychlor - (Inst.)	TM343	**104.17** 73.33 : 171.13
p,p-DDD (TDE) - (Inst.)	TM343	**90.95** 67.95 : 160.20
p,p-DDE - (Inst.)	TM343	**95.8** 67.80 : 159.45
p,p-DDT - (Inst.)	TM343	**118.73** 68.30 : 178.25
p,p-Methoxychlor - (Inst.)	TM343	**121.56** 66.94 : 176.47
Permethrin I - (Inst.)	TM343	**110.28** 63.25 : 146.35
Permethrin II - (Inst.)	TM343	**114.22** 66.00 : 151.80
trans-Chlordane - (Inst.)	TM343	**89.88** 71.68 : 165.88
Trifluralin - (Inst.)	TM343	**95.25** 64.73 : 161.48

pH Value

Component	Method Code	QC 2453
pH	TM256	**100.53** 99.33 : 102.54

Phenols by HPLC (W)

Component	Method Code	QC 2489
2.3.5 Trimethyl-Phenol by HPLC (W)	TM259	**93.75** 76.00 : 124.00
2-Isopropyl Phenol by HPLC (W)	TM259	**91.78** 76.00 : 124.00
Cresols by HPLC (W)	TM259	**96.71** 76.00 : 124.00
Napthol by HPLC (W)	TM259	**87.89** 76.00 : 124.00
Phenol by HPLC (W)	TM259	**92.63** 76.00 : 124.00
Xylenols by HPLC (W)	TM259	**93.99** 76.00 : 124.00

Phosphate by Kone (w)

Component	Method Code	QC 2490
Phosphate (Ortho as PO4)	TM184	**102.0** 96.40 : 109.60

Sulphide

Component	Method Code	QC 2440	QC 2471
Sulphide	TM101	**93.33** 88.90 : 112.50	**99.33** 88.90 : 112.50

SVOC MS (W) - Aqueous

Component	Method Code	QC 2461	QC 2463
4-Bromophenylphenylether	TM176	**87.2** 61.60 : 106.72	**83.2** 52.80 : 111.84
Benzo(a)anthracene	TM176	**84.0** 64.64 : 115.52	**80.8** 59.28 : 107.76
Benzo(a)pyrene	TM176	**82.4** 60.56 : 115.28	**72.72** 54.40 : 105.76
Butylbenzyl phthalate	TM176	**84.8** 57.12 : 116.16	**83.2** 51.68 : 117.92
Hexachlorobutadiene	TM176	**72.24** 52.88 : 95.12	**70.56** 48.64 : 95.68
Naphthalene	TM176	**88.8** 65.68 : 110.32	**86.4** 63.04 : 111.04
Nitrobenzene	TM176	**85.6** 57.12 : 109.44	**84.0** 59.92 : 108.40
Phenol	TM176	**52.88** 37.60 : 70.72	**52.56** 36.88 : 72.40

Total Metals by ICP-MS

CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Total Metals by ICP-MS

Component	Method Code	QC 2454	QC 2477
Aluminium	TM152	**104.0** 88.99 : 114.16	**102.33** 88.99 : 114.16
Antimony	TM152	**103.17** 93.05 : 123.32	**100.33** 93.05 : 123.32
Arsenic	TM152	**102.0** 97.95 : 112.90	**100.5** 97.95 : 112.90
Barium	TM152	**104.33** 95.11 : 116.80	**104.17** 95.11 : 116.80
Beryllium	TM152	**106.67** 96.06 : 116.39	**104.83** 96.06 : 116.39
Bismuth	TM152	**105.5** 93.21 : 113.89	**104.17** 93.21 : 113.89
Boron	TM152	**107.0** 86.68 : 117.67	**104.33** 86.68 : 117.67
Cadmium	TM152	**103.67** 96.08 : 112.92	**99.83** 96.08 : 112.92
Calcium	TM152	**107.33** 95.17 : 121.17	**107.33** 95.17 : 121.17
Chromium	TM152	**101.67** 97.65 : 111.90	**100.67** 97.65 : 111.90
Cobalt	TM152	**100.83** 96.52 : 113.04	**99.83** 96.52 : 113.04
Copper	TM152	**101.0** 97.32 : 113.53	**99.83** 97.32 : 113.53
Iron	TM152	**102.0** 96.27 : 111.69	**99.33** 96.27 : 111.69
Lead	TM152	**104.83** 96.90 : 113.51	**103.0** 96.90 : 113.51
Lithium	TM152	**107.5** 94.68 : 116.74	**105.5** 94.68 : 116.74
Magnesium	TM152	**104.0** 92.42 : 114.10	**102.67** 92.42 : 114.10
Manganese	TM152	**102.5** 97.04 : 112.45	**100.67** 97.04 : 112.45
Molybdenum	TM152	**102.67** 87.00 : 108.89	**100.5** 87.00 : 108.89
Nickel	TM152	**101.17** 97.57 : 113.15	**100.5** 97.57 : 113.15
Phosphorus	TM152	**103.67** 96.28 : 113.79	**103.17** 96.28 : 113.79
Potassium	TM152	**106.67** 96.14 : 114.83	**106.67** 96.14 : 114.83
Selenium	TM152	**101.83** 96.70 : 113.86	**101.0** 96.70 : 113.86
Silver	TM152	**104.5** 82.13 : 120.33	**101.5** 82.13 : 120.33
Sodium	TM152	**104.0** 92.77 : 115.64	**103.33** 92.77 : 115.64
Strontium	TM152	**103.67** 90.72 : 114.82	**102.0** 90.72 : 114.82
Tellurium	TM152	**105.67** 95.55 : 115.82	**104.83** 95.55 : 115.82
Thallium	TM152	**102.83** 80.92 : 114.72	**100.5** 80.92 : 114.72

Total Metals by ICP-MS

		QC 2454	QC 2477
Tin	TM152	**102.83** 96.04 : 111.04	**101.17** 96.04 : 111.04
Titanium	TM152	**102.0** 96.48 : 114.94	**102.67** 96.48 : 114.94
Uranium	TM152	**105.33** 95.56 : 112.07	**103.67** 95.56 : 112.07
Vanadium	TM152	**100.33** 88.43 : 114.30	**97.17** 88.43 : 114.30
Zinc	TM152	**101.33** 97.95 : 113.95	**100.33** 97.95 : 113.95

VOC MS (W)

Component	Method Code	QC 2450
1,1,1,2-Tetrachloroethane	TM208	**104.0** 87.41 : 110.84
1,1,1-Trichloroethane	TM208	**102.0** 81.01 : 112.00
1,1-Dichloroethane	TM208	**103.0** 82.09 : 116.41
1,2-Dichloroethane	TM208	**102.0** 80.28 : 123.63
2-Chlorotoluene	TM208	**105.5** 83.31 : 110.91
4-Chlorotoluene	TM208	**104.5** 84.01 : 111.46
Benzene	TM208	**103.5** 87.46 : 118.30
Bromomethane	TM208	**99.0** 76.99 : 118.39
Carbontetrachloride	TM208	**102.5** 81.73 : 114.22
Chlorobenzene	TM208	**106.5** 90.24 : 109.71
Chloroform	TM208	**100.0** 83.67 : 118.08
Chloromethane	TM208	**100.0** 70.42 : 127.06
Cis-1,2-Dichloroethene	TM208	**101.5** 83.95 : 112.60
Dichloromethane	TM208	**102.5** 81.65 : 120.83
Ethylbenzene	TM208	**103.5** 85.59 : 106.44
Hexachlorobutadiene	TM208	**108.5** 66.83 : 108.27
o-Xylene	TM208	**104.5** 78.40 : 110.68
p/m-Xylene	TM208	**103.0** 82.64 : 112.12
Tert-butyl methyl ether	TM208	**101.0** 68.23 : 127.69
Tetrachloroethene	TM208	**101.5** 81.10 : 112.63

VOC MS (W)

		QC 2450
Toluene	TM208	**101.0** 87.40 : 109.78
Trichloroethene	TM208	**101.5** 81.17 : 111.80
Vinyl Chloride	TM208	**98.0** 72.73 : 123.40

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

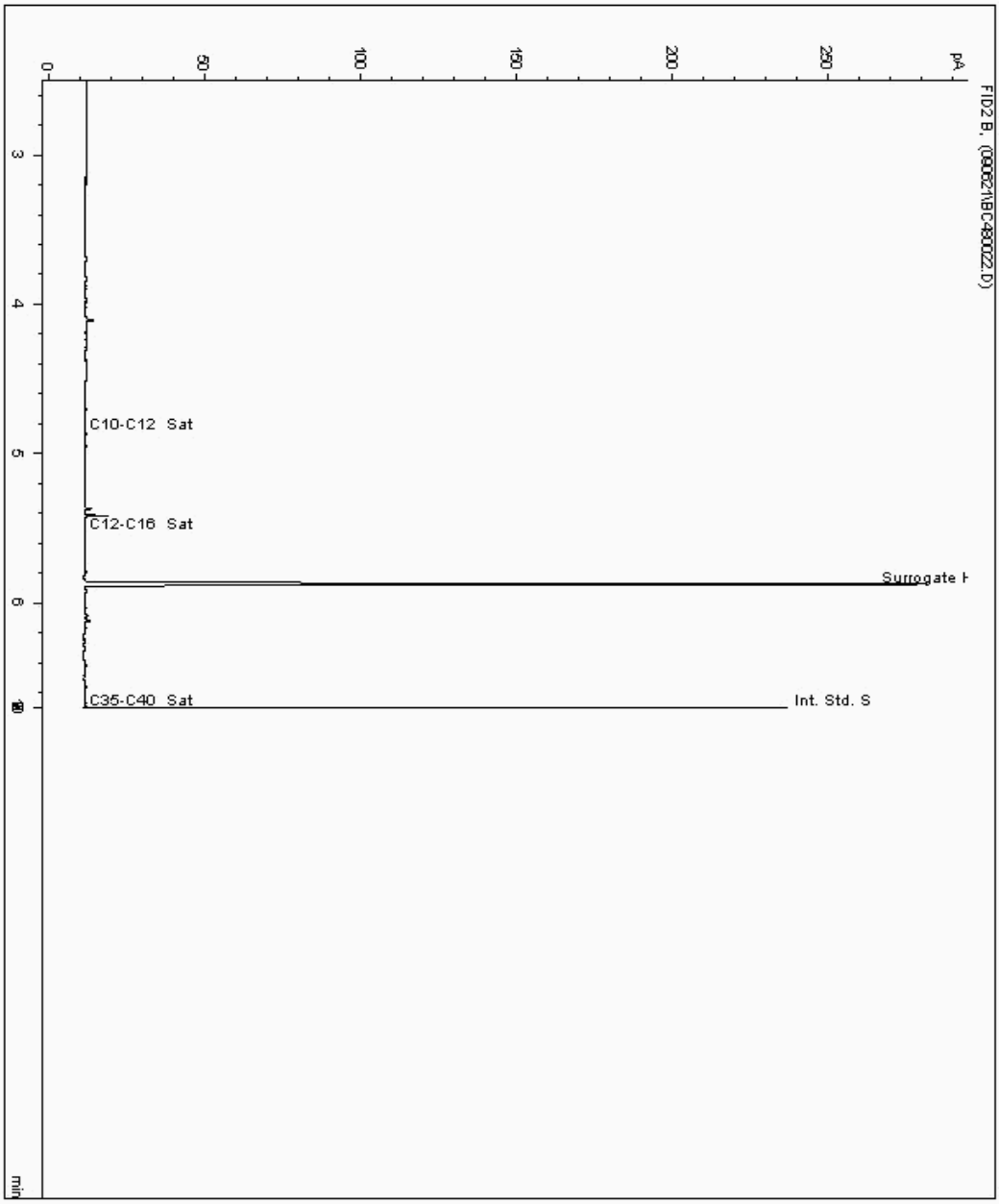
SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24899805 **Depth :** 0.00 - 0.00
Sample ID : SW6

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23284881-
Date Acquired : 06/09/2021 19:12:14 PM
Units : ppb
Dilution : SE SW6[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

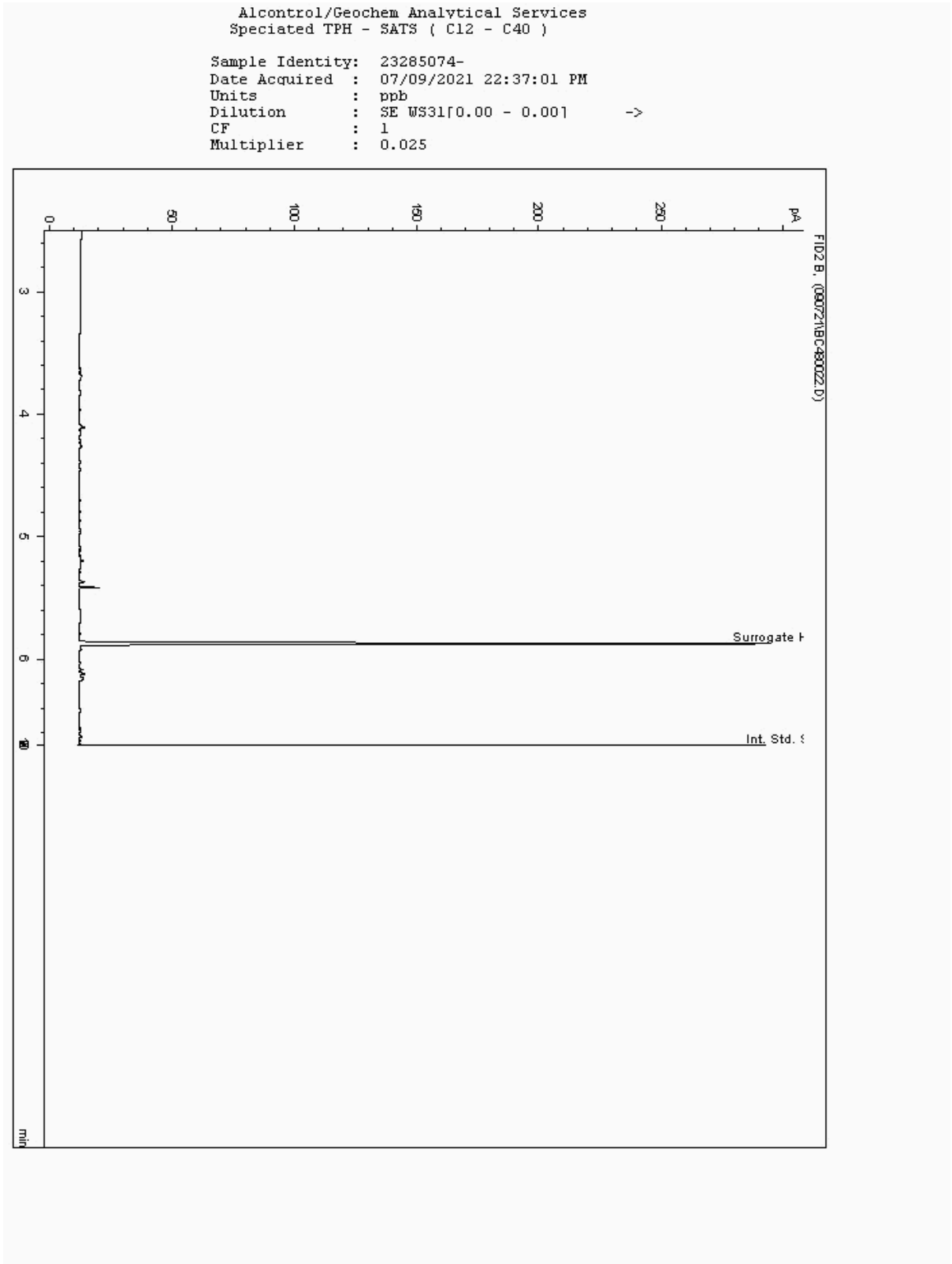


CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24899815 **Depth :** 0.00 - 0.00
Sample ID : WS31

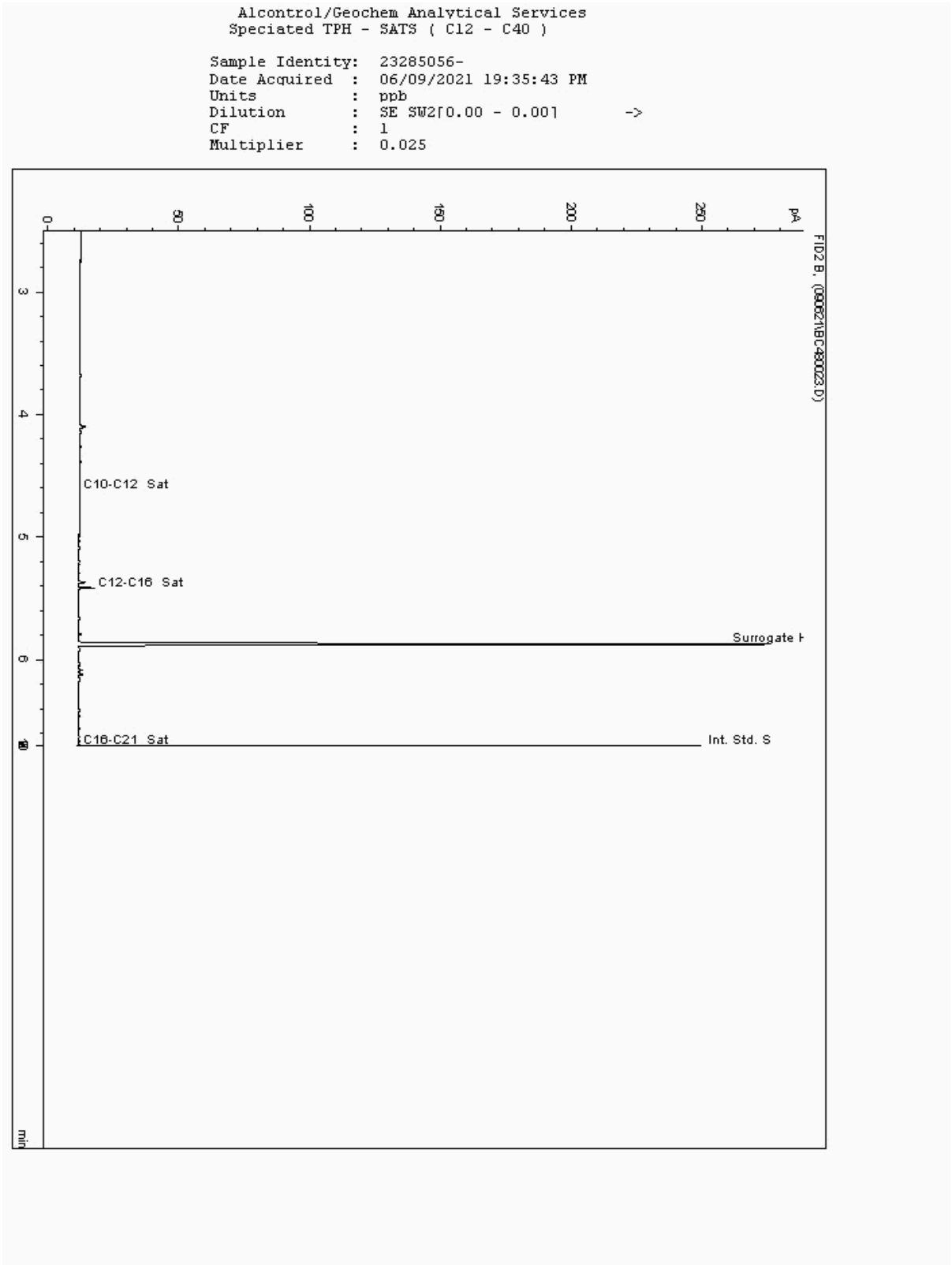


CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24899821 **Depth :** 0.00 - 0.00
Sample ID : SW2

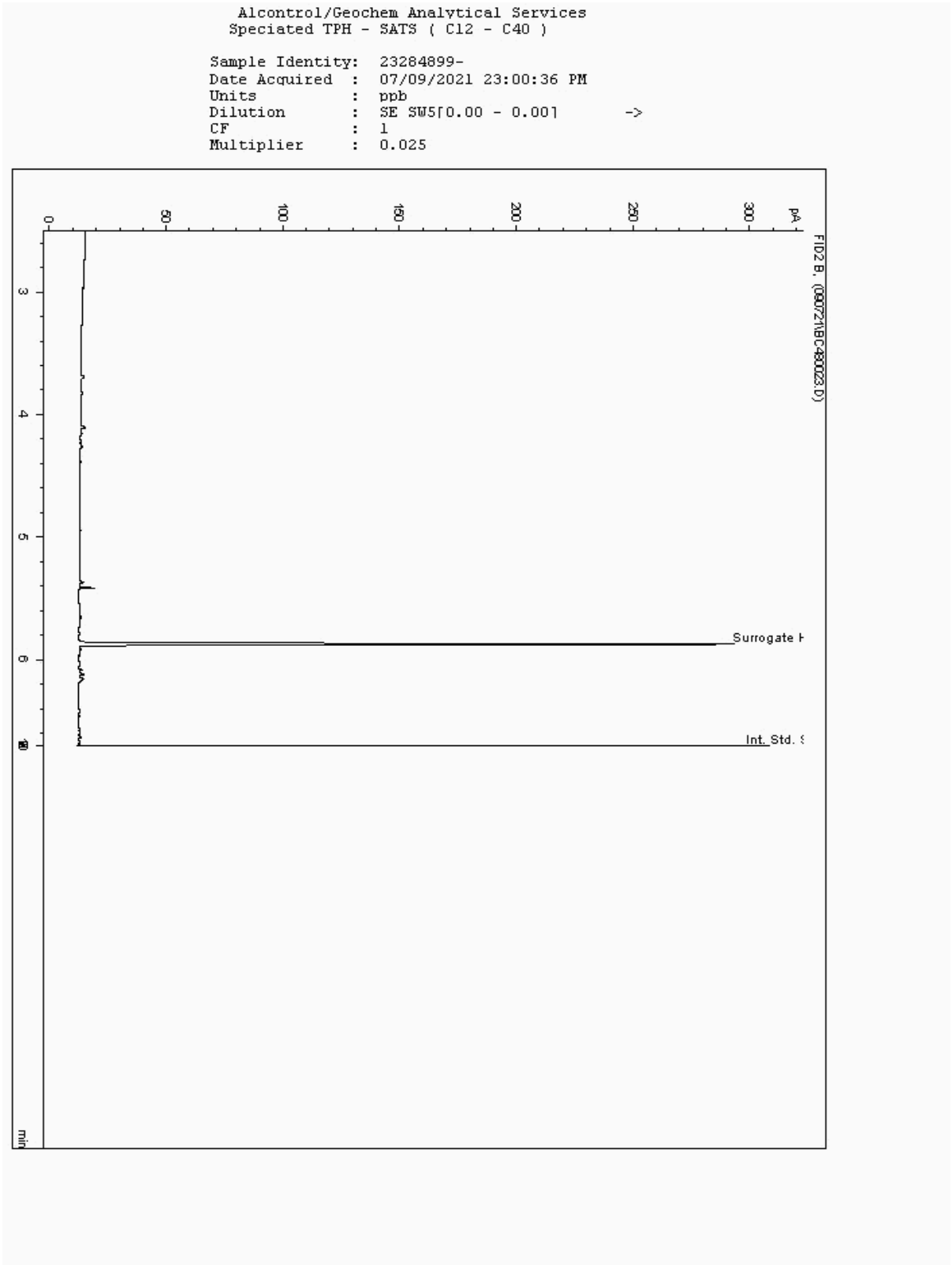


CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24899832 **Depth :** 0.00 - 0.00
Sample ID : SW5

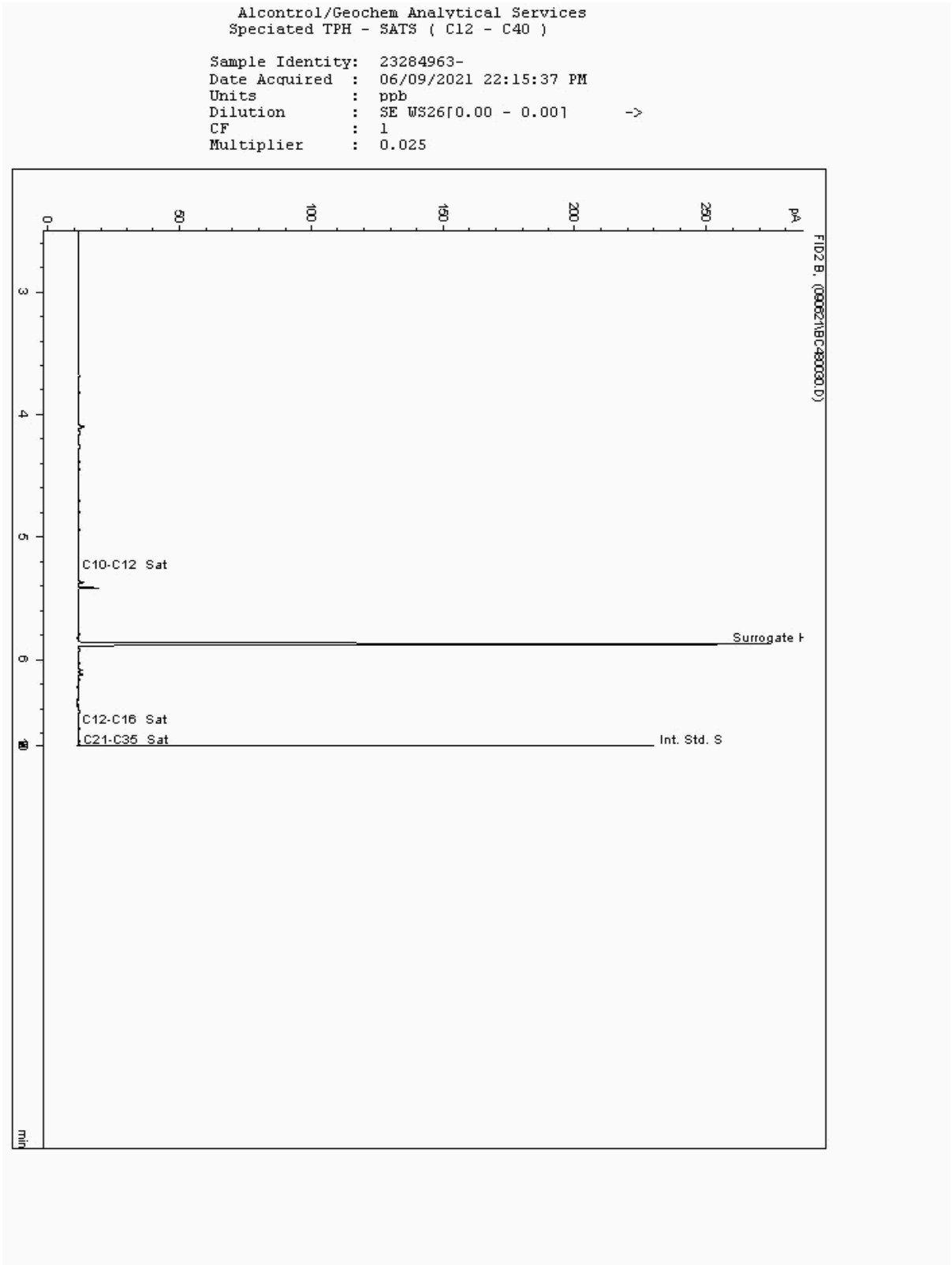


CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24899839 **Depth :** 0.00 - 0.00
Sample ID : WS26

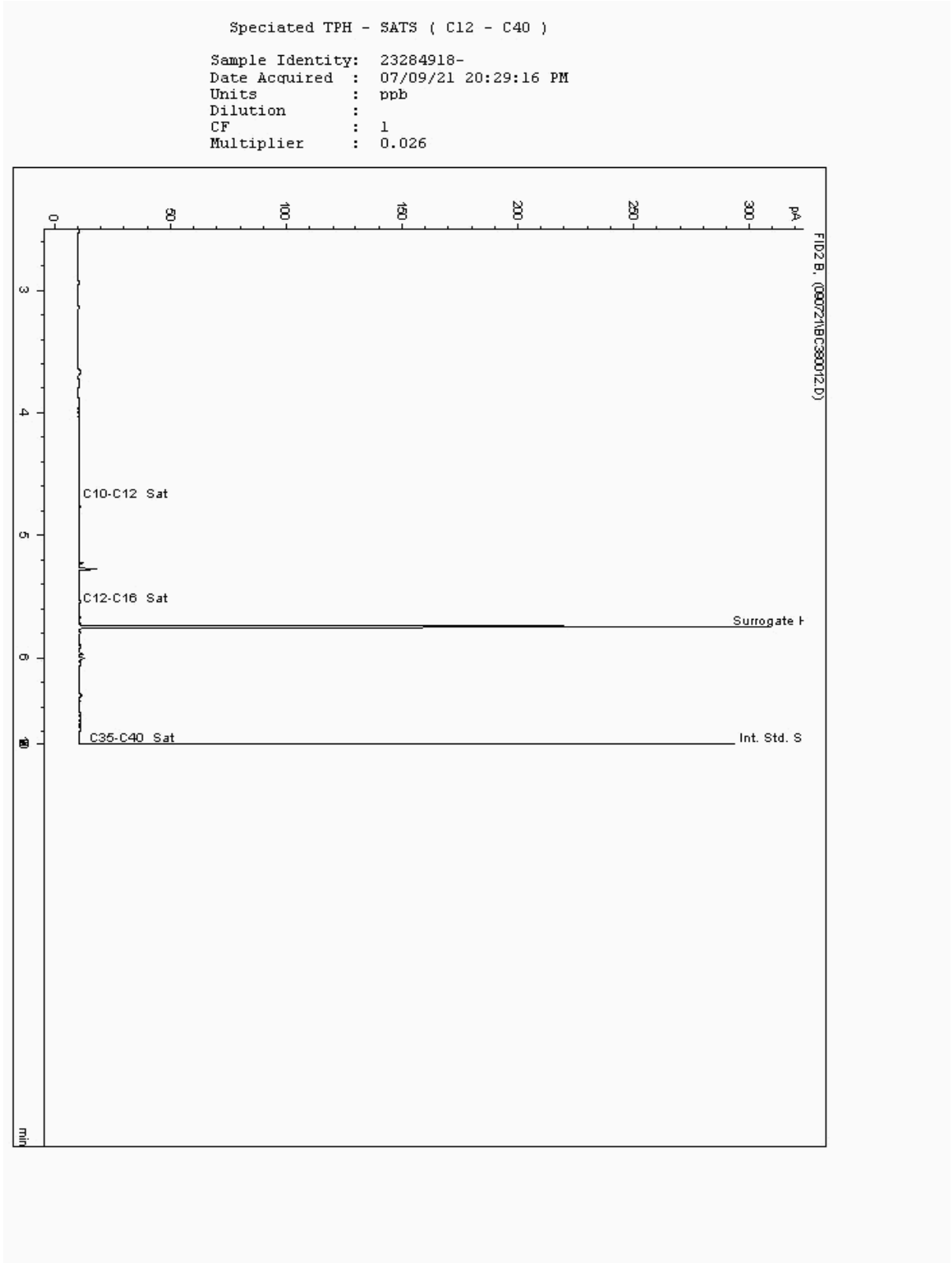


CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24899868 **Depth :** 0.00 - 0.00
Sample ID : BH06

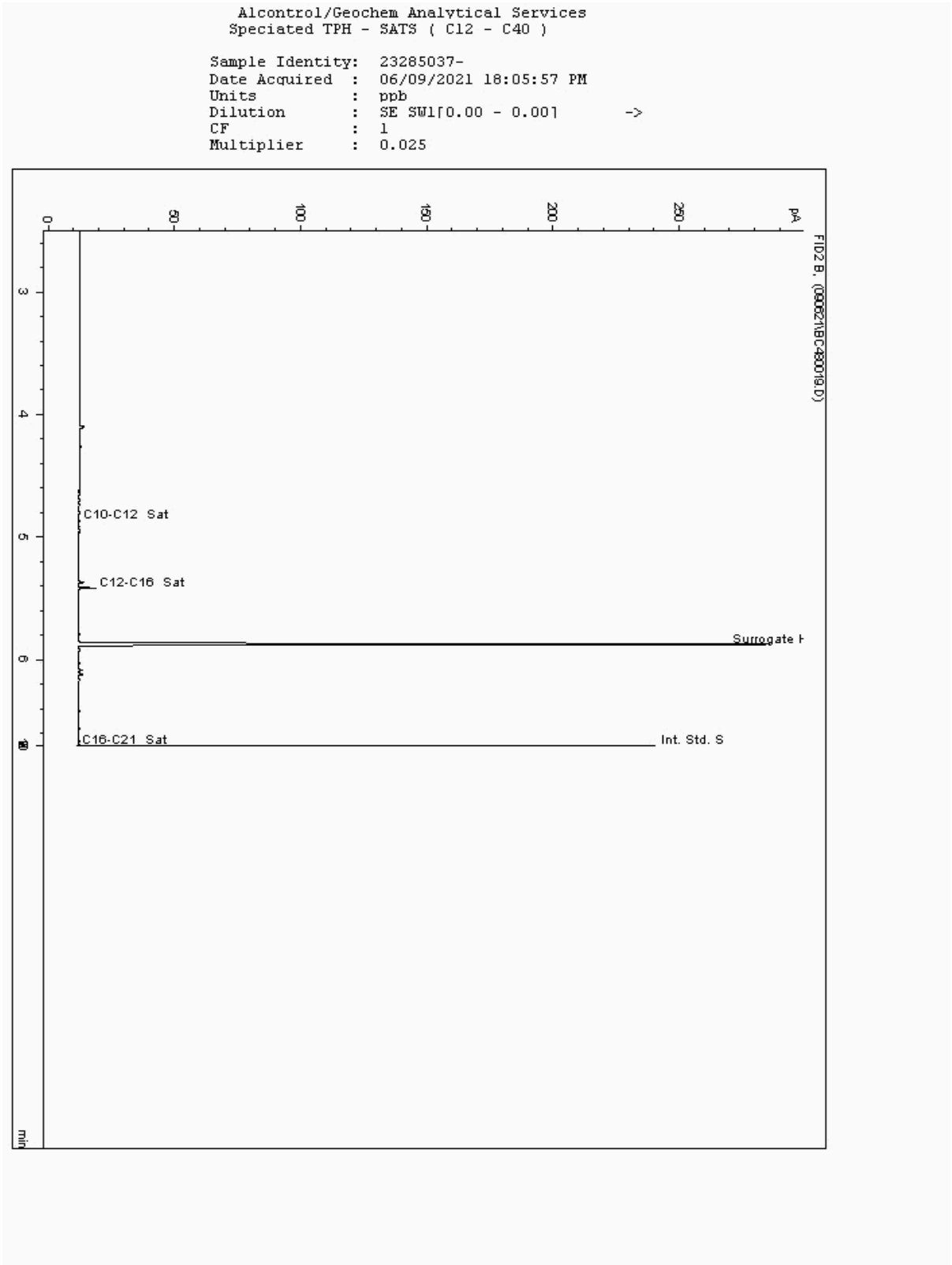


CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24899952 **Depth :** 0.00 - 0.00
Sample ID : SW1



CERTIFICATE OF ANALYSIS

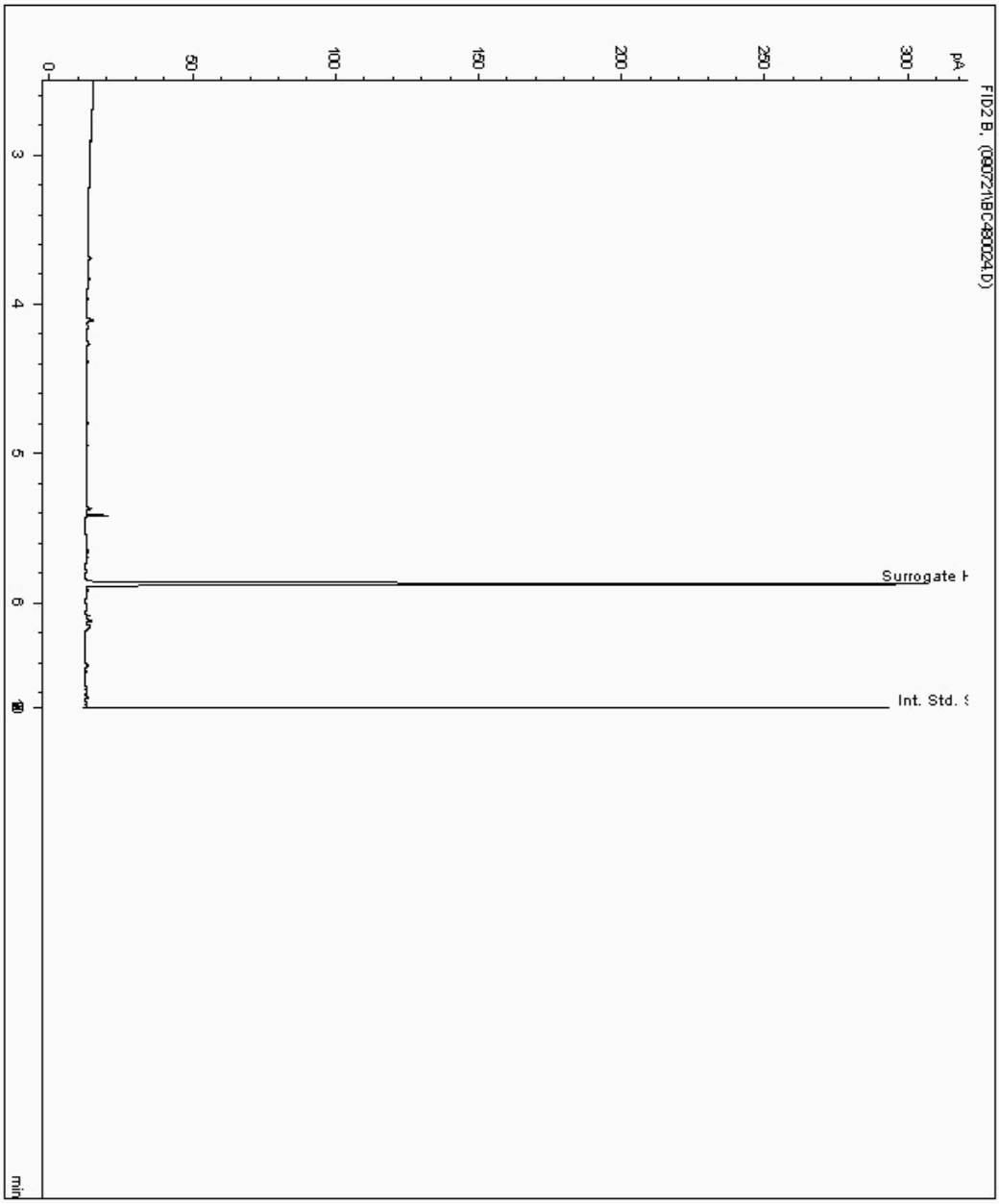
SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24899962 **Depth :** 0.00 - 0.00
Sample ID : BH11

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23284984-
Date Acquired : 07/09/2021 23:24:19 PM
Units : ppb
Dilution : SE BH11[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

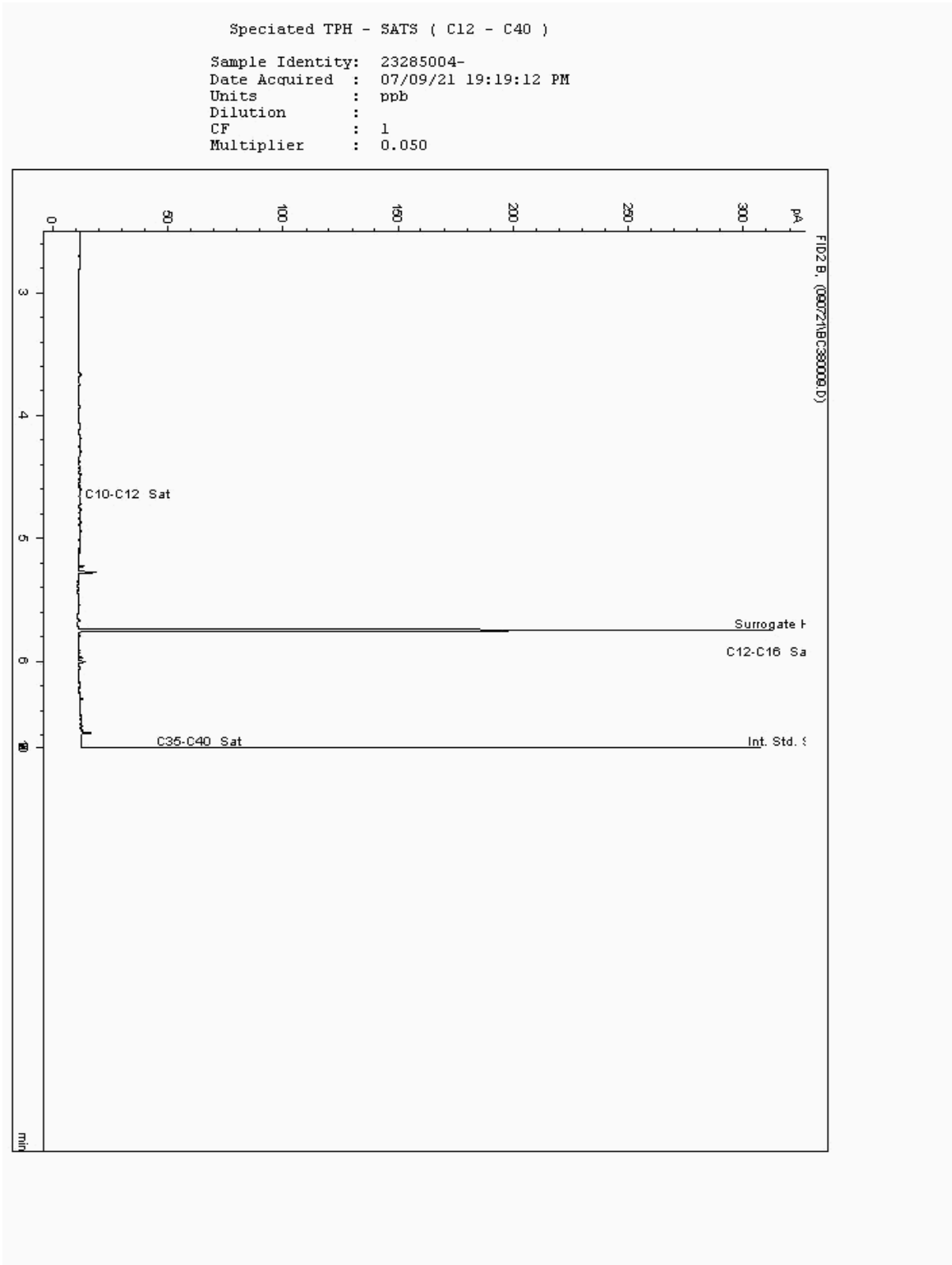


CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 24899968 **Depth :** 0.00 - 0.00
Sample ID : BH12

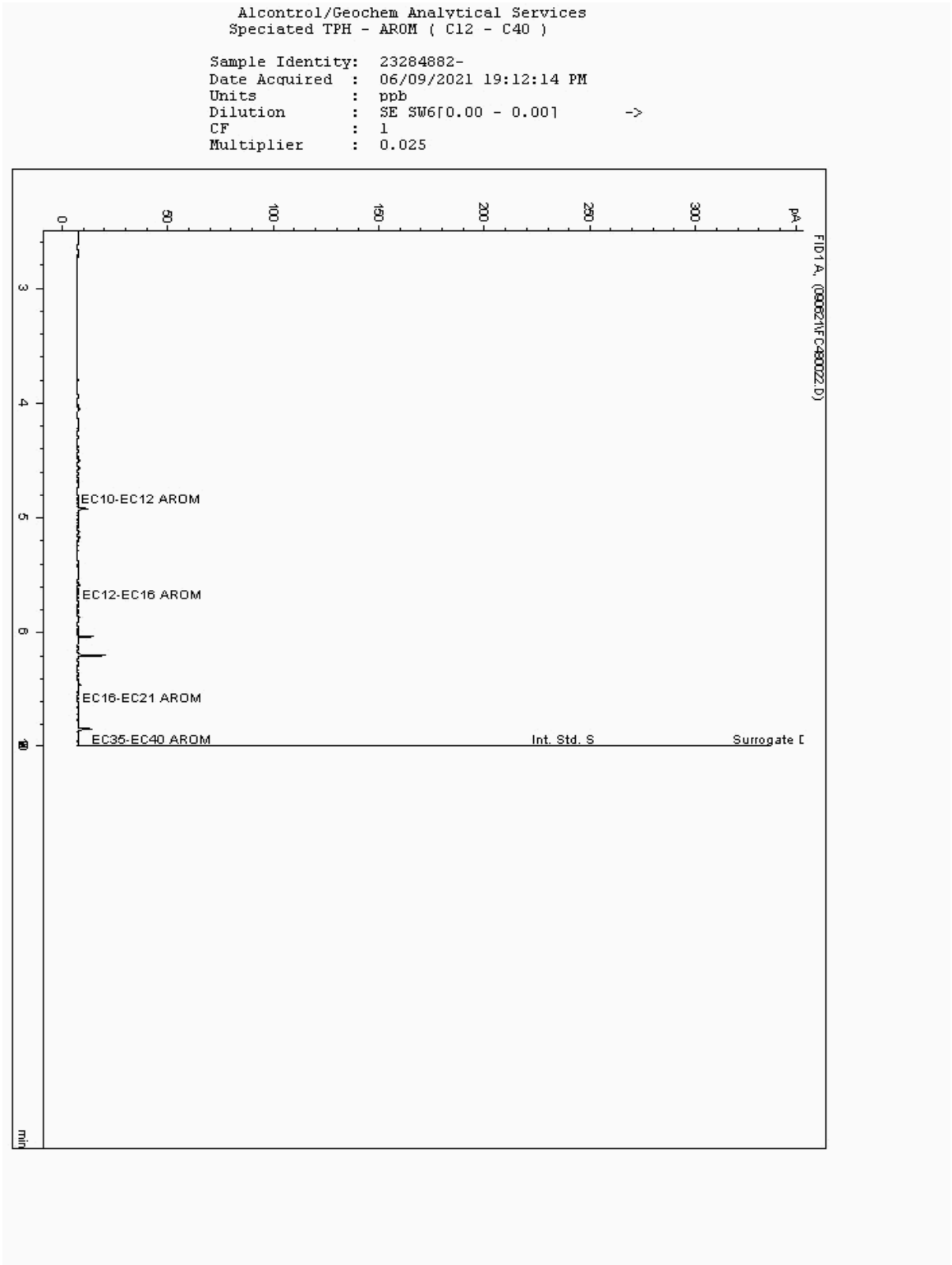


CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24899805 **Depth :** 0.00 - 0.00
Sample ID : SW6

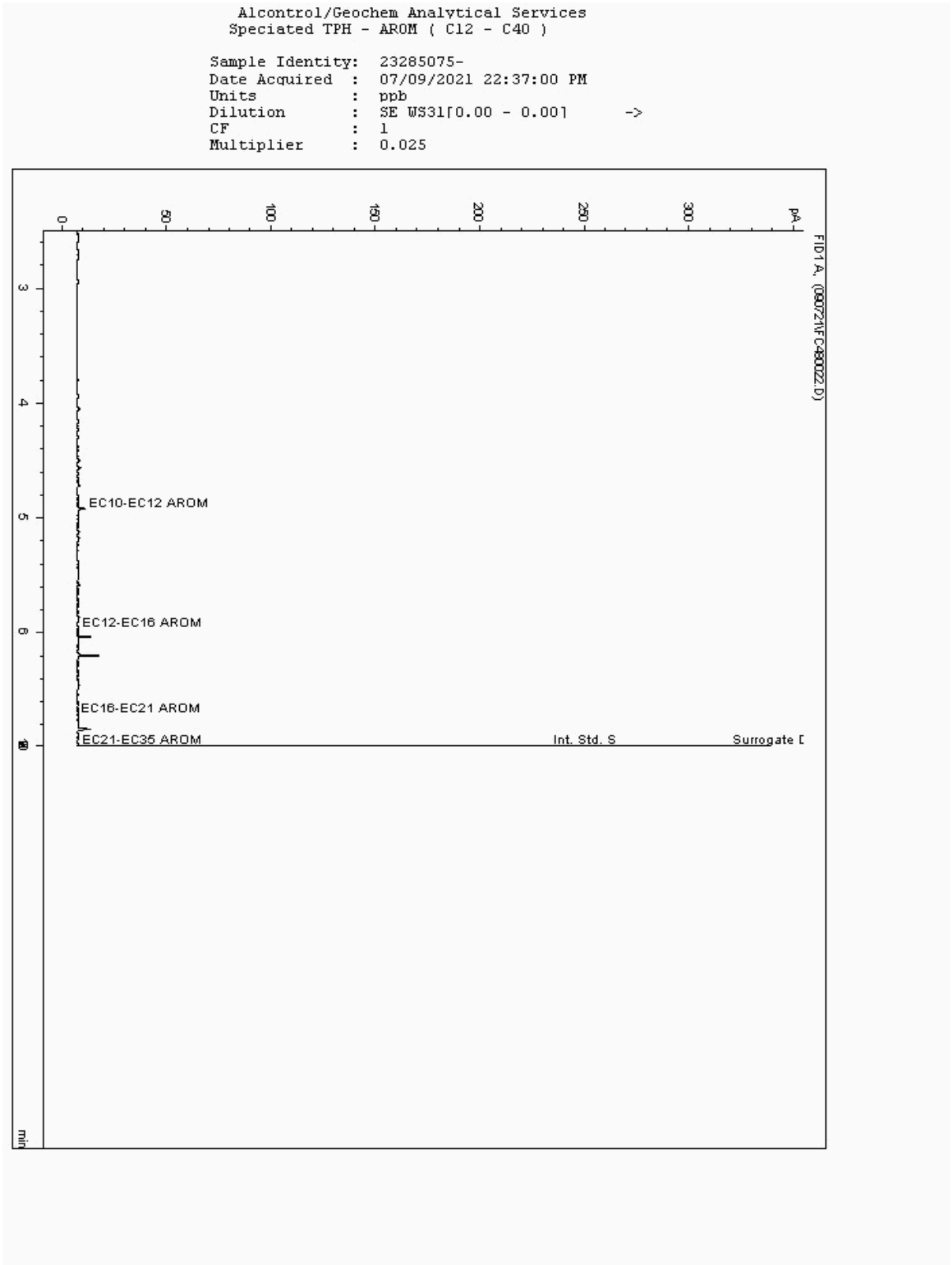


CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24899815 **Depth :** 0.00 - 0.00
Sample ID : WS31



CERTIFICATE OF ANALYSIS

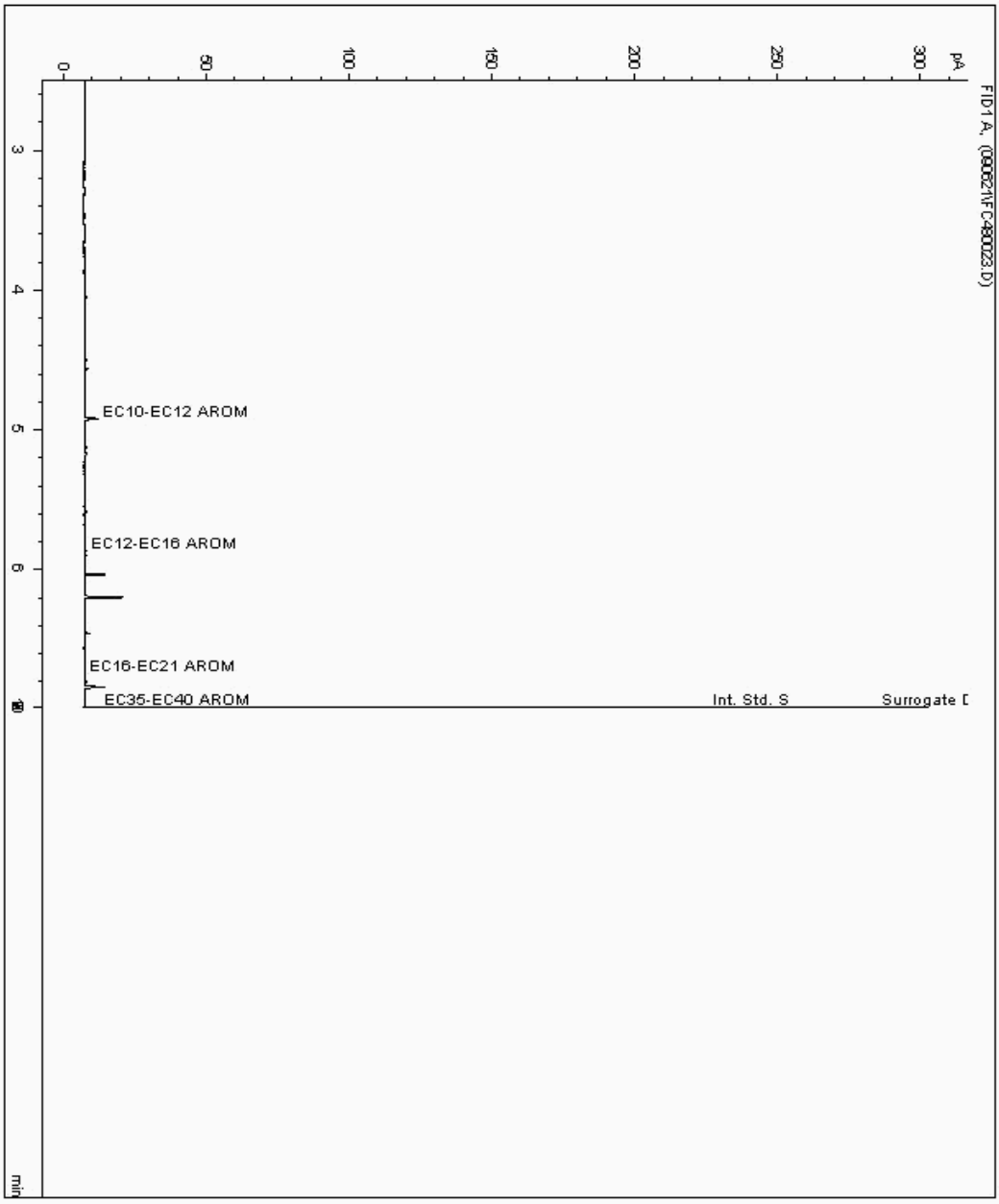
SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24899821 **Depth :** 0.00 - 0.00
Sample ID : SW2

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 23285057-
Date Acquired : 06/09/2021 19:35:43 PM
Units : ppb
Dilution : SE SW2[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

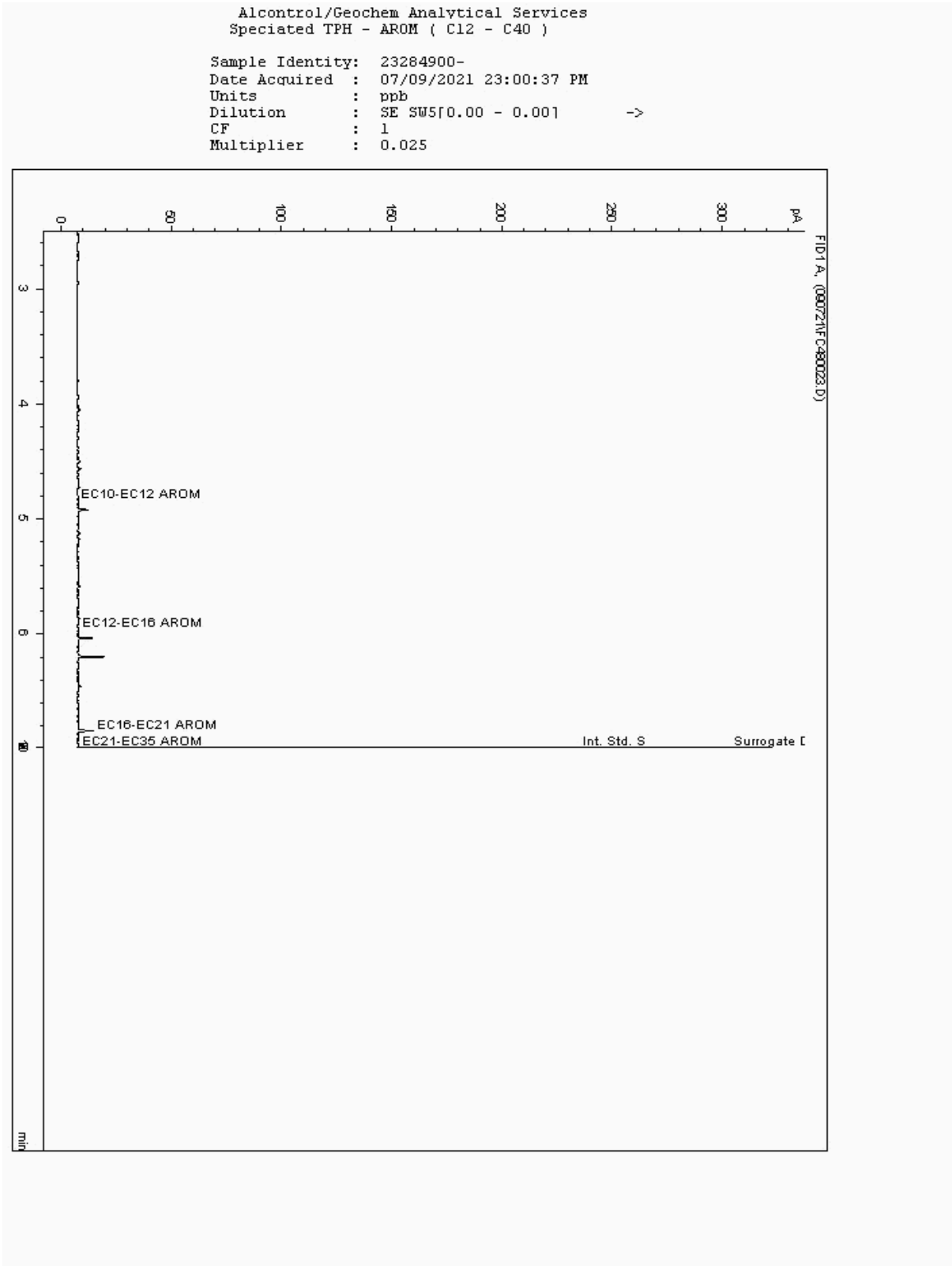


CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24899832 **Depth :** 0.00 - 0.00
Sample ID : SW5

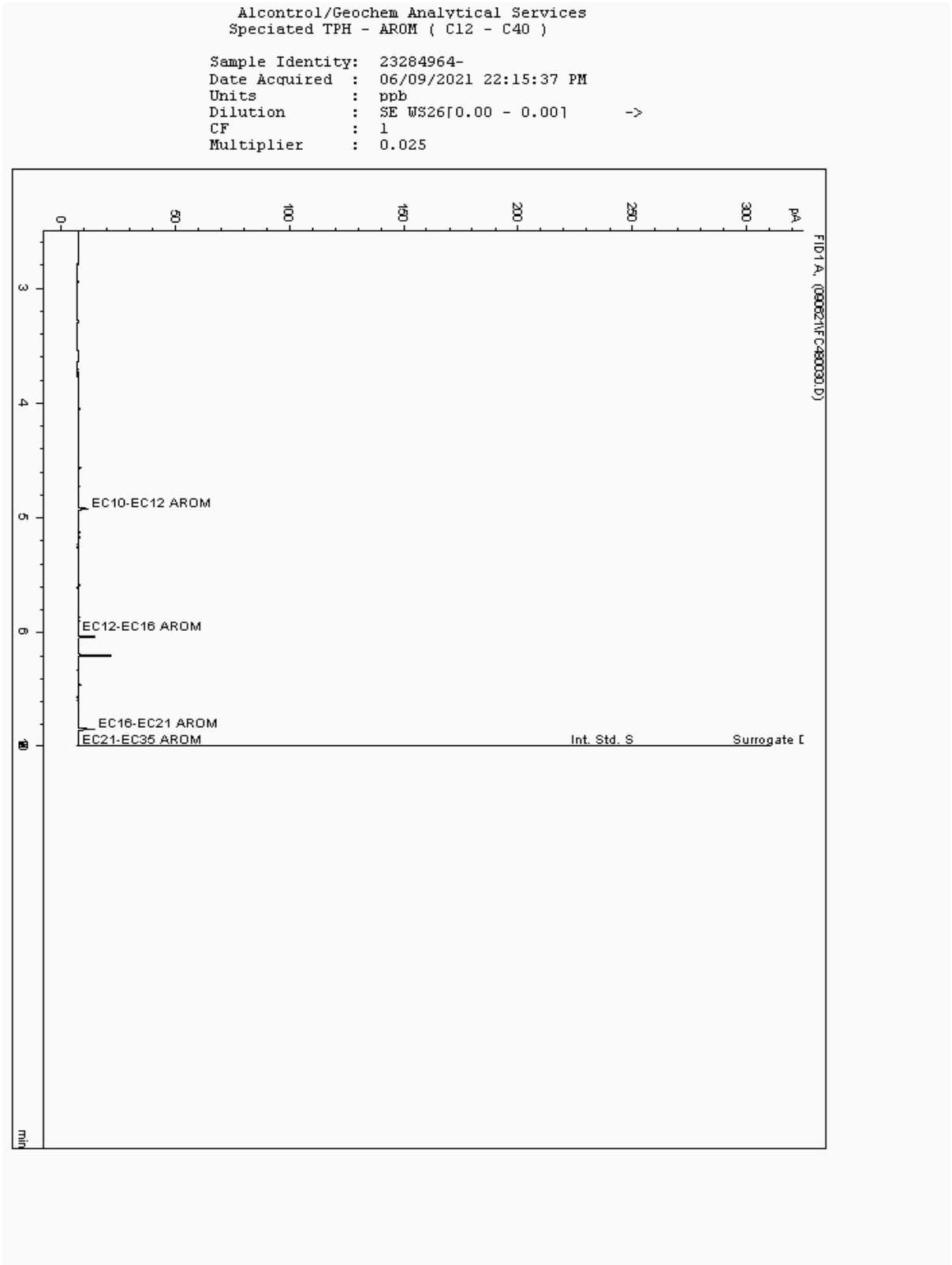


CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24899839 **Depth :** 0.00 - 0.00
Sample ID : WS26



CERTIFICATE OF ANALYSIS

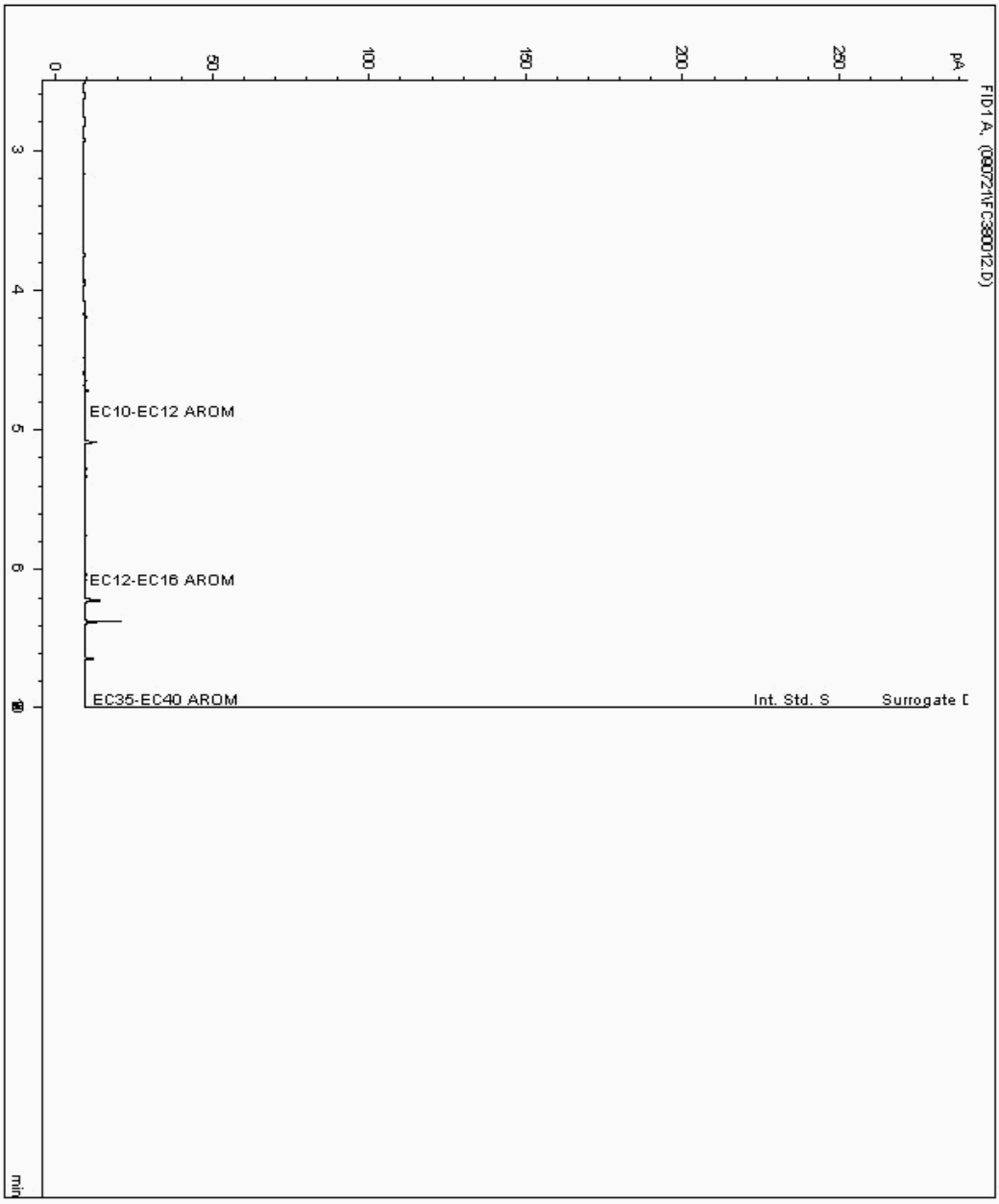
SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24899868 **Depth :** 0.00 - 0.00
Sample ID : BH06

Speciated TPH - AROM (C12 - C40)

Sample Identity: 23284919-
Date Acquired : 07/09/21 20:29:16 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.026

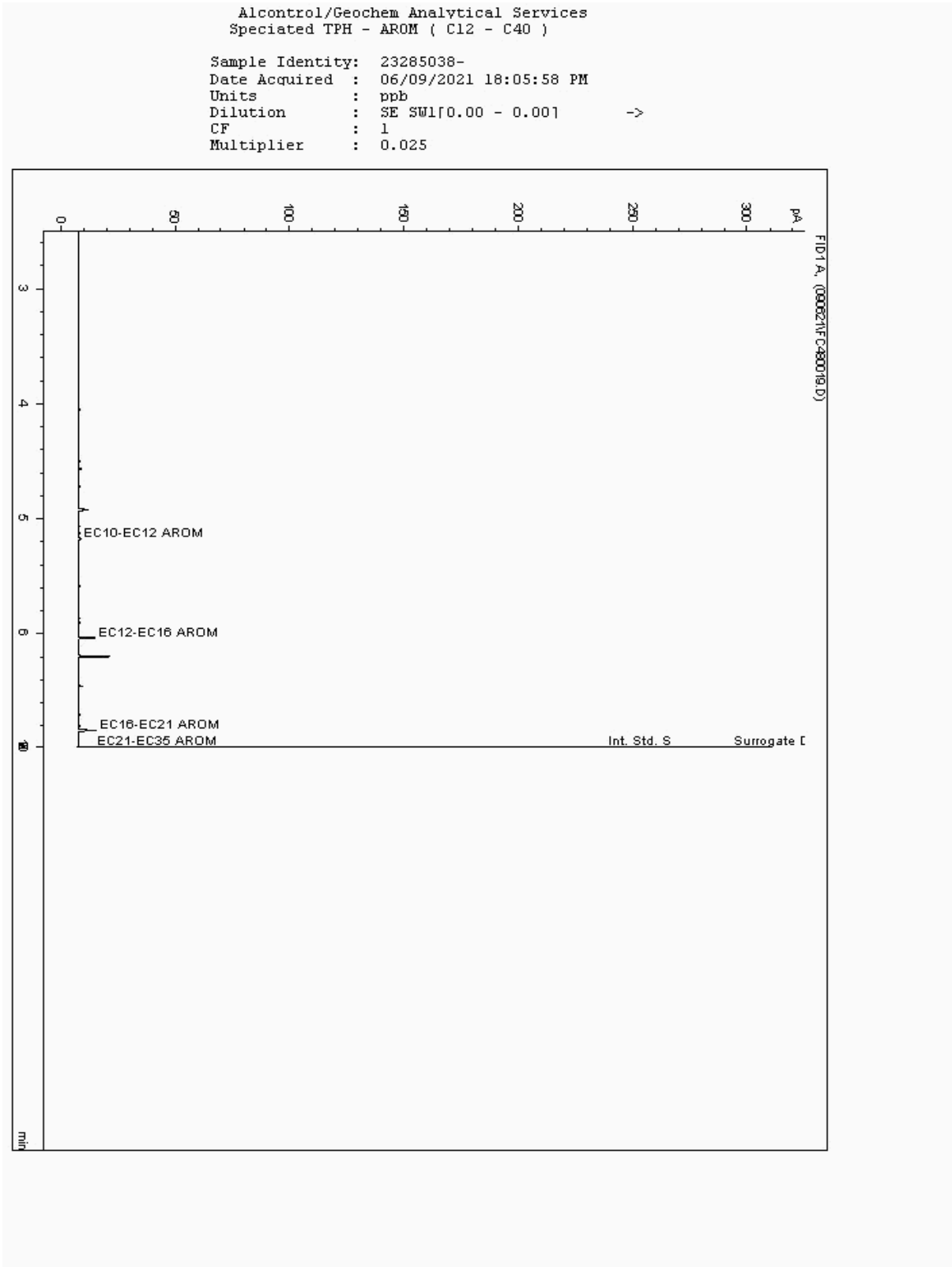


CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

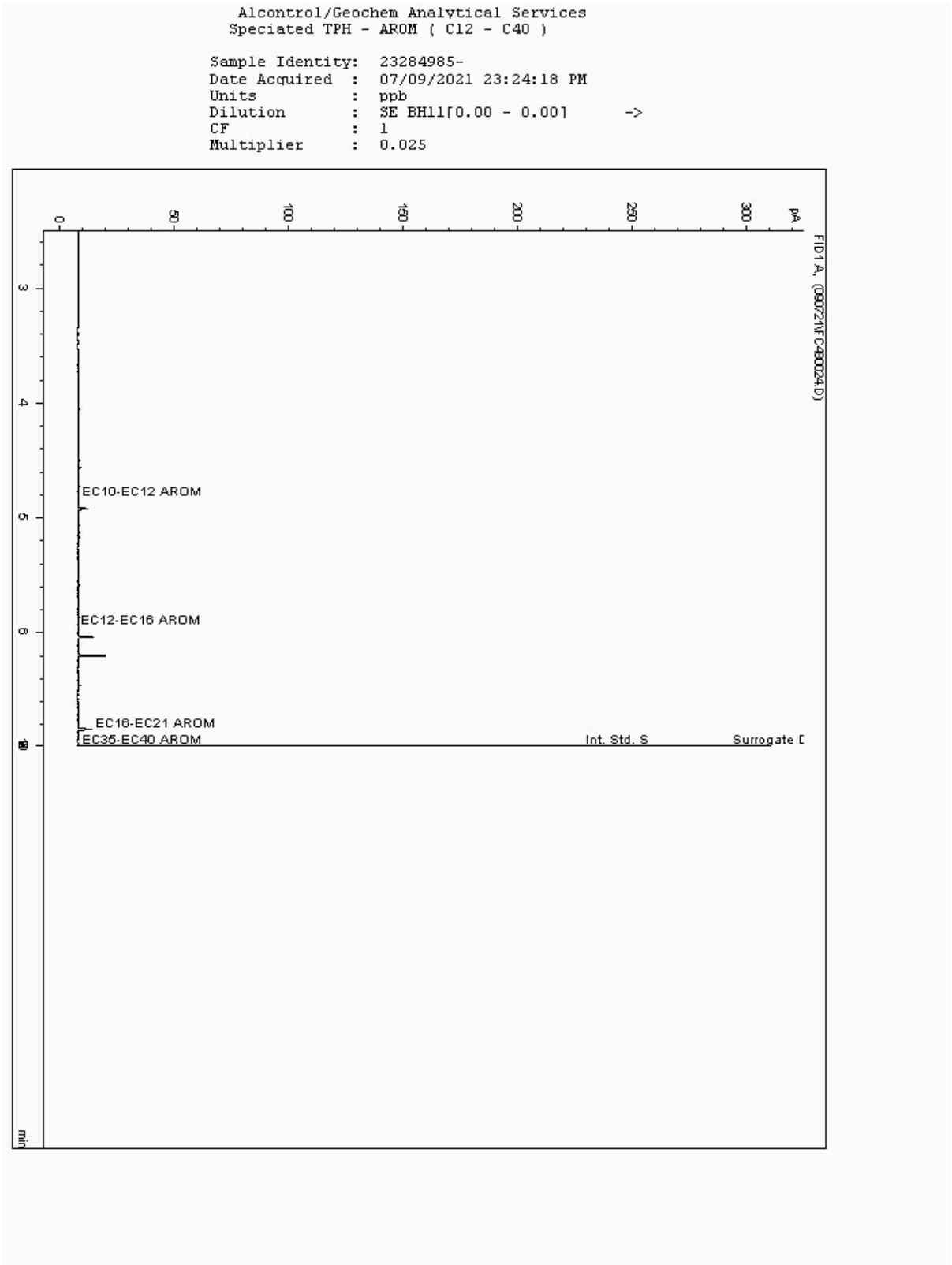
Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24899952 **Depth :** 0.00 - 0.00
Sample ID : SW1



Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24899962 **Depth :** 0.00 - 0.00
Sample ID : BH11



CERTIFICATE OF ANALYSIS

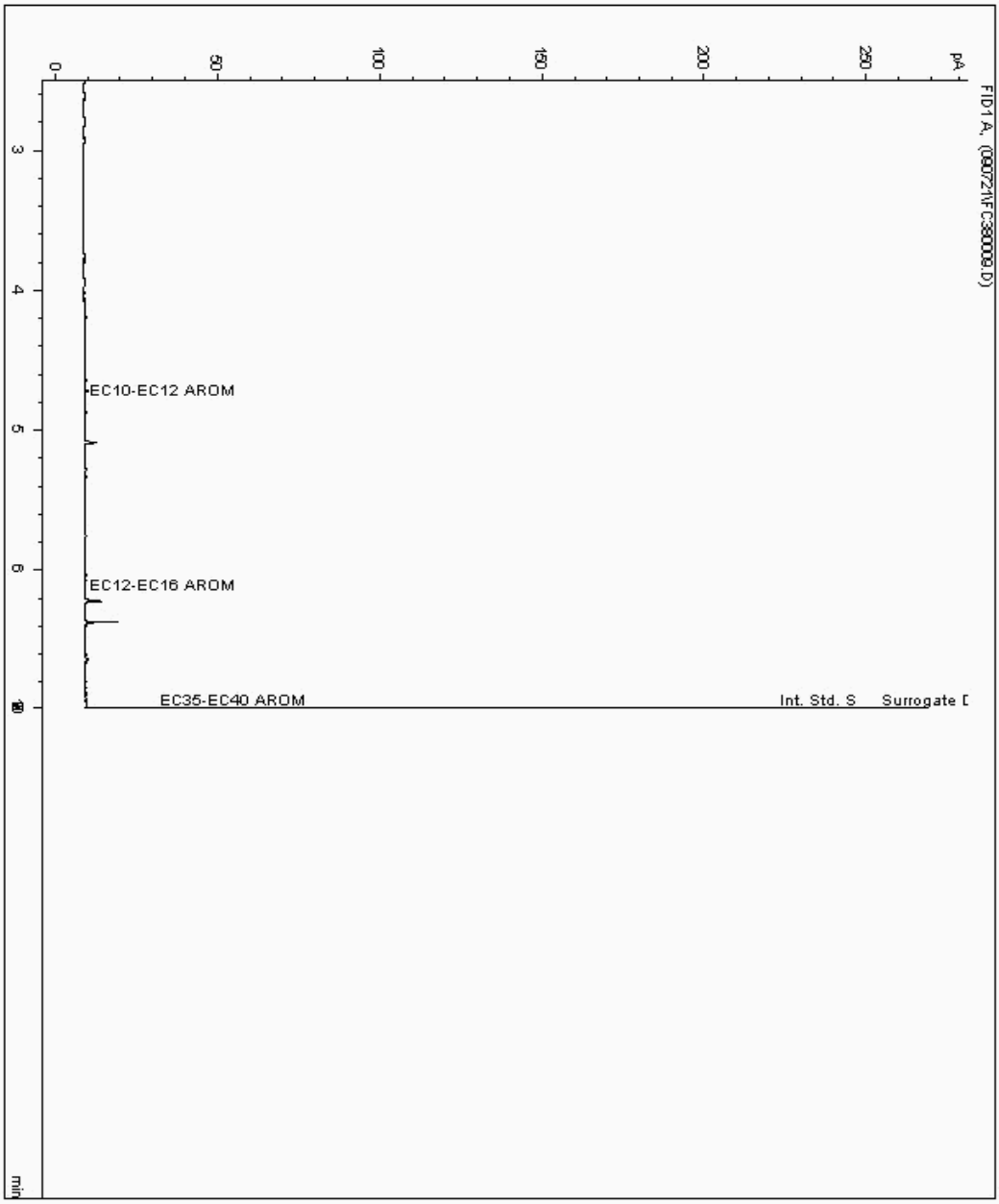
SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 24899968 **Depth :** 0.00 - 0.00
Sample ID : BH12

Speciated TPH - AROM (C12 - C40)

Sample Identity: 23285005-
Date Acquired : 07/09/21 19:19:12 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.050

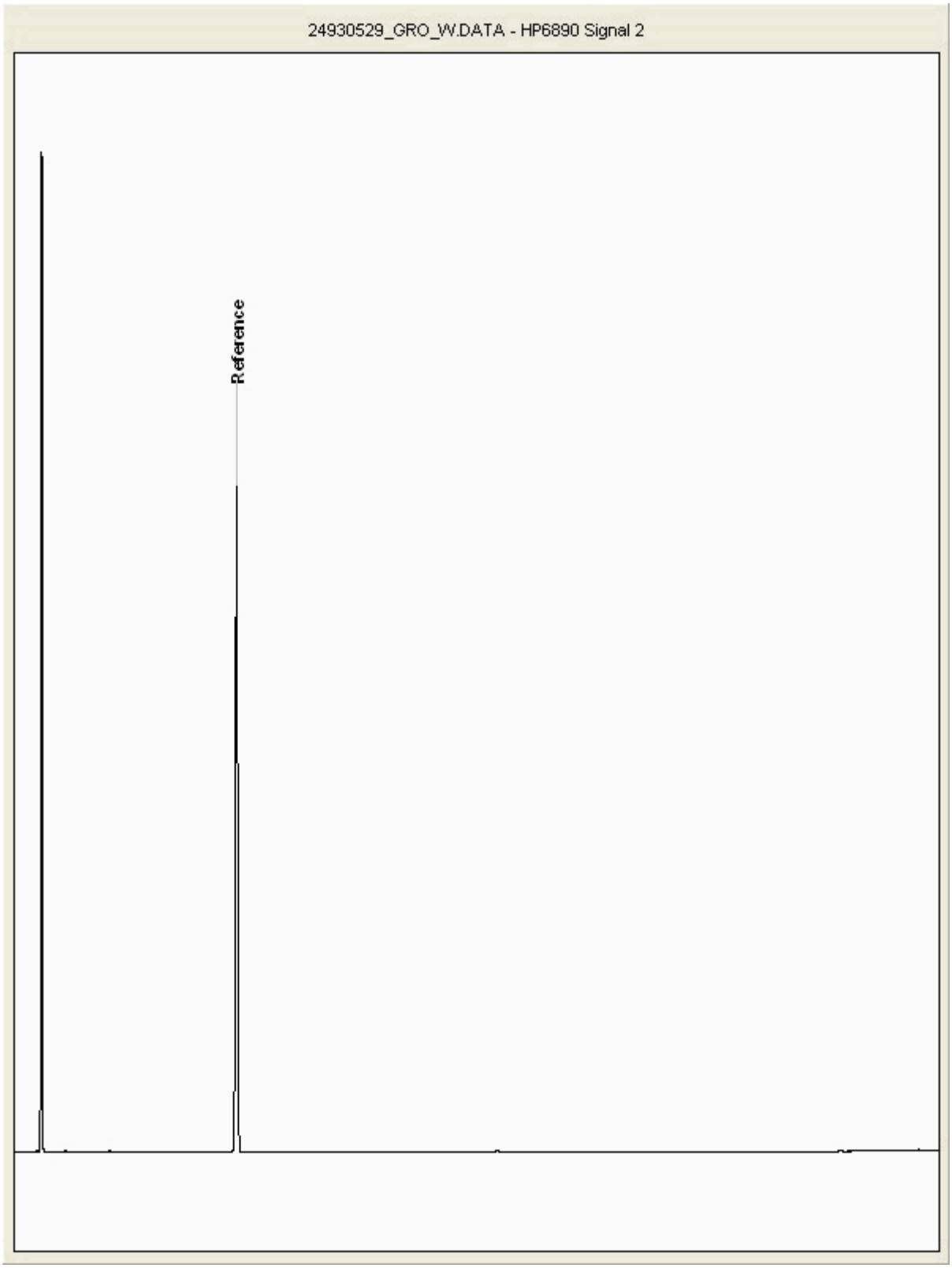


CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 24930529 **Depth :** 0.00 - 0.00
Sample ID : SW2

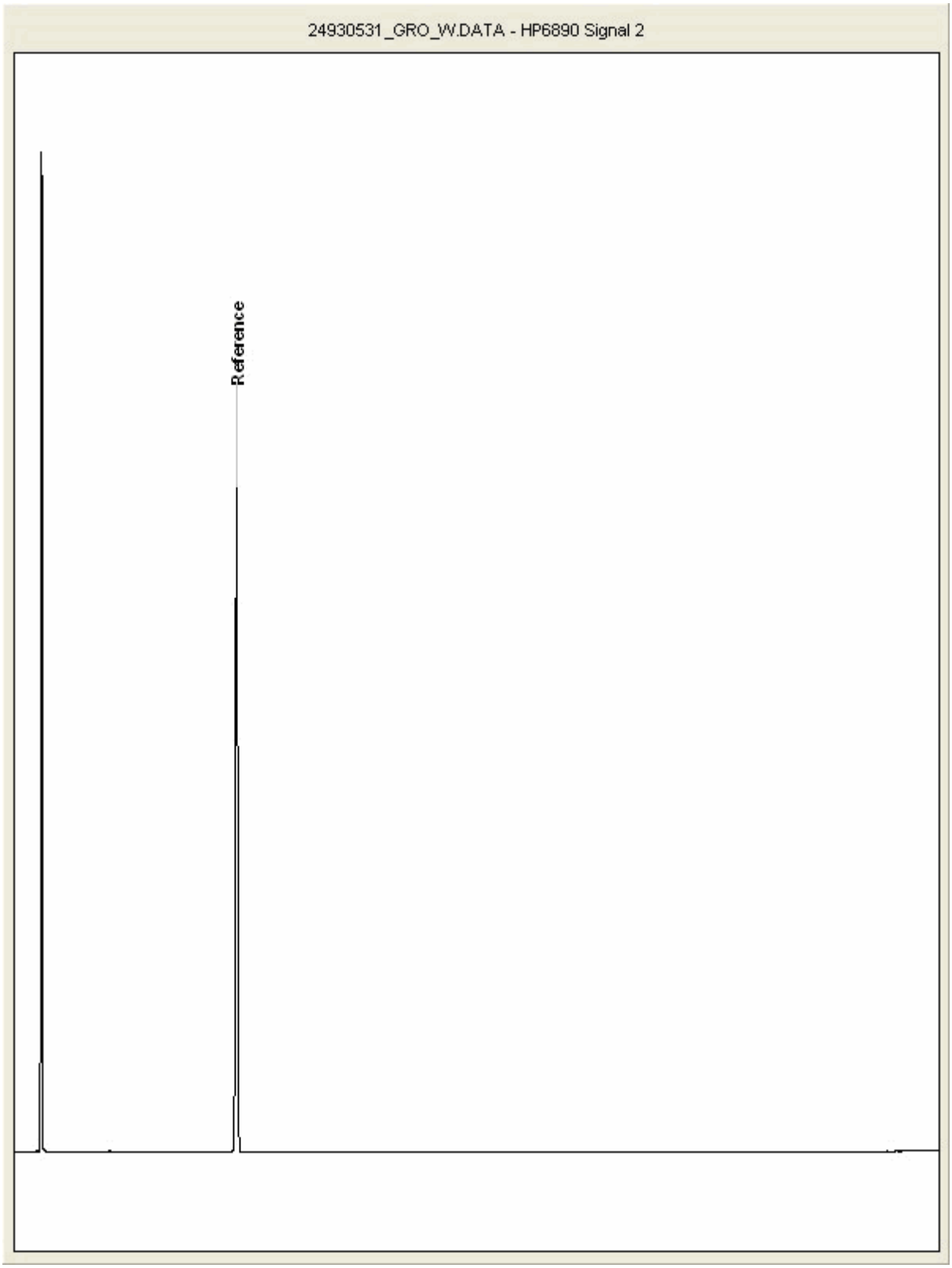


CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 24930531 **Depth :** 0.00 - 0.00
Sample ID : BH11

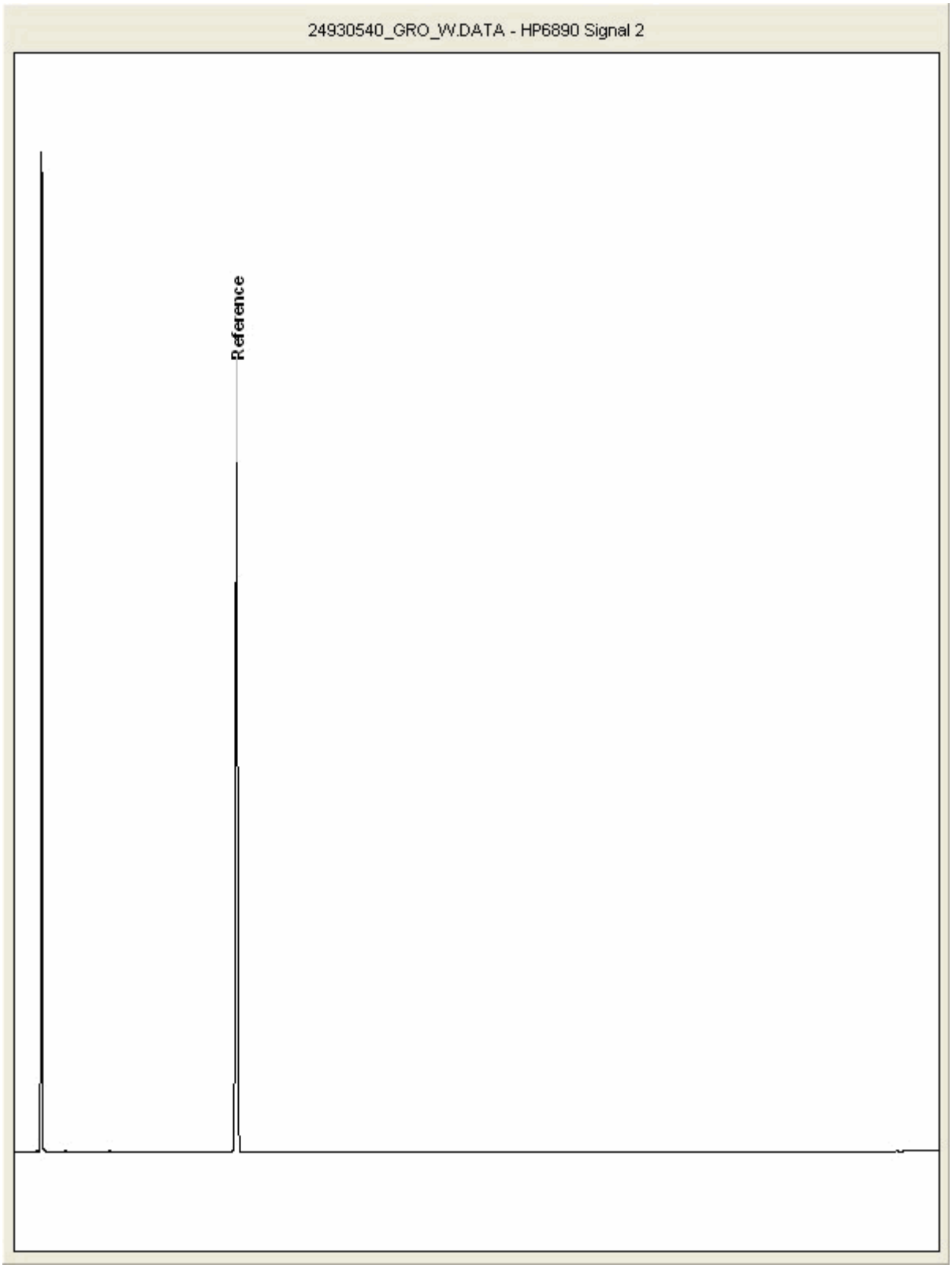


CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 24930540 **Depth :** 0.00 - 0.00
Sample ID : SW5

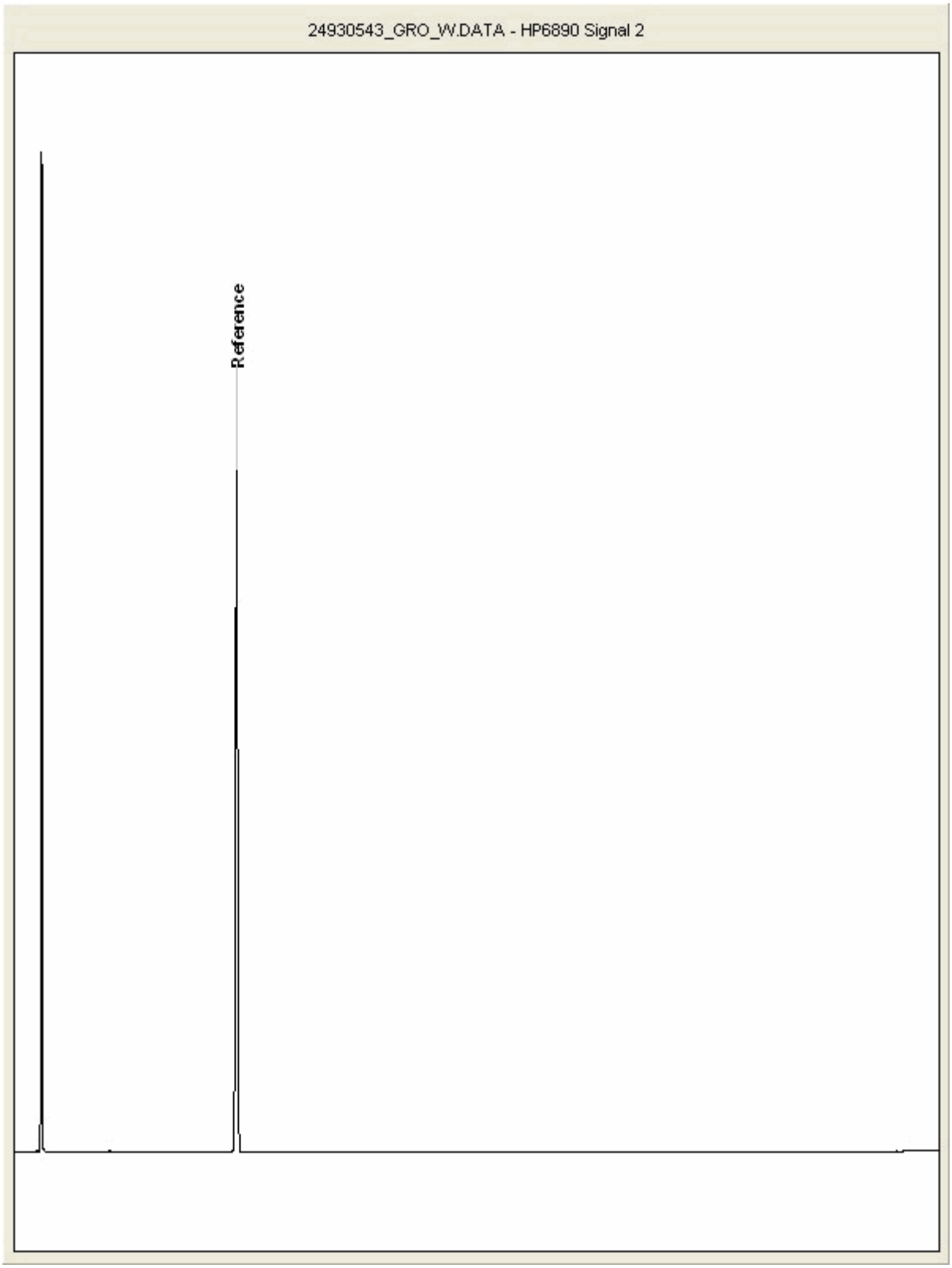


CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 24930543 **Depth :** 0.00 - 0.00
Sample ID : SW6

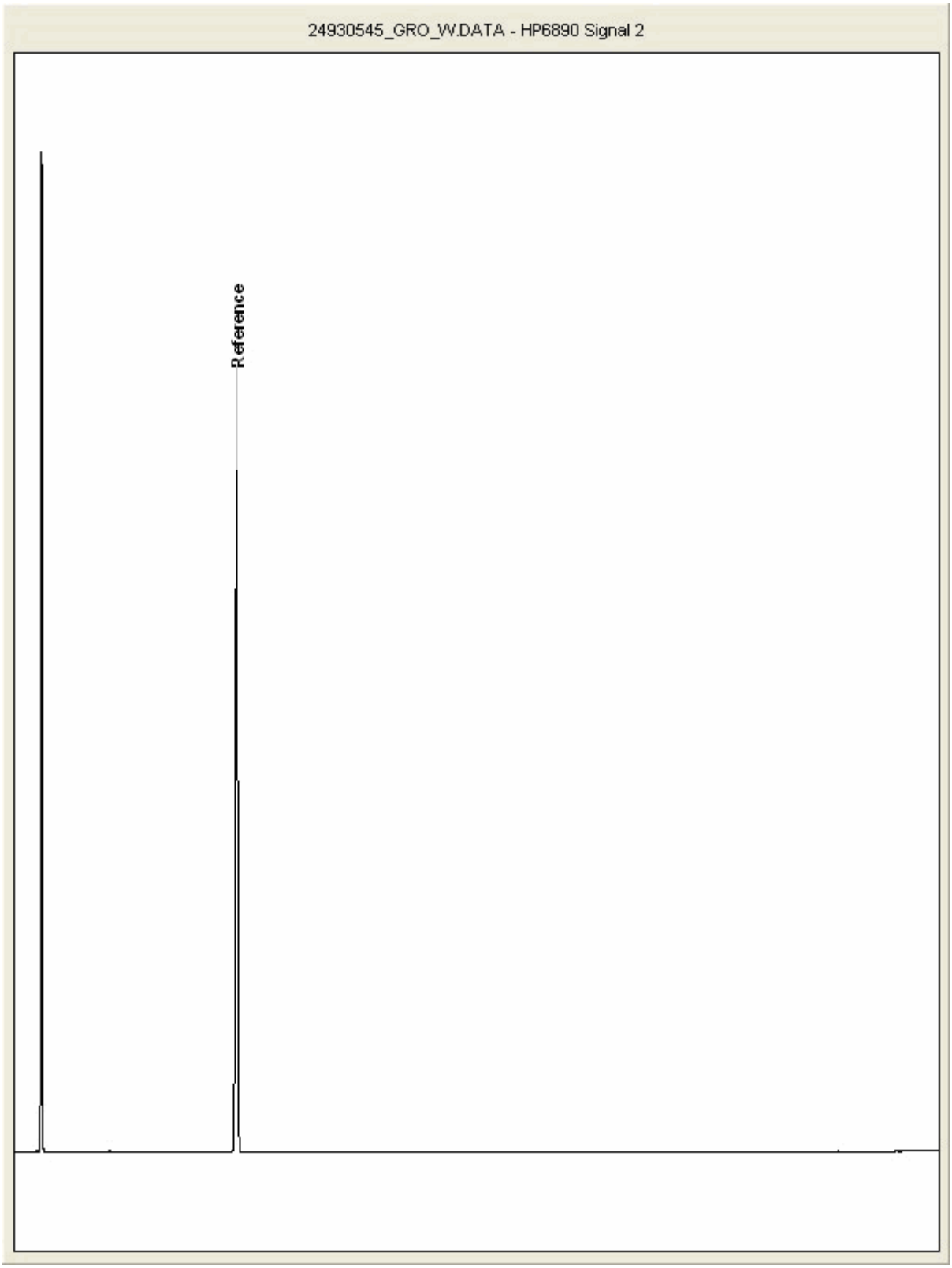


CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 24930545 **Depth :** 0.00 - 0.00
Sample ID : SW1

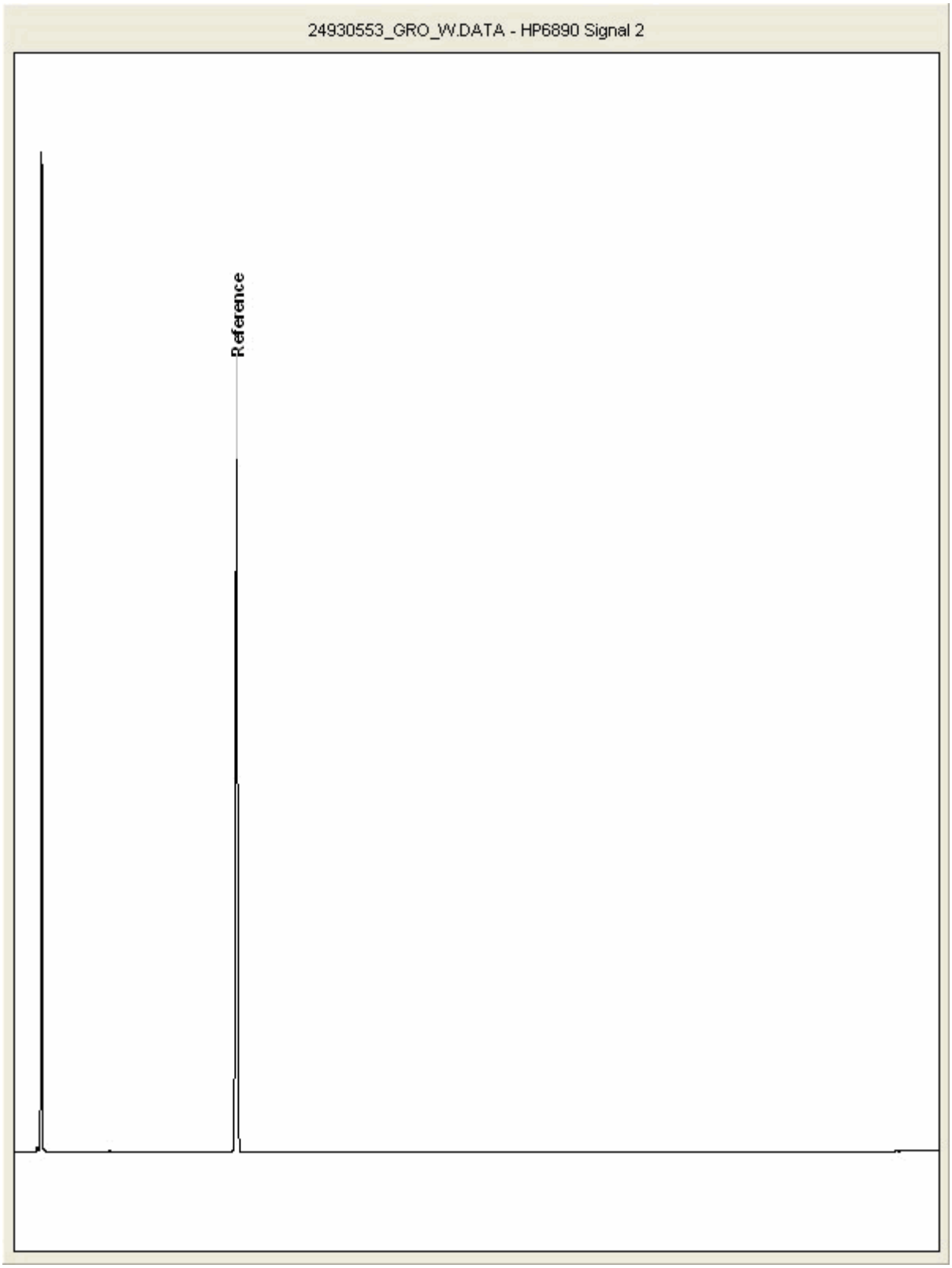


CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 24930553 **Depth :** 0.00 - 0.00
Sample ID : BH06

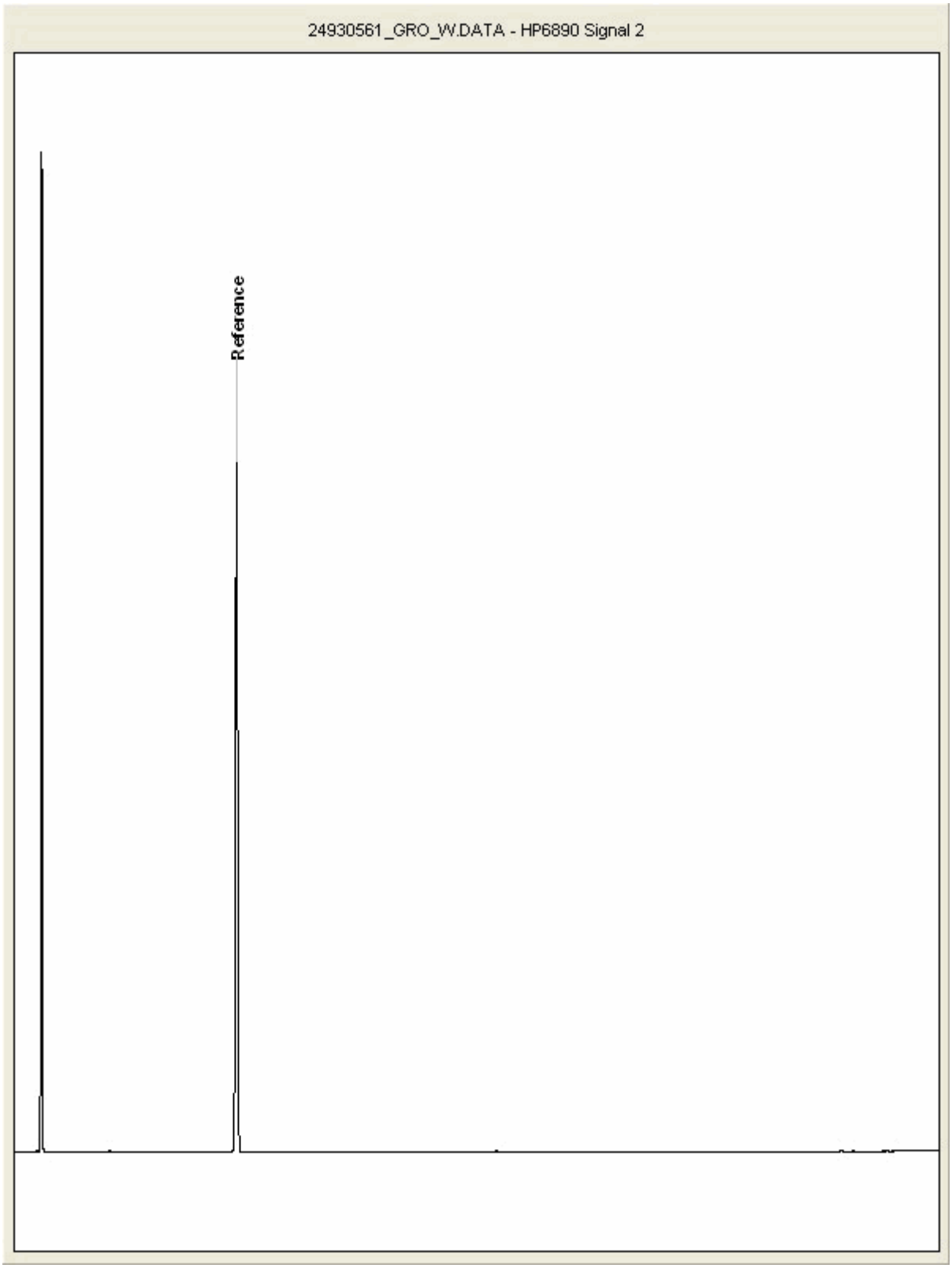


CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 24930561 **Depth :** 0.00 - 0.00
Sample ID : WS26

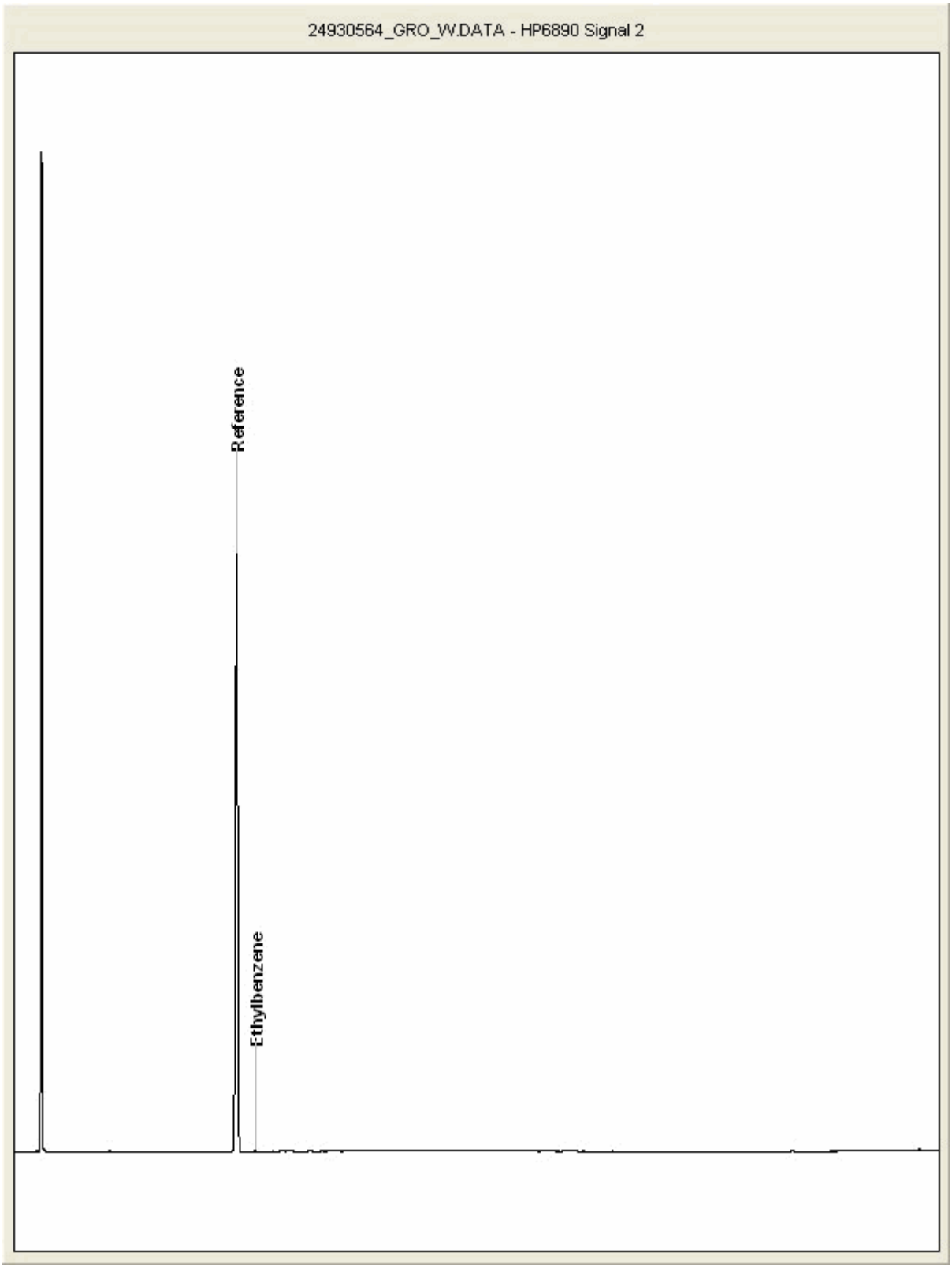


CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 24930564 **Depth :** 0.00 - 0.00
Sample ID : BH12

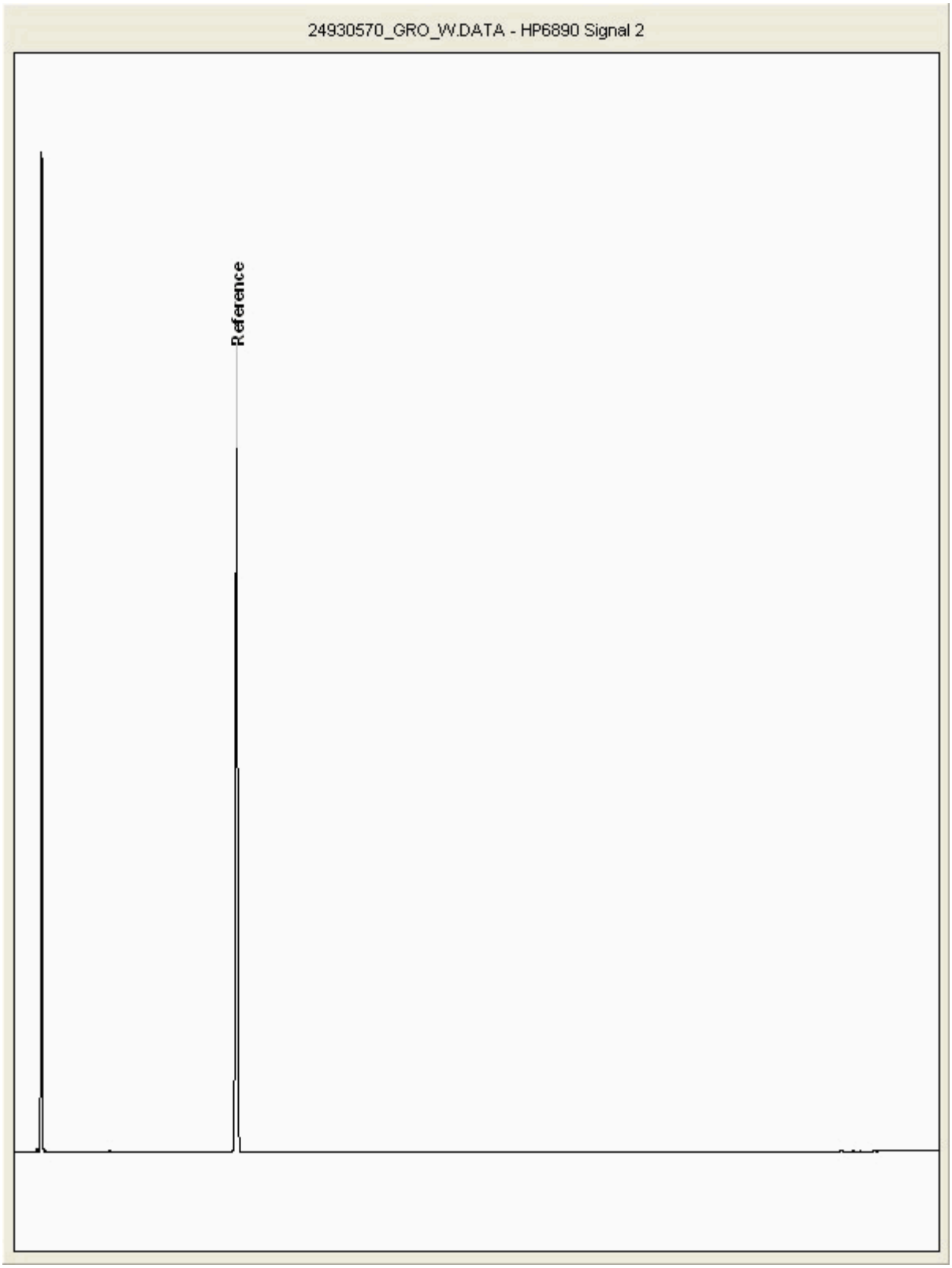


CERTIFICATE OF ANALYSIS

SDG: 210901-37 **Report Number:** 615527 **Superseded Report:** 612113
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 24930570 **Depth :** 0.00 - 0.00
Sample ID : WS31



Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

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email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	11 December 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	211119-164
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	625368
Order Number:	7001649

This report has been revised and directly supersedes 623920 in its entirety.

We received 31 samples on Friday November 19, 2021 and 29 of these samples were scheduled for analysis which was completed on Saturday December 11, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.

Approved By:

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25370225	BH01	EW1	0.00 - 0.00	17/11/2021
25370235	BH02	EW1	0.00 - 0.00	17/11/2021
25370263	BH05	EW1	0.00 - 0.00	18/11/2021
25370503	BH06	EW1	0.00 - 0.00	17/11/2021
25370341	BH07	EW1	0.00 - 0.00	18/11/2021
25370372	BH09	EW1	0.00 - 0.00	19/11/2021
25370396	BH10	EW1	0.00 - 0.00	19/11/2021
25370417	BH11	EW1	0.00 - 0.00	19/11/2021
25379515	BH12	EW1	0.00 - 0.00	19/11/2021
25370217	BH14	EW1	0.00 - 0.00	18/11/2021
25379518	BH15			19/11/2021
25370443	BH15	EW1	0.00 - 0.00	19/11/2021
25370323	BH16	EW1	0.00 - 0.00	16/11/2021
25370486	BH17	EW1	0.00 - 0.00	17/11/2021
25370469	BH18	EW1	0.00 - 0.00	16/11/2021
25379519	BH19			19/11/2021
25379517	BH19	EW1	0.00 - 0.00	19/11/2021
25370194	BH21	EW1	0.00 - 0.00	16/11/2021
25379516	BH22	EW1	0.00 - 0.00	19/11/2021
25370276	BH56	EW1	0.00 - 0.00	18/11/2021
25370512	BH60	EW1	0.00 - 0.00	17/11/2021
25370521	BH61	EW1	0.00 - 0.00	17/11/2021
25370550	BH03A	EW1	0.00 - 0.00	17/11/2021
25370245	WS08	EW1	0.00 - 0.00	18/11/2021
25370559	WS12	EW1	0.00 - 0.00	17/11/2021
25370254	WS15	EW1	0.00 - 0.00	18/11/2021
25370296	WS25	EW1	0.00 - 0.00	18/11/2021
25370314	WS26	EW1	0.00 - 0.00	18/11/2021
25370332	WS31	EW1	0.00 - 0.00	18/11/2021
25420547	WS54			18/11/2021
25370208	WS54	EW1	0.00 - 0.00	17/11/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
			25370225	BH01	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Filtered (ALE204)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
			25370235	BH02	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Filtered (ALE204)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
			25370263	BH05	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Filtered (ALE204)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
			25370503	BH06	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 8	X					
Ammonium Low	All	NDPs: 1 Tests: 28			X			
							X	
								X
Anions by Kone (w)	All	NDPs: 0 Tests: 28		X				
							X	
								X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 28				X		
							X	
								X
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 28				X		
							X	
								X
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 28	X					
							X	
								X
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 28	X					
							X	
								X
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 28	X					
							X	
								X
GRO by GC-FID (W)	All	NDPs: 0 Tests: 28				X		
							X	
								X
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 28		X				
							X	
								X
Mercury Dissolved	All	NDPs: 0 Tests: 28				X		
							X	
								X
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 28	X					
							X	
								X
Pesticides (Suite I) by GCMS	All	NDPs: 0 Tests: 8	X					
Pesticides (Suite II) by GCMS	All	NDPs: 0 Tests: 8	X					
pH Value	All	NDPs: 0 Tests: 28		X				
							X	
								X

25370396	BH10	EW1	0.00 - 0.00	HNO3 Filtered (ALE204)	GW					X						X						
				H2SO4 (ALE244)	GW		X															
				500ml Plastic (ALE208)	GW			X								X						X
				250ml Amber Gl. PTFE/PE	GW						X	X	X				X					
25370372	BH09	EW1	0.00 - 0.00	Vial (ALE297)	GW									X								
				NaOH (ALE245)	GW				X													
				HNO3 Filtered (ALE204)	GW					X						X						
				H2SO4 (ALE244)	GW		X															
				500ml Plastic (ALE208)	GW			X								X						X
				250ml Amber Gl. PTFE/PE	GW	X					X	X	X				X	X	X			
25370341	BH07	EW1	0.00 - 0.00	Vial (ALE297)	GW									X								
				NaOH (ALE245)	GW				X													
				HNO3 Filtered (ALE204)	GW					X						X						
				H2SO4 (ALE244)	GW		X															
				500ml Plastic (ALE208)	GW			X								X						X
				250ml Amber Gl. PTFE/PE	GW						X	X	X				X					
25370503	BH06	EW1	0.00 - 0.00	Vial (ALE297)	GW									X								
				NaOH (ALE245)	GW				X													
				HNO3 Filtered (ALE204)	GW					X						X						

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)																									
			25370225												25370235													
			Customer Sample Reference												BH01													
			AGS Reference												EW1													
			Depth (m)												0.00 - 0.00													
			Container	250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)			
			Sample Type	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW			
Phenols by HPLC (W)	All	NDPs: 1 Tests: 28			X						X						X						X			
Sulphide	All	NDPs: 0 Tests: 28		X						X						X						X				
Total Metals by ICP-MS	All	NDPs: 0 Tests: 28		X						X						X						X				
TPH CWG (W)	All	NDPs: 0 Tests: 28	X						X						X						X					

25370396	BH10	EW1	0.00 - 0.00	HNO3 Filtered (ALE204)	GW								
				H2SO4 (ALE244)	GW		X						
				500ml Plastic (ALE208)	GW				X		X		
				250ml Amber Gl. PTFE/PE	GW								X
25370372	BH09	EW1	0.00 - 0.00	Vial (ALE297)	GW								
				NaOH (ALE245)	GW								
				HNO3 Filtered (ALE204)	GW								
				H2SO4 (ALE244)	GW		X						
				500ml Plastic (ALE208)	GW				X		X		
				250ml Amber Gl. PTFE/PE	GW								X
25370341	BH07	EW1	0.00 - 0.00	Vial (ALE297)	GW								
				NaOH (ALE245)	GW								
				HNO3 Filtered (ALE204)	GW								
				H2SO4 (ALE244)	GW		X						
				500ml Plastic (ALE208)	GW				X		X		
				250ml Amber Gl. PTFE/PE	GW								X
25370503	BH06	EW1	0.00 - 0.00	Vial (ALE297)	GW								
				NaOH (ALE245)	GW								
				HNO3 Filtered (ALE204)	GW								

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
			25370396	BH10	EW1	0.00 - 0.00	NaOH (ALE245)	GW
							Vial (ALE297)	GW
							250ml Amber Gl. PTFE/PE	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Filtered (ALE204)	GW
			25370417	BH11	EW1	0.00 - 0.00	NaOH (ALE245)	GW
							Vial (ALE297)	GW
							250ml Amber Gl. PTFE/PE	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Unfiltered (ALE204)	GW
			25379515	BH12	EW1	0.00 - 0.00	NaOH (ALE245)	GW
							Vial (ALE297)	GW
							250ml Amber Gl. PTFE/PE	GW
							H2SO4 (ALE244)	GW
							HNO3 Filtered (ALE204)	GW
			25370217	BH14	EW1	0.00 - 0.00	NaOH (ALE245)	GW
							Vial (ALE297)	GW
			25370443	BH15	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	GW
							500ml Plastic (ALE208)	GW
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 8						X
Ammonium Low	All	NDPs: 1 Tests: 28				X		X								X				
Anions by Kone (w)	All	NDPs: 0 Tests: 28				X		X								X				X
Clostridium Perfringens*	All	NDPs: 0 Tests: 3						X								X				
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 28	X						X						X				X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 28					X					X						X		
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 28			X						X					X				X
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 28			X						X					X				X
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 28			X						X					X				X
Faecal Coliforms (W)*	All	NDPs: 0 Tests: 3										X				X				
Faecal Streptococci (W)*	All	NDPs: 0 Tests: 3										X				X				
GRO by GC-FID (W)	All	NDPs: 0 Tests: 28		X					X					X					X	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 28				X						X				X				X
Mercury Dissolved	All	NDPs: 0 Tests: 28					X					X						X		
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 28			X						X					X				X

25370469	BH18	EW1	0.00 - 0.00	H2SO4 (ALE244)	GW				X																										
				500ml Plastic (ALE208)	GW						X																				X					
				250ml Amber Gl. PTFE/PE	GW														X		X		X												X
25370486	BH17	EW1	0.00 - 0.00	Vial (ALE297)	GW																								X						
				NaOH (ALE245)	GW										X																				
				HNO3 Filtered (ALE204)	GW												X																X		
				H2SO4 (ALE244)	GW				X																										
				500ml Plastic (ALE208)	GW						X																				X				
				250ml Amber Gl. PTFE/PE	GW														X		X		X												X
25370323	BH16	EW1	0.00 - 0.00	Vial (ALE297)	GW																								X						
				NaOH (ALE245)	GW										X																				
				HNO3 Filtered (ALE204)	GW												X																X		
				H2SO4 (ALE244)	GW				X																										
				500ml Plastic (ALE208)	GW						X																				X				
				250ml Amber Gl. PTFE/PE	GW														X		X		X												X
25370443	BH15	EW1	0.00 - 0.00	Vial (ALE297)	GW																								X						
				NaOH (ALE245)	GW										X																				
				HNO3 Filtered (ALE204)	GW												X																X		
				H2SO4 (ALE244)	GW			N	X																										

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
Pesticides (Suite I) by GCMS	All	NDPs: 0 Tests: 8	25370396	BH10	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE (ALE208)	GW
Pesticides (Suite II) by GCMS	All	NDPs: 0 Tests: 8	25370396	BH10	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE (ALE208)	GW
pH Value	All	NDPs: 0 Tests: 28	25370396	BH10	EW1	0.00 - 0.00	500ml Plastic (ALE208)	GW
Phenols by HPLC (W)	All	NDPs: 1 Tests: 28	25370396	BH10	EW1	0.00 - 0.00	H2SO4 (ALE244)	GW
Sulphide	All	NDPs: 0 Tests: 28	25370396	BH10	EW1	0.00 - 0.00	500ml Plastic (ALE208)	GW
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 5	25370396	BH10	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE (ALE208)	GW
Total Coliforms (W)*	All	NDPs: 0 Tests: 3	25370396	BH10	EW1	0.00 - 0.00	500ml Plastic (ALE208)	GW
Total Metals by ICP-MS	All	NDPs: 0 Tests: 28	25370396	BH10	EW1	0.00 - 0.00	500ml Plastic (ALE208)	GW
TPH CWG (W)	All	NDPs: 0 Tests: 28	25370396	BH10	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE (ALE208)	GW
VOC MS (W)	All	NDPs: 0 Tests: 5	25370396	BH10	EW1	0.00 - 0.00	Vial (ALE297)	GW

25370469	BH18	EW1	0.00 - 0.00	H2SO4 (ALE244)	GW								X												
				500ml Plastic (ALE208)	GW						X				X						X				
				250ml Amber Gl. PTFE/PE	GW																		X		
25370486	BH17	EW1	0.00 - 0.00	Vial (ALE297)	GW																				
				NaOH (ALE245)	GW																				
				HNO3 Filtered (ALE204)	GW																				
				H2SO4 (ALE244)	GW								X												
				500ml Plastic (ALE208)	GW						X				X						X				
				250ml Amber Gl. PTFE/PE	GW																		X		
25370323	BH16	EW1	0.00 - 0.00	Vial (ALE297)	GW																				
				NaOH (ALE245)	GW																				
				HNO3 Filtered (ALE204)	GW																				
				H2SO4 (ALE244)	GW								X												
				500ml Plastic (ALE208)	GW						X				X						X				
				250ml Amber Gl. PTFE/PE	GW																		X		
25370443	BH15	EW1	0.00 - 0.00	Vial (ALE297)	GW																				
				NaOH (ALE245)	GW																				
				HNO3 Filtered (ALE204)	GW																				
				H2SO4 (ALE244)	GW							N	X												

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			25370469			25379517							25370194					25379516						25370276
Customer Sample Reference			BH18			BH19							BH21					BH22						BH56
AGS Reference			EW1			EW1							EW1					EW1						EW1
Depth (m)			0.00 - 0.00			0.00 - 0.00							0.00 - 0.00					0.00 - 0.00						0.00 - 0.00
Container			HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Unfiltered (ALE204)	NaOH (ALE245)	Vial (ALE297)	250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)	NaOH (ALE245)	Vial (ALE297)	250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Unfiltered (ALE204)	NaOH (ALE245)	Vial (ALE297)	250ml Amber Gl. PTFE/PE
Sample Type			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 8										X					X						
Ammonium Low	All	NDPs: 1 Tests: 28						X						X					X				
Anions by Kone (w)	All	NDPs: 0 Tests: 28					X						X					X					
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 28		X						X					X						X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 28	X				X						X					X					
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 28				X						X					X						X
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 28				X						X					X						X
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 28				X						X					X						X
GRO by GC-FID (W)	All	NDPs: 0 Tests: 28			X						X					X						X	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 28					X						X					X					
Mercury Dissolved	All	NDPs: 0 Tests: 28	X				X						X					X					
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 28				X						X					X						X
Pesticides (Suite I) by GCMS	All	NDPs: 0 Tests: 8										X					X						
Pesticides (Suite II) by GCMS	All	NDPs: 0 Tests: 8										X					X						
pH Value	All	NDPs: 0 Tests: 28					X						X					X					

25370550	BH03A	EW1	0.00 - 0.00	500ml Plastic (ALE208)	GW			X							X					X
				250ml Amber Gl. PTFE/PE	GW						X	X	X				X			
25370521	BH61	EW1	0.00 - 0.00	Vial (ALE297)	GW									X						
				NaOH (ALE245)	GW				X											
				HNO3 Filtered (ALE204)	GW					X						X				
				H2SO4 (ALE244)	GW		X													
				500ml Plastic (ALE208)	GW			X							X					X
				250ml Amber Gl. PTFE/PE	GW	X					X	X	X				X	X	X	
25370512	BH60	EW1	0.00 - 0.00	Vial (ALE297)	GW									X						
				NaOH (ALE245)	GW				X											
				HNO3 Filtered (ALE204)	GW					X						X				
				H2SO4 (ALE244)	GW		X													
				500ml Plastic (ALE208)	GW			X							X					X
				250ml Amber Gl. PTFE/PE	GW						X	X	X				X			
25370276	BH56	EW1	0.00 - 0.00	Vial (ALE297)	GW									X						
				NaOH (ALE245)	GW				X											
				HNO3 Filtered (ALE204)	GW					X						X				
				H2SO4 (ALE244)	GW		X													
				500ml Plastic (ALE208)	GW			X							X					X

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
Phenols by HPLC (W)	All	NDPs: 1 Tests: 28	25370469	BH18	EW1	0.00 - 0.00	H2SO4 (ALE244)	GW
			25379517	BH19	EW1	0.00 - 0.00	H2SO4 (ALE244)	GW
			25370194	BH21	EW1	0.00 - 0.00	H2SO4 (ALE244)	GW
			25379516	BH22	EW1	0.00 - 0.00	H2SO4 (ALE244)	GW
			25370276	BH56	EW1	0.00 - 0.00	H2SO4 (ALE244)	GW
Sulphide	All	NDPs: 0 Tests: 28	25370469	BH18	EW1	0.00 - 0.00	500ml Plastic (ALE208)	GW
			25379517	BH19	EW1	0.00 - 0.00	500ml Plastic (ALE208)	GW
			25370194	BH21	EW1	0.00 - 0.00	500ml Plastic (ALE208)	GW
			25379516	BH22	EW1	0.00 - 0.00	500ml Plastic (ALE208)	GW
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 5	25370469	BH18	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	GW
Total Metals by ICP-MS	All	NDPs: 0 Tests: 28	25370469	BH18	EW1	0.00 - 0.00	HNO3 Unfiltered (ALE204)	GW
			25379517	BH19	EW1	0.00 - 0.00	HNO3 Unfiltered (ALE204)	GW
			25370194	BH21	EW1	0.00 - 0.00	HNO3 Unfiltered (ALE204)	GW
			25379516	BH22	EW1	0.00 - 0.00	HNO3 Unfiltered (ALE204)	GW
TPH CWG (W)	All	NDPs: 0 Tests: 28	25370469	BH18	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	GW
			25379517	BH19	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	GW
			25370194	BH21	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	GW
			25379516	BH22	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	GW
			25370276	BH56	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	GW
VOC MS (W)	All	NDPs: 0 Tests: 5	25379517	BH19	EW1	0.00 - 0.00	Vial (ALE297)	GW

25370550	BH03A	EW1	0.00 - 0.00	500ml Plastic (ALE208)	GW	
				250ml Amber Gl. PTFE/PE	GW	
25370521	BH61	EW1	0.00 - 0.00	Vial (ALE297)	GW	
				NaOH (ALE245)	GW	
				HNO3 Filtered (ALE204)	GW	
				H2SO4 (ALE244)	GW	
				500ml Plastic (ALE208)	GW	
				250ml Amber Gl. PTFE/PE	GW	
25370512	BH60	EW1	0.00 - 0.00	Vial (ALE297)	GW	
				NaOH (ALE245)	GW	
				HNO3 Filtered (ALE204)	GW	
				H2SO4 (ALE244)	GW	
				500ml Plastic (ALE208)	GW	
				250ml Amber Gl. PTFE/PE	GW	
25370276	BH56	EW1	0.00 - 0.00	Vial (ALE297)	GW	
				NaOH (ALE245)	GW	
				HNO3 Filtered (ALE204)	GW	
				H2SO4 (ALE244)	GW	
				500ml Plastic (ALE208)	GW	

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
			25370550	BH03A	EW1	0.00 - 0.00	H2SO4 (ALE244)	GW
							HNO3 Filtered (ALE204)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
							250ml Amber Gl. PTFE/PE	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Filtered (ALE204)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
			25370245	WS08	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Filtered (ALE204)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
			25370559	WS12	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Filtered (ALE204)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
			25370254	WS15	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Filtered (ALE204)	GW
							NaOH (ALE245)	GW
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 8						X
Ammonium Low	All	NDPs: 1 Tests: 28	X				X	X
Anions by Kone (w)	All	NDPs: 0 Tests: 28					X	X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 28		X			X	X
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 28		X			X	X
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 28			X		X	X
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 28			X		X	X
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 28			X		X	X
GRO by GC-FID (W)	All	NDPs: 0 Tests: 28		X		X	X	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 28			X		X	X
Mercury Dissolved	All	NDPs: 0 Tests: 28		X			X	X
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 28			X		X	X
Pesticides (Suite I) by GCMS	All	NDPs: 0 Tests: 8						X
Pesticides (Suite II) by GCMS	All	NDPs: 0 Tests: 8						X
pH Value	All	NDPs: 0 Tests: 28					X	X

25370332	WS31	EW1	0.00 - 0.00	Vial (ALE297)	GW									X						
				NaOH (ALE245)	GW				X											
				HNO3 Filtered (ALE204)	GW					X						X				
				H2SO4 (ALE244)	GW		X													
				500ml Plastic (ALE208)	GW			X							X					X
				250ml Amber Gl. PTFE/PE	GW						X	X	X				X			
25370314	WS26	EW1	0.00 - 0.00	Vial (ALE297)	GW									X						
				NaOH (ALE245)	GW				X											
				HNO3 Filtered (ALE204)	GW					X						X				
				H2SO4 (ALE244)	GW		X													
				500ml Plastic (ALE208)	GW			X							X					X
				250ml Amber Gl. PTFE/PE	GW	X					X	X	X				X	X	X	
25370296	WS25	EW1	0.00 - 0.00	Vial (ALE297)	GW									X						
				NaOH (ALE245)	GW				X											
				HNO3 Filtered (ALE204)	GW					X						X				
				H2SO4 (ALE244)	GW		X													
				500ml Plastic (ALE208)	GW			X							X					X
				250ml Amber Gl. PTFE/PE	GW						X	X	X				X			
25370254	WS15	EW1	0.00 - 0.00	Vial (ALE297)	GW									X						

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
Phenols by HPLC (W)	All	NDPs: 1 Tests: 28	25370550	BH03A	EW1	0.00 - 0.00	H2SO4 (ALE244)	GW
							HNO3 Filtered (ALE204)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
							250ml Amber Gl. PTFE/PE	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Filtered (ALE204)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
			25370245	WS08	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Filtered (ALE204)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
			25370559	WS12	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Filtered (ALE204)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
			25370254	WS15	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Filtered (ALE204)	GW
							NaOH (ALE245)	GW
Phenols by HPLC (W)	All	NDPs: 1 Tests: 28	X					
							X	
							X	
							X	
							X	
							X	
							X	
Sulphide	All	NDPs: 0 Tests: 28						
							X	
							X	
							X	
							X	
Total Metals by ICP-MS	All	NDPs: 0 Tests: 28						
							X	
							X	
							X	
							X	
TPH CWG (W)	All	NDPs: 0 Tests: 28						
							X	
							X	
							X	
							X	

25370332	WS31	EW1	0.00 - 0.00	Vial (ALE297)	GW								
				NaOH (ALE245)	GW								
				HNO3 Filtered (ALE204)	GW								
				H2SO4 (ALE244)	GW		X						
				500ml Plastic (ALE208)	GW				X		X		
				250ml Amber Gl. PTFE/PE	GW								X
25370314	WS26	EW1	0.00 - 0.00	Vial (ALE297)	GW								
				NaOH (ALE245)	GW								
				HNO3 Filtered (ALE204)	GW								
				H2SO4 (ALE244)	GW		X						
				500ml Plastic (ALE208)	GW				X		X		
				250ml Amber Gl. PTFE/PE	GW								X
25370296	WS25	EW1	0.00 - 0.00	Vial (ALE297)	GW								
				NaOH (ALE245)	GW								
				HNO3 Filtered (ALE204)	GW								
				H2SO4 (ALE244)	GW		X						
				500ml Plastic (ALE208)	GW				X		X		
				250ml Amber Gl. PTFE/PE	GW								X
25370254	WS15	EW1	0.00 - 0.00	Vial (ALE297)	GW								

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	25420547	25370208
			Customer Sample Reference	WS54	WS54
			AGS Reference		EW1
			Depth (m)		0.00 - 0.00
			Container	1L Plastic (Microbiology)	250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)
			Sample Type	GW	GW	GW	GW	GW	GW	GW
Ammonium Low	All	NDPs: 1 Tests: 28					X			
Anions by Kone (w)	All	NDPs: 0 Tests: 28				X				
Clostridium Perfringens*	All	NDPs: 0 Tests: 3	X							
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 28							X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 28						X		
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 28		X						
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 28		X						
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 28		X						
Faecal Coliforms (W)*	All	NDPs: 0 Tests: 3	X							
Faecal Streptococci (W)*	All	NDPs: 0 Tests: 3	X							
GRO by GC-FID (W)	All	NDPs: 0 Tests: 28								X
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 28				X				
Mercury Dissolved	All	NDPs: 0 Tests: 28						X		
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 28		X						
pH Value	All	NDPs: 0 Tests: 28				X				

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
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GW - Ground Water
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LE - Land Leachate
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PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)							
			25420547							25370208
			Customer Sample Reference							
			WS54							WS54
			AGS Reference							
										EW1
			Depth (m)							
										0.00 - 0.00
			Container	1L Plastic (Microbiology)	250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)
			Sample Type	GW	GW	GW	GW	GW	GW	GW
Phenols by HPLC (W)	All	NDPs: 1 Tests: 28				X				
Sulphide	All	NDPs: 0 Tests: 28			X					
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 5		X						
Total Coliforms (W)*	All	NDPs: 0 Tests: 3	X							
Total Metals by ICP-MS	All	NDPs: 0 Tests: 28			X					
TPH CWG (W)	All	NDPs: 0 Tests: 28		X						
VOC MS (W)	All	NDPs: 0 Tests: 5								X

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH01	BH02	BH05	BH06	BH07	BH09
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	17/11/2021	17/11/2021	18/11/2021	17/11/2021	18/11/2021	19/11/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164	211119-164
			Lab Sample No.(s)	25370225	25370235	25370263	25370503	25370341	25370372
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
Carbon, Organic (diss.filt)	<3 mg/l	TM090		<3	<3	3.67	4.4	3.85	3.83
Ammoniacal Nitrogen as N (low level)	<0.01 mg/l	TM099		0.025 #	0.028 #	0.117 #	0.093 #	0.119 #	0.142 #
Ammoniacal Nitrogen Low as NH4	<0.01 mg/l	TM099		0.0321 #	0.036 #	0.15 #	0.12 #	0.153 #	0.183 #
Sulphide	<0.01 mg/l	TM101		<0.01 2 #	<0.01 2 #	0.0181 2 #	0.0237 2 #	<0.01 2 #	0.01 2 #
Arsenic (diss.filt)	<0.5 µg/l	TM152		3.18 #	2.41 #	<0.5 #	1.34 #	<0.5 #	0.504 #
Boron (diss.filt)	<10 µg/l	TM152		333 #	368 #	134 #	469 #	125 #	135 #
Cadmium (diss.filt)	<0.08 µg/l	TM152		<0.08 #	0.0806 #	0.155 #	0.133 #	0.137 #	0.148 #
Chromium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Copper (diss.filt)	<0.3 µg/l	TM152		<0.3 #	<0.3 #	0.413 #	<0.3 #	0.412 #	0.395 #
Lead (diss.filt)	<0.2 µg/l	TM152		<0.2 #	0.265 #	<0.2 #	0.221 #	<0.2 #	<0.2 #
Manganese (diss.filt)	<3 µg/l	TM152		92.8 #	130 #	1220 #	1900 #	1300 #	1290 #
Nickel (diss.filt)	<0.4 µg/l	TM152		2.59 #	2.62 #	4.28 #	5.33 #	4.31 #	4.42 #
Selenium (diss.filt)	<1 µg/l	TM152		2.74 #	2.58 #	<1 #	<1 #	<1 #	<1 #
Vanadium (diss.filt)	<1 µg/l	TM152		2.37 #	1.71 #	<1 #	<1 #	<1 #	<1 #
Zinc (diss.filt)	<1 µg/l	TM152		5.23 #	1.76 #	3.31 #	5.8 #	3.3 #	3.2 #
Calcium (Dis.Filt)	<0.2 mg/l	TM152		557 #	556 #	150 #	381 #	149 #	151 #
Iron (Dis.Filt)	<0.019 mg/l	TM152		<0.019 #	<0.019 #	0.862 #	1.16 #	1.16 #	1.12 #
Hardness, Total as CaCO3 unfiltered	<0.35 mg/l	TM152		1600 2	1610 2	488 2	1290 2	513 2	514 2
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #
Sulphate	<2 mg/l	TM184		1560 #	1570 #	184 #	1310 #	188 #	185 #
Nitrate as NO3	<0.3 mg/l	TM184		20.9	19.4	<0.3	6.42	<0.3	<0.3
Cyanide, Total	<0.05 mg/l	TM227		<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
Cyanide, Free	<0.05 mg/l	TM227		<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.03 #	<0.03 #	<0.03 #	<0.03 #	<0.03 #	<0.03 #
pH	<1 pH Units	TM256		7.53 #	7.38 #	7.11 #	7.16 #	6.92 #	6.96 #
Phenol	<0.002 mg/l	TM259		<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 #
Cresols	<0.006 mg/l	TM259		<0.006 #	<0.006 #	<0.006 #	<0.006 #	<0.006 #	<0.006 #
Xylenols	<0.008 mg/l	TM259		<0.008 #	<0.008 #	<0.008 #	<0.008 #	<0.008 #	<0.008 #
Phenols, Total Detected monohydric	<0.016 mg/l	TM259		<0.016 #	<0.016 #	<0.016 #	<0.016 #	<0.016 #	<0.016 #
Trifluralin	<0.01 µg/l	TM343		<0.01					<0.01
alpha-HCH	<0.01 µg/l	TM343		<0.01					<0.01
gamma-HCH (Lindane)	<0.01 µg/l	TM343		<0.01					<0.01

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend
- # ISO17025 accredited.
- M *m*CERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+S@ Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH01	BH02	BH05	BH06	BH07	BH09
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	17/11/2021	17/11/2021	18/11/2021	17/11/2021	18/11/2021	19/11/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164	211119-164
			Lab Sample No.(s)	25370225	25370235	25370263	25370503	25370341	25370372
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
Heptachlor	<0.01 µg/l	TM343		<0.01					<0.01
Aldrin	<0.01 µg/l	TM343		<0.01					<0.01
beta-HCH	<0.01 µg/l	TM343		<0.01					<0.01
Isodrin	<0.01 µg/l	TM343		<0.01					<0.01
delta-HCH	<0.01 µg/l	TM343		<0.01					<0.01
Heptachlor epoxide	<0.01 µg/l	TM343		<0.01					<0.01
o,p'-DDE	<0.01 µg/l	TM343		<0.01					<0.01
Endosulphan I	<0.01 µg/l	TM343		<0.01					<0.01
trans-Chlordane	<0.01 µg/l	TM343		<0.01					<0.01
cis-Chlordane	<0.01 µg/l	TM343		<0.01					<0.01
p,p'-DDE	<0.01 µg/l	TM343		<0.01					<0.01
Dieldrin	<0.01 µg/l	TM343		<0.01					<0.01
o,p'-DDD (TDE)	<0.01 µg/l	TM343		<0.01					<0.01
Endrin	<0.01 µg/l	TM343		<0.01					<0.01
o,p'-DDT	<0.01 µg/l	TM343		<0.02					<0.02
p,p'-DDD (TDE)	<0.01 µg/l	TM343		<0.01					<0.01
Endosulphan II	<0.02 µg/l	TM343		<0.02					<0.02
p,p'-DDT	<0.01 µg/l	TM343		<0.02					<0.02
o,p'-Methoxychlor	<0.01 µg/l	TM343		<0.02					<0.02
p,p'-Methoxychlor	<0.01 µg/l	TM343		<0.02					<0.02
Endosulphan Sulphate	<0.02 µg/l	TM343		<0.02					<0.02
Permethrin I	<0.01 µg/l	TM343		<0.01					<0.01
Permethrin II	<0.01 µg/l	TM343		<0.01					<0.01
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344		<0.04					<0.04
Hexachlorobutadiene	<0.01 µg/l	TM344		<0.04					<0.04
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344		<0.04					<0.04
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344		<0.04					<0.04
Dichlorvos	<0.01 µg/l	TM344		<0.04					<0.04
Dichlobenil	<0.01 µg/l	TM344		<0.04					<0.04
Mevinphos	<0.01 µg/l	TM344		<0.04					<0.04
Tecnazene	<0.01 µg/l	TM344		<0.04					<0.04
Hexachlorobenzene	<0.01 µg/l	TM344		<0.04					<0.04

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH01	BH02	BH05	BH06	BH07	BH09
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	17/11/2021	17/11/2021	18/11/2021	17/11/2021	18/11/2021	19/11/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164	211119-164
			Lab Sample No.(s)	25370225	25370235	25370263	25370503	25370341	25370372
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
Demeton-S-methyl	<0.01 µg/l	TM344		<0.04					<0.04
Phorate	<0.01 µg/l	TM344		<0.04					<0.04
Diazinon	<0.01 µg/l	TM344		<0.04					<0.04
Triallate	<0.01 µg/l	TM344		<0.04					<0.04
Atrazine	<0.01 µg/l	TM344		<0.04					<0.04
Simazine	<0.01 µg/l	TM344		<0.04					<0.04
Disulfoton	<0.01 µg/l	TM344		<0.15					<0.15
Propetamphos	<0.01 µg/l	TM344		<0.04					<0.04
Chlorpyriphos-methyl	<0.01 µg/l	TM344		<0.04					<0.04
Dimethoate	<0.01 µg/l	TM344		<0.04					<0.04
Pirimiphos-methyl	<0.01 µg/l	TM344		<0.04					<0.04
Chlorpyriphos	<0.01 µg/l	TM344		<0.04					<0.04
Methyl Parathion	<0.01 µg/l	TM344		<0.04					<0.04
Malathion	<0.01 µg/l	TM344		<0.04					<0.04
Fenthion	<0.01 µg/l	TM344		<0.04					<0.04
Fenitrothion	<0.01 µg/l	TM344		<0.04					<0.04
Triadimefon	<0.01 µg/l	TM344		<0.04					<0.04
Pendimethalin	<0.01 µg/l	TM344		<0.04					<0.04
Parathion	<0.01 µg/l	TM344		<0.04					<0.04
Chlorfenvinphos	<0.01 µg/l	TM344		<0.04					<0.04
trans-Chlordane	<0.01 µg/l	TM344		<0.04					<0.04
cis-Chlordane	<0.01 µg/l	TM344		<0.04					<0.04
Ethion	<0.01 µg/l	TM344		<0.04					<0.04
Carbophenothion	<0.01 µg/l	TM344		<0.04					<0.04
Triazophos	<0.01 µg/l	TM344		<0.04					<0.04
Phosalone	<0.01 µg/l	TM344		<0.04					<0.04
Azinphos methyl	<0.02 µg/l	TM344		<0.08					<0.08
Azinphos ethyl	<0.02 µg/l	TM344		<0.08					<0.08
Dinitro-o-cresol	<0.1 µg/l	TM411		<0.1					<0.1
Clopyralid	<0.04 µg/l	TM411		<0.04					0.0657
MCPA	<0.05 µg/l	TM411		<0.05					<0.05
Mecoprop	<0.04 µg/l	TM411		<0.04					<0.04

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

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Component	LOD/Units	Method	Customer Sample Ref.	BH01	BH02	BH05	BH06	BH07	BH09
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	17/11/2021	17/11/2021	18/11/2021	17/11/2021	18/11/2021	19/11/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164	211119-164
			Lab Sample No.(s)	25370225	25370235	25370263	25370503	25370341	25370372
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
Dicamba	<0.04 µg/l	TM411		<0.04					<0.04
MCPB	<0.05 µg/l	TM411		<0.05					<0.05
2,4-DB	<0.1 µg/l	TM411		<0.1					<0.1
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411		<0.05					<0.05
Dichlorprop	<0.1 µg/l	TM411		<0.1					<0.1
Triclopyr	<0.05 µg/l	TM411		<0.05					<0.05
Fenoprop (Silvex)	<0.1 µg/l	TM411		<0.1					<0.1
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411		<0.05					<0.05
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411		<0.05					<0.05
Bromoxynil	<0.04 µg/l	TM411		<0.04					<0.04
Benazolin	<0.04 µg/l	TM411		<0.04					<0.04
Ioxynil	<0.05 µg/l	TM411		<0.1					<0.1
Pentachlorophenol	<0.04 µg/l	TM411		<0.04					<0.04
Fluoroxypyr	<0.1 µg/l	TM411		<0.1					<0.1

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	BH10	BH11	BH12	BH14	BH15	BH16
Customer Sample Ref.								
Depth (m)			0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Sample Type			Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
Date Sampled			19/11/2021	19/11/2021	19/11/2021	18/11/2021	19/11/2021	16/11/2021
Sampled Time			.	.	.	.	.	.
Date Received			19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
SDG Ref			211119-164	211119-164	211119-164	211119-164	211119-164	211119-164
Lab Sample No.(s)			25370396	25370417	25379515	25370217	25370443	25370323
AGS Reference			EW1	EW1	EW1	EW1	EW1	EW1
Clostridium perfringens (M1U)*	CFU/100ml	SUB			0	1		
Enterococci Presumptive (M1L)*	CFU/100ml	SUB			1	1		
Faecal coliforms confirmed (M7M)*	0 CFU/100ml	SUB			0	1		
Clostridium Perfringens (MZP)	CFU/100ml	SUB			4	1		
Enterococci Confirmed (M1E)*	CFU/100ml	SUB			1	1		
Total Coliform Presumptive (M7G)*	CFU/100ml	SUB			0	0		
Total Coliform Confirmed (M7H)*	CFU/100ml	SUB			0	0		
Carbon, Organic (diss.filt)	<3 mg/l	TM090	3.65	3.74	7.1	<3	3.69	3.13
Ammoniacal Nitrogen as N (low level)	<0.01 mg/l	TM099	0.129 #	0.141 #	0.016 #	0.024 #	0.032 #	0.036 #
Ammoniacal Nitrogen Low as NH4	<0.01 mg/l	TM099	0.166 #	0.181 #	0.0206 #	0.0309 #	0.0411 #	0.0463 #
Sulphide	<0.01 mg/l	TM101	<0.01 2 #	<0.01 2 #	<0.01 2 #	0.022 2 #	<0.01 2 #	0.0187 2 #
Arsenic (diss.filt)	<0.5 µg/l	TM152	<0.5 #	0.534 #	<0.5 2 #	3.51 #	0.558 #	2.72 #
Boron (diss.filt)	<10 µg/l	TM152	142 #	136 #	48 2 #	295 #	132 #	181 #
Cadmium (diss.filt)	<0.08 µg/l	TM152	0.118 #	0.115 #	<0.08 2 #	<0.08 #	0.152 #	<0.08 #
Chromium (diss.filt)	<1 µg/l	TM152	<1 #	<1 #	<1 2 #	<1 #	<1 #	<1 #
Copper (diss.filt)	<0.3 µg/l	TM152	0.497 #	<0.3 #	2.02 2 #	0.673 #	0.615 #	1.09 #
Lead (diss.filt)	<0.2 µg/l	TM152	<0.2 #	<0.2 #	<0.2 2 #	<0.2 #	<0.2 #	0.323 #
Manganese (diss.filt)	<3 µg/l	TM152	1320 #	1350 #	<3 2 #	72.6 #	1380 #	9.14 #
Nickel (diss.filt)	<0.4 µg/l	TM152	4.45 #	4.7 #	1.31 2 #	2.05 #	4.61 #	2.07 #
Selenium (diss.filt)	<1 µg/l	TM152	<1 #	<1 #	4.19 2 #	3.61 #	<1 #	<1 #
Vanadium (diss.filt)	<1 µg/l	TM152	<1 #	<1 #	<1 2 #	2.25 #	<1 #	1.96 #
Zinc (diss.filt)	<1 µg/l	TM152	3.85 #	3.4 #	<1 2 #	2.33 #	4.52 #	4.22 #
Calcium (Dis.Filt)	<0.2 mg/l	TM152	150 #	151 #	79.8 2 #	556 #	153 #	449 #
Iron (Dis.Filt)	<0.019 mg/l	TM152	1.19 #	2.2 #	0.0485 2 #	<0.019 #	1.96 #	<0.019 #
Hardness, Total as CaCO3 unfiltered	<0.35 mg/l	TM152	507 2	506 2	226	1660 2	516 2	1350 2
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01 #	<0.01 #	<0.01 2 #	<0.01 #	<0.01 #	<0.01 #
Sulphate	<2 mg/l	TM184	190 #	192 #	54.9 #	1580 #	199 #	880 #
Nitrate as NO3	<0.3 mg/l	TM184	<0.3	<0.3	30.3	20.5	<0.3	35.7
Cyanide, Total	<0.05 mg/l	TM227	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
Cyanide, Free	<0.05 mg/l	TM227	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
Chromium, Hexavalent	<0.03 mg/l	TM241	<0.03 #	<0.03 #	<0.03 #	<0.03 #	<0.03 #	<0.03 #
pH	<1 pH Units	TM256	7.21 #	6.89 #	7.21 #	7.47 #	6.95 #	7.57 #

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH10	BH11	BH12	BH14	BH15	BH16
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	19/11/2021	19/11/2021	19/11/2021	18/11/2021	19/11/2021	16/11/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164	211119-164
			Lab Sample No.(s)	25370396	25370417	25379515	25370217	25370443	25370323
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
Phenol	<0.002 mg/l	TM259		<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 #
Cresols	<0.006 mg/l	TM259		<0.006 #	<0.006 #	<0.006 #	<0.006 #	<0.006 #	<0.006 #
Xylenols	<0.008 mg/l	TM259		<0.008 #	<0.008 #	<0.008 #	<0.008 #	<0.008 #	<0.008 #
Phenols, Total Detected monohydric	<0.016 mg/l	TM259		<0.016 #	<0.016 #	<0.016 #	<0.016 #	<0.016 #	<0.016 #
Trifluralin	<0.01 µg/l	TM343						<0.01	
alpha-HCH	<0.01 µg/l	TM343						<0.01	
gamma-HCH (Lindane)	<0.01 µg/l	TM343						<0.01	
Heptachlor	<0.01 µg/l	TM343						<0.01	
Aldrin	<0.01 µg/l	TM343						<0.01	
beta-HCH	<0.01 µg/l	TM343						<0.01	
Isodrin	<0.01 µg/l	TM343						<0.01	
delta-HCH	<0.01 µg/l	TM343						<0.01	
Heptachlor epoxide	<0.01 µg/l	TM343						<0.01	
o,p'-DDE	<0.01 µg/l	TM343						<0.01	
Endosulphan I	<0.01 µg/l	TM343						<0.01	
trans-Chlordane	<0.01 µg/l	TM343						<0.01	
cis-Chlordane	<0.01 µg/l	TM343						<0.01	
p,p'-DDE	<0.01 µg/l	TM343						<0.01	
Dieldrin	<0.01 µg/l	TM343						<0.01	
o,p'-DDD (TDE)	<0.01 µg/l	TM343						<0.01	
Endrin	<0.01 µg/l	TM343						<0.01	
o,p'-DDT	<0.01 µg/l	TM343						<0.02	
p,p'-DDD (TDE)	<0.01 µg/l	TM343						<0.01	
Endosulphan II	<0.02 µg/l	TM343						<0.02	
p,p'-DDT	<0.01 µg/l	TM343						<0.02	
o,p'-Methoxychlor	<0.01 µg/l	TM343						<0.02	
p,p'-Methoxychlor	<0.01 µg/l	TM343						<0.02	
Endosulphan Sulphate	<0.02 µg/l	TM343						<0.02	
Permethrin I	<0.01 µg/l	TM343						<0.01	
Permethrin II	<0.01 µg/l	TM343						<0.01	
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344						<0.04	
Hexachlorobutadiene	<0.01 µg/l	TM344						<0.04	

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH10	BH11	BH12	BH14	BH15	BH16
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	19/11/2021	19/11/2021	19/11/2021	18/11/2021	19/11/2021	16/11/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164	211119-164
			Lab Sample No.(s)	25370396	25370417	25379515	25370217	25370443	25370323
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344						<0.04	
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344						<0.04	
Dichlorvos	<0.01 µg/l	TM344						<0.04	
Dichlobenil	<0.01 µg/l	TM344						<0.04	
Mevinphos	<0.01 µg/l	TM344						<0.04	
Tecnazene	<0.01 µg/l	TM344						<0.04	
Hexachlorobenzene	<0.01 µg/l	TM344						<0.04	
Demeton-S-methyl	<0.01 µg/l	TM344						<0.04	
Phorate	<0.01 µg/l	TM344						<0.04	
Diazinon	<0.01 µg/l	TM344						<0.04	
Triallate	<0.01 µg/l	TM344						<0.04	
Atrazine	<0.01 µg/l	TM344						<0.04	
Simazine	<0.01 µg/l	TM344						<0.04	
Disulfoton	<0.01 µg/l	TM344						<0.15	
Propetamphos	<0.01 µg/l	TM344						<0.04	
Chlorpyriphos-methyl	<0.01 µg/l	TM344						<0.04	
Dimethoate	<0.01 µg/l	TM344						<0.04	
Pirimiphos-methyl	<0.01 µg/l	TM344						<0.04	
Chlorpyriphos	<0.01 µg/l	TM344						<0.04	
Methyl Parathion	<0.01 µg/l	TM344						<0.04	
Malathion	<0.01 µg/l	TM344						<0.04	
Fenthion	<0.01 µg/l	TM344						<0.04	
Fenitrothion	<0.01 µg/l	TM344						<0.04	
Triadimefon	<0.01 µg/l	TM344						<0.04	
Pendimethalin	<0.01 µg/l	TM344						<0.04	
Parathion	<0.01 µg/l	TM344						<0.04	
Chlorfenvinphos	<0.01 µg/l	TM344						<0.04	
trans-Chlordane	<0.01 µg/l	TM344						<0.04	
cis-Chlordane	<0.01 µg/l	TM344						<0.04	
Ethion	<0.01 µg/l	TM344						<0.04	
Carbophenothion	<0.01 µg/l	TM344						<0.04	
Triazophos	<0.01 µg/l	TM344						<0.04	

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH10	BH11	BH12	BH14	BH15	BH16
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	19/11/2021	19/11/2021	19/11/2021	18/11/2021	19/11/2021	16/11/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164	211119-164
			Lab Sample No.(s)	25370396	25370417	25379515	25370217	25370443	25370323
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
Phosalone	<0.01 µg/l	TM344						<0.04	
Azinphos methyl	<0.02 µg/l	TM344						<0.08	
Azinphos ethyl	<0.02 µg/l	TM344						<0.08	
Dinitro-o-cresol	<0.1 µg/l	TM411						<0.1	
Clopyralid	<0.04 µg/l	TM411						0.0463	
MCPA	<0.05 µg/l	TM411						<0.05	
Mecoprop	<0.04 µg/l	TM411						<0.04	
Dicamba	<0.04 µg/l	TM411						<0.04	
MCPB	<0.05 µg/l	TM411						<0.05	
2,4-DB	<0.1 µg/l	TM411						<0.1	
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411						<0.05	
Dichlorprop	<0.1 µg/l	TM411						<0.1	
Triclopyr	<0.05 µg/l	TM411						<0.05	
Fenoprop (Silvex)	<0.1 µg/l	TM411						<0.1	
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411						<0.05	
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411						<0.05	
Bromoxynil	<0.04 µg/l	TM411						<0.04	
Benazolin	<0.04 µg/l	TM411						<0.04	
Ioxynil	<0.05 µg/l	TM411						<0.1	
Pentachlorophenol	<0.04 µg/l	TM411						<0.04	
Fluoroxypyr	<0.1 µg/l	TM411						<0.1	

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH17	BH18	BH19	BH21	BH22	BH56
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	17/11/2021	16/11/2021	19/11/2021	16/11/2021	19/11/2021	18/11/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164	211119-164
			Lab Sample No.(s)	25370486	25370469	25379517	25370194	25379516	25370276
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
Carbon, Organic (diss.filt)	<3 mg/l	TM090		3.09	<3	7.22	7.08	7.25	3.75
Ammoniacal Nitrogen as N (low level)	<0.01 mg/l	TM099		0.036 #	0.035 #	0.031 #	0.046 #	0.027 #	0.126 #
Ammoniacal Nitrogen Low as NH4	<0.01 mg/l	TM099		0.0463 #	0.045 #	0.0399 #	0.0591 #	0.0347 #	0.162 #
Sulphide	<0.01 mg/l	TM101		<0.01 2 #	<0.01 2 #	<0.01 2 #	<0.01 2 #	<0.01 2 #	<0.01 2 #
Arsenic (diss.filt)	<0.5 µg/l	TM152		3.58 #	4.03 #	<0.5 2 #	0.504 2 #	0.559 2 #	0.507 #
Boron (diss.filt)	<10 µg/l	TM152		172 #	151 #	47.5 2 #	384 2 #	51.5 2 #	127 #
Cadmium (diss.filt)	<0.08 µg/l	TM152		<0.08 #	<0.08 #	0.11 2 #	0.481 2 #	0.0913 2 #	0.135 #
Chromium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	<1 2 #	<1 2 #	<1 2 #	<1 #
Copper (diss.filt)	<0.3 µg/l	TM152		1.34 #	0.636 #	2.19 2 #	2.24 2 #	2.54 2 #	0.416 #
Lead (diss.filt)	<0.2 µg/l	TM152		0.329 #	<0.2 #	<0.2 2 #	0.223 2 #	0.232 2 #	<0.2 #
Manganese (diss.filt)	<3 µg/l	TM152		<3 #	3.3 #	12 2 #	<3 2 #	7.86 2 #	1240 #
Nickel (diss.filt)	<0.4 µg/l	TM152		1.43 #	0.967 #	1.41 2 #	0.829 2 #	1.54 2 #	4.4 #
Selenium (diss.filt)	<1 µg/l	TM152		<1 #	1.6 #	4.15 2 #	3.3 2 #	3.88 2 #	<1 #
Vanadium (diss.filt)	<1 µg/l	TM152		6.1 #	3.78 #	<1 2 #	<1 2 #	<1 2 #	<1 #
Zinc (diss.filt)	<1 µg/l	TM152		2.56 #	1.69 #	2.29 2 #	768 2 #	2.62 2 #	2.82 #
Calcium (Dis.Filt)	<0.2 mg/l	TM152		243 #	300 #	81.5 2 #	90.1 2 #	84.2 2 #	151 #
Iron (Dis.Filt)	<0.019 mg/l	TM152		<0.019 #	<0.019 #	<0.019 2 #	<0.019 2 #	0.0228 2 #	0.907 #
Hardness, Total as CaCO3 unfiltered	<0.35 mg/l	TM152		775 2	947 2	238	443 2	237	506 2
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 #	<0.01 2 #	<0.01 2 #	<0.01 2 #	<0.01 #
Sulphate	<2 mg/l	TM184		412 #	598 #	54.5 #	56.5 #	55 #	194 #
Nitrate as NO3	<0.3 mg/l	TM184		79.8	38.4	30.4	28.9	30.6	<0.3
Cyanide, Total	<0.05 mg/l	TM227		<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
Cyanide, Free	<0.05 mg/l	TM227		<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.03 #	<0.03 #	<0.03 #	<0.03 #	<0.03 #	<0.03 #
pH	<1 pH Units	TM256		7.56 #	7.37 #	7.4 #	7.44 #	7.43 #	6.99 #
Phenol	<0.002 mg/l	TM259		<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 #
Cresols	<0.006 mg/l	TM259		<0.006 #	<0.006 #	<0.006 #	<0.006 #	<0.006 #	<0.006 #
Xylenols	<0.008 mg/l	TM259		<0.008 #	<0.008 #	<0.008 #	<0.008 #	<0.008 #	<0.008 #
Phenols, Total Detected monohydric	<0.016 mg/l	TM259		<0.016 #	<0.016 #	<0.016 #	<0.016 #	<0.016 #	<0.016 #
Trifluralin	<0.01 µg/l	TM343					<0.1	<0.05	
alpha-HCH	<0.01 µg/l	TM343					<0.1	<0.05	
gamma-HCH (Lindane)	<0.01 µg/l	TM343					<0.1	<0.05	

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH17	BH18	BH19	BH21	BH22	BH56
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	17/11/2021	16/11/2021	19/11/2021	16/11/2021	19/11/2021	18/11/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164	211119-164
			Lab Sample No.(s)	25370486	25370469	25379517	25370194	25379516	25370276
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
Heptachlor	<0.01 µg/l	TM343					<0.1	<0.05	
Aldrin	<0.01 µg/l	TM343					<0.1	<0.05	
beta-HCH	<0.01 µg/l	TM343					<0.1	<0.05	
Isodrin	<0.01 µg/l	TM343					<0.1	<0.05	
delta-HCH	<0.01 µg/l	TM343					<0.1	<0.05	
Heptachlor epoxide	<0.01 µg/l	TM343					<0.1	<0.05	
o,p'-DDE	<0.01 µg/l	TM343					<0.1	<0.05	
Endosulphan I	<0.01 µg/l	TM343					<0.1	<0.05	
trans-Chlordane	<0.01 µg/l	TM343					<0.1	<0.05	
cis-Chlordane	<0.01 µg/l	TM343					<0.1	<0.05	
p,p'-DDE	<0.01 µg/l	TM343					<0.1	<0.05	
Dieldrin	<0.01 µg/l	TM343					<0.1	<0.05	
o,p'-DDD (TDE)	<0.01 µg/l	TM343					<0.1	<0.05	
Endrin	<0.01 µg/l	TM343					<0.1	<0.05	
o,p'-DDT	<0.01 µg/l	TM343					<0.2	<0.1	
p,p'-DDD (TDE)	<0.01 µg/l	TM343					<0.1	<0.05	
Endosulphan II	<0.02 µg/l	TM343					<0.2	<0.1	
p,p'-DDT	<0.01 µg/l	TM343					<0.2	<0.1	
o,p'-Methoxychlor	<0.01 µg/l	TM343					<0.2	<0.1	
p,p'-Methoxychlor	<0.01 µg/l	TM343					<0.2	<0.1	
Endosulphan Sulphate	<0.02 µg/l	TM343					<0.2	<0.1	
Permethrin I	<0.01 µg/l	TM343					<0.1	<0.05	
Permethrin II	<0.01 µg/l	TM343					<0.1	<0.05	
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344					<0.4	<0.04	
Hexachlorobutadiene	<0.01 µg/l	TM344					<0.4	<0.04	
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344					<0.4	<0.04	
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344					<0.4	<0.04	
Dichlorvos	<0.01 µg/l	TM344					<0.4	<0.04	
Dichlobenil	<0.01 µg/l	TM344					<0.4	<0.04	
Mevinphos	<0.01 µg/l	TM344					<0.4	<0.04	
Tecnazene	<0.01 µg/l	TM344					<0.4	<0.04	
Hexachlorobenzene	<0.01 µg/l	TM344					<0.4	<0.04	

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH17	BH18	BH19	BH21	BH22	BH56
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	17/11/2021	16/11/2021	19/11/2021	16/11/2021	19/11/2021	18/11/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164	211119-164
			Lab Sample No.(s)	25370486	25370469	25379517	25370194	25379516	25370276
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
Demeton-S-methyl	<0.01 µg/l	TM344					<0.4	<0.04	
Phorate	<0.01 µg/l	TM344					<0.4	<0.04	
Diazinon	<0.01 µg/l	TM344					<0.4	<0.04	
Triallate	<0.01 µg/l	TM344					<0.4	<0.04	
Atrazine	<0.01 µg/l	TM344					<0.4	<0.04	
Simazine	<0.01 µg/l	TM344					<0.4	<0.04	
Disulfoton	<0.01 µg/l	TM344					<1.5	<0.15	
Propetamphos	<0.01 µg/l	TM344					<0.4	<0.04	
Chlorpyriphos-methyl	<0.01 µg/l	TM344					<0.4	<0.04	
Dimethoate	<0.01 µg/l	TM344					<0.4	<0.04	
Pirimiphos-methyl	<0.01 µg/l	TM344					<0.4	<0.04	
Chlorpyriphos	<0.01 µg/l	TM344					<0.4	<0.04	
Methyl Parathion	<0.01 µg/l	TM344					<0.4	<0.04	
Malathion	<0.01 µg/l	TM344					<0.4	<0.04	
Fenthion	<0.01 µg/l	TM344					<0.4	<0.04	
Fenitrothion	<0.01 µg/l	TM344					<0.4	<0.04	
Triadimefon	<0.01 µg/l	TM344					<0.4	<0.04	
Pendimethalin	<0.01 µg/l	TM344					<0.4	<0.04	
Parathion	<0.01 µg/l	TM344					<0.4	<0.04	
Chlorfenvinphos	<0.01 µg/l	TM344					<0.4	<0.04	
trans-Chlordane	<0.01 µg/l	TM344					<0.4	<0.04	
cis-Chlordane	<0.01 µg/l	TM344					<0.4	<0.04	
Ethion	<0.01 µg/l	TM344					<0.4	<0.04	
Carbophenothion	<0.01 µg/l	TM344					<0.4	<0.04	
Triazophos	<0.01 µg/l	TM344					<0.4	<0.04	
Phosalone	<0.01 µg/l	TM344					<0.4	<0.04	
Azinphos methyl	<0.02 µg/l	TM344					<0.8	<0.08	
Azinphos ethyl	<0.02 µg/l	TM344					<0.8	<0.08	
Dinitro-o-cresol	<0.1 µg/l	TM411					<0.2	<0.1	
Clopyralid	<0.04 µg/l	TM411					<0.08	0.0438	
MCPA	<0.05 µg/l	TM411					<0.1	<0.05	
Mecoprop	<0.04 µg/l	TM411					<0.08	0.0514	

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH17	BH18	BH19	BH21	BH22	BH56
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	17/11/2021	16/11/2021	19/11/2021	16/11/2021	19/11/2021	18/11/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164	211119-164
			Lab Sample No.(s)	25370486	25370469	25379517	25370194	25379516	25370276
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
Dicamba	<0.04 µg/l	TM411					<0.08	<0.04	
MCPB	<0.05 µg/l	TM411					<0.1	<0.05	
2,4-DB	<0.1 µg/l	TM411					<0.2	<0.1	
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411					<0.1	<0.05	
Dichlorprop	<0.1 µg/l	TM411					<0.2	<0.1	
Triclopyr	<0.05 µg/l	TM411					<0.1	<0.05	
Fenoprop (Silvex)	<0.1 µg/l	TM411					<0.2	<0.1	
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411					<0.1	<0.05	
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411					<0.1	<0.05	
Bromoxynil	<0.04 µg/l	TM411					<0.08	<0.04	
Benazolin	<0.04 µg/l	TM411					<0.08	<0.04	
Ioxynil	<0.05 µg/l	TM411					<0.2	<0.1	
Pentachlorophenol	<0.04 µg/l	TM411					<0.08	<0.04	
Fluoroxypyr	<0.1 µg/l	TM411					<0.2	<0.1	

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH60	BH61	BH03A	WS08	WS12	WS15
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	17/11/2021	17/11/2021	17/11/2021	18/11/2021	17/11/2021	18/11/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164	211119-164
			Lab Sample No.(s)	25370512	25370521	25370550	25370245	25370559	25370254
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
Carbon, Organic (diss.filt)	<3 mg/l	TM090		5.83	3.78	3.07	3.6	4.09	3.69
Ammoniacal Nitrogen as N (low level)	<0.01 mg/l	TM099		0.1 #	0.109 #	0.642 #	0.116 #	0.164 #	0.113 #
Ammoniacal Nitrogen Low as NH4	<0.01 mg/l	TM099		0.129 #	0.14 #	0.825 #	0.149 #	0.211 #	0.145 #
Sulphide	<0.01 mg/l	TM101		<0.01 2 #	<0.01 2 #	0.022 2 #	<0.01 2 #	<0.01 2 #	<0.01 2 #
Arsenic (diss.filt)	<0.5 µg/l	TM152		1.92 #	0.596 #	9.1 #	<0.5 #	1.99 #	<0.5 #
Boron (diss.filt)	<10 µg/l	TM152		182 #	136 #	126 #	130 #	88.2 #	136 #
Cadmium (diss.filt)	<0.08 µg/l	TM152		4.79 #	0.113 #	<0.08 #	0.134 #	<0.08 #	0.157 #
Chromium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Copper (diss.filt)	<0.3 µg/l	TM152		13.7 #	<0.3 #	<0.3 #	0.442 #	<0.3 #	0.49 #
Lead (diss.filt)	<0.2 µg/l	TM152		6.62 #	<0.2 #	<0.2 #	<0.2 #	<0.2 #	0.204 #
Manganese (diss.filt)	<3 µg/l	TM152		472 #	1240 #	3010 #	1120 #	3810 #	1160 #
Nickel (diss.filt)	<0.4 µg/l	TM152		237 #	4.18 #	2.51 #	4.08 #	4.56 #	4.51 #
Selenium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Vanadium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Zinc (diss.filt)	<1 µg/l	TM152		96.7 #	4.7 #	2.21 #	2.87 #	3.51 #	3.39 #
Calcium (Dis.Filt)	<0.2 mg/l	TM152		215 #	145 #	113 #	147 #	152 #	150 #
Iron (Dis.Filt)	<0.019 mg/l	TM152		1.75 #	1.4 #	24.3 #	0.617 #	14.7 #	0.704 #
Hardness, Total as CaCO3 unfiltered	<0.35 mg/l	TM152		725 2	468 2	419 2	506 2	560 2	498 2
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #
Sulphate	<2 mg/l	TM184		512 #	185 #	190 #	200 #	169 #	191 #
Nitrate as NO3	<0.3 mg/l	TM184		2.69	<0.3	<0.3	<0.3	<0.3	<0.3
Cyanide, Total	<0.05 mg/l	TM227		<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
Cyanide, Free	<0.05 mg/l	TM227		<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.03 #	<0.03 #	<0.03 #	<0.03 #	<0.03 #	<0.03 #
pH	<1 pH Units	TM256		6.6 #	6.97 #	6.72 #	6.94 #	6.86 #	7.04 #
Phenol	<0.002 mg/l	TM259		<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 #
Cresols	<0.006 mg/l	TM259		<0.006 #	<0.006 #	<0.006 #	<0.006 #	<0.006 #	<0.006 #
Xylenols	<0.008 mg/l	TM259		<0.008 #	<0.008 #	<0.008 #	<0.008 #	<0.008 #	<0.008 #
Phenols, Total Detected monohydric	<0.016 mg/l	TM259		<0.016 #	<0.016 #	<0.016 #	<0.016 #	<0.016 #	<0.016 #
Trifluralin	<0.01 µg/l	TM343			<0.01				<0.01
alpha-HCH	<0.01 µg/l	TM343			<0.01				<0.01
gamma-HCH (Lindane)	<0.01 µg/l	TM343			<0.01				<0.01

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH60	BH61	BH03A	WS08	WS12	WS15
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	17/11/2021	17/11/2021	17/11/2021	18/11/2021	17/11/2021	18/11/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164	211119-164
			Lab Sample No.(s)	25370512	25370521	25370550	25370245	25370559	25370254
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
Heptachlor	<0.01 µg/l	TM343		<0.01					<0.01
Aldrin	<0.01 µg/l	TM343		<0.01					<0.01
beta-HCH	<0.01 µg/l	TM343		<0.01					<0.01
Isodrin	<0.01 µg/l	TM343		<0.01					<0.01
delta-HCH	<0.01 µg/l	TM343		<0.01					<0.01
Heptachlor epoxide	<0.01 µg/l	TM343		<0.01					<0.01
o,p'-DDE	<0.01 µg/l	TM343		<0.01					<0.01
Endosulphan I	<0.01 µg/l	TM343		<0.01					<0.01
trans-Chlordane	<0.01 µg/l	TM343		<0.01					<0.01
cis-Chlordane	<0.01 µg/l	TM343		<0.01					<0.01
p,p'-DDE	<0.01 µg/l	TM343		<0.01					<0.01
Dieldrin	<0.01 µg/l	TM343		<0.01					<0.01
o,p'-DDD (TDE)	<0.01 µg/l	TM343		<0.01					<0.01
Endrin	<0.01 µg/l	TM343		<0.01					<0.01
o,p'-DDT	<0.01 µg/l	TM343		<0.02					<0.02
p,p'-DDD (TDE)	<0.01 µg/l	TM343		<0.01					<0.01
Endosulphan II	<0.02 µg/l	TM343		<0.02					<0.02
p,p'-DDT	<0.01 µg/l	TM343		<0.02					<0.02
o,p'-Methoxychlor	<0.01 µg/l	TM343		<0.02					<0.02
p,p'-Methoxychlor	<0.01 µg/l	TM343		<0.02					<0.02
Endosulphan Sulphate	<0.02 µg/l	TM343		<0.02					<0.02
Permethrin I	<0.01 µg/l	TM343		<0.01					<0.01
Permethrin II	<0.01 µg/l	TM343		<0.01					<0.01
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344		<0.04					<0.04
Hexachlorobutadiene	<0.01 µg/l	TM344		<0.04					<0.04
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344		<0.04					<0.04
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344		<0.04					<0.04
Dichlorvos	<0.01 µg/l	TM344		<0.04					<0.04
Dichlobenil	<0.01 µg/l	TM344		<0.04					<0.04
Mevinphos	<0.01 µg/l	TM344		<0.04					<0.04
Tecnazene	<0.01 µg/l	TM344		<0.04					<0.04
Hexachlorobenzene	<0.01 µg/l	TM344		<0.04					<0.04

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH60	BH61	BH03A	WS08	WS12	WS15
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	17/11/2021	17/11/2021	17/11/2021	18/11/2021	17/11/2021	18/11/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164	211119-164
			Lab Sample No.(s)	25370512	25370521	25370550	25370245	25370559	25370254
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
Demeton-S-methyl	<0.01 µg/l	TM344		<0.04					<0.04
Phorate	<0.01 µg/l	TM344		<0.04					<0.04
Diazinon	<0.01 µg/l	TM344		<0.04					<0.04
Triallate	<0.01 µg/l	TM344		<0.04					<0.04
Atrazine	<0.01 µg/l	TM344		<0.04					<0.04
Simazine	<0.01 µg/l	TM344		<0.04					<0.04
Disulfoton	<0.01 µg/l	TM344		<0.15					<0.15
Propetamphos	<0.01 µg/l	TM344		<0.04					<0.04
Chlorpyriphos-methyl	<0.01 µg/l	TM344		<0.04					<0.04
Dimethoate	<0.01 µg/l	TM344		<0.04					<0.04
Pirimiphos-methyl	<0.01 µg/l	TM344		<0.04					<0.04
Chlorpyriphos	<0.01 µg/l	TM344		<0.04					<0.04
Methyl Parathion	<0.01 µg/l	TM344		<0.04					<0.04
Malathion	<0.01 µg/l	TM344		<0.04					<0.04
Fenthion	<0.01 µg/l	TM344		<0.04					<0.04
Fenitrothion	<0.01 µg/l	TM344		<0.04					<0.04
Triadimefon	<0.01 µg/l	TM344		<0.04					<0.04
Pendimethalin	<0.01 µg/l	TM344		<0.04					<0.04
Parathion	<0.01 µg/l	TM344		<0.04					<0.04
Chlorfenvinphos	<0.01 µg/l	TM344		<0.04					<0.04
trans-Chlordane	<0.01 µg/l	TM344		<0.04					<0.04
cis-Chlordane	<0.01 µg/l	TM344		<0.04					<0.04
Ethion	<0.01 µg/l	TM344		<0.04					<0.04
Carbophenothion	<0.01 µg/l	TM344		<0.04					<0.04
Triazophos	<0.01 µg/l	TM344		<0.04					<0.04
Phosalone	<0.01 µg/l	TM344		<0.04					<0.04
Azinphos methyl	<0.02 µg/l	TM344		<0.08					<0.08
Azinphos ethyl	<0.02 µg/l	TM344		<0.08					<0.08
Dinitro-o-cresol	<0.1 µg/l	TM411		<0.2					<0.1
Clopyralid	<0.04 µg/l	TM411		<0.08					0.0646
MCPA	<0.05 µg/l	TM411		<0.1					<0.05
Mecoprop	<0.04 µg/l	TM411		<0.08					<0.04

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH60	BH61	BH03A	WS08	WS12	WS15
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	17/11/2021	17/11/2021	17/11/2021	18/11/2021	17/11/2021	18/11/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164	211119-164
			Lab Sample No.(s)	25370512	25370521	25370550	25370245	25370559	25370254
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
Dicamba	<0.04 µg/l	TM411		<0.08					<0.04
MCPB	<0.05 µg/l	TM411		<0.1					<0.05
2,4-DB	<0.1 µg/l	TM411		<0.2					<0.1
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411		<0.1					<0.05
Dichlorprop	<0.1 µg/l	TM411		<0.2					<0.1
Triclopyr	<0.05 µg/l	TM411		<0.1					<0.05
Fenoprop (Silvex)	<0.1 µg/l	TM411		<0.2					<0.1
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411		<0.1					<0.05
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411		<0.1					<0.05
Bromoxynil	<0.04 µg/l	TM411		<0.08					<0.04
Benazolin	<0.04 µg/l	TM411		<0.08					<0.04
Ioxynil	<0.05 µg/l	TM411		<0.2					<0.1
Pentachlorophenol	<0.04 µg/l	TM411		<0.08					<0.04
Fluoroxypyr	<0.1 µg/l	TM411		<0.2					<0.1

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS25	WS26	WS31	WS54	WS54
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	.	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	18/11/2021	18/11/2021	18/11/2021	18/11/2021	17/11/2021
			Sampled Time	.	.	.	.	.
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164
			Lab Sample No.(s)	25370296	25370314	25370332	25420547	25370208
			AGS Reference	EW1	EW1	EW1		EW1
Clostridium perfringens (M1U)*	CFU/100ml	SUB					0	
Enterococci Presumptive (M1L)*	CFU/100ml	SUB					0	
Faecal coliforms confirmed (M7M)*	0 CFU/100ml	SUB					0	
Clostridium Perfringens (MZP)	CFU/100ml	SUB					0	
Enterococci Confirmed (M1E)*	CFU/100ml	SUB					0	
Total Coliform Presumptive (M7G)*	CFU/100ml	SUB					2	
Total Coliform Confirmed (M7H)*	CFU/100ml	SUB					0	
Carbon, Organic (diss.filt)	<3 mg/l	TM090	3.88	3.66	3.75		13.1	
Ammoniacal Nitrogen as N (low level)	<0.01 mg/l	TM099	0.132 #	0.136 #	0.146 #		0.219 #	
Ammoniacal Nitrogen Low as NH4	<0.01 mg/l	TM099	0.17 #	0.175 #	0.188 #		0.282 #	
Sulphide	<0.01 mg/l	TM101	0.0292 2 #	<0.01 2 #	<0.01 2 #		<0.01 2 #	
Arsenic (diss.filt)	<0.5 µg/l	TM152	<0.5 #	<0.5 #	<0.5 #		2.32 #	
Boron (diss.filt)	<10 µg/l	TM152	134 #	136 #	135 #		216 #	
Cadmium (diss.filt)	<0.08 µg/l	TM152	0.14 #	0.139 #	0.171 #		3.15 #	
Chromium (diss.filt)	<1 µg/l	TM152	<1 #	<1 #	<1 #		<1 #	
Copper (diss.filt)	<0.3 µg/l	TM152	0.572 #	0.408 #	<0.3 #		<0.3 #	
Lead (diss.filt)	<0.2 µg/l	TM152	0.205 #	<0.2 #	<0.2 #		<0.2 #	
Manganese (diss.filt)	<3 µg/l	TM152	1240 #	1290 #	1300 #		1140 #	
Nickel (diss.filt)	<0.4 µg/l	TM152	4.18 #	4.37 #	4.29 #		31.3 #	
Selenium (diss.filt)	<1 µg/l	TM152	<1 #	<1 #	<1 #		<1 #	
Vanadium (diss.filt)	<1 µg/l	TM152	<1 #	<1 #	<1 #		<1 #	
Zinc (diss.filt)	<1 µg/l	TM152	3.18 #	3.35 #	3.39 #		157 #	
Calcium (Dis.Filt)	<0.2 mg/l	TM152	149 #	150 #	147 #		210 #	
Iron (Dis.Filt)	<0.019 mg/l	TM152	1.03 #	1.24 #	1.31 #		4.86 #	
Hardness, Total as CaCO3 unfiltered	<0.35 mg/l	TM152	499 2	490 2	481 2		677 2	
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01 #	<0.01 #	<0.01 #		<0.01 #	
Sulphate	<2 mg/l	TM184	194 #	190 #	192 #		280 #	
Nitrate as NO3	<0.3 mg/l	TM184	<0.3	<0.3	<0.3		0.568	
Cyanide, Total	<0.05 mg/l	TM227	<0.05 #	<0.05 #	<0.05 #		<0.05 #	
Cyanide, Free	<0.05 mg/l	TM227	<0.05 #	<0.05 #	<0.05 #		<0.05 #	
Chromium, Hexavalent	<0.03 mg/l	TM241	<0.03 #	<0.03 #	<0.03 #		<0.03 #	
pH	<1 pH Units	TM256	6.96 #	6.96 #	7.04 #		6.45 #	

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS25	WS26	WS31	WS54	WS54	
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	.	0.00 - 0.00	
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	
			Date Sampled	18/11/2021	18/11/2021	18/11/2021	18/11/2021	17/11/2021	
			Sampled Time	.	.	.	.	.	
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021	
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164	
			Lab Sample No.(s)	25370296	25370314	25370332	25420547	25370208	
			AGS Reference	EW1	EW1	EW1		EW1	
Phenol	<0.002 mg/l	TM259		<0.002 #	<0.002 #	<0.002 #		<0.002 #	
Cresols	<0.006 mg/l	TM259		<0.006 #	<0.006 #	<0.006 #		<0.006 #	
Xylenols	<0.008 mg/l	TM259		<0.008 #	<0.008 #	<0.008 #		<0.008 #	
Phenols, Total Detected monohydric	<0.016 mg/l	TM259		<0.016 #	<0.016 #	<0.016 #		<0.016 #	
Trifluralin	<0.01 µg/l	TM343			<0.01				
alpha-HCH	<0.01 µg/l	TM343			<0.01				
gamma-HCH (Lindane)	<0.01 µg/l	TM343			<0.01				
Heptachlor	<0.01 µg/l	TM343			<0.01				
Aldrin	<0.01 µg/l	TM343			<0.01				
beta-HCH	<0.01 µg/l	TM343			<0.01				
Isodrin	<0.01 µg/l	TM343			<0.01				
delta-HCH	<0.01 µg/l	TM343			<0.01				
Heptachlor epoxide	<0.01 µg/l	TM343			<0.01				
o,p'-DDE	<0.01 µg/l	TM343			<0.01				
Endosulphan I	<0.01 µg/l	TM343			<0.01				
trans-Chlordane	<0.01 µg/l	TM343			<0.01				
cis-Chlordane	<0.01 µg/l	TM343			<0.01				
p,p'-DDE	<0.01 µg/l	TM343			<0.01				
Dieldrin	<0.01 µg/l	TM343			<0.01				
o,p'-DDD (TDE)	<0.01 µg/l	TM343			<0.01				
Endrin	<0.01 µg/l	TM343			<0.01				
o,p'-DDT	<0.01 µg/l	TM343			<0.02				
p,p'-DDD (TDE)	<0.01 µg/l	TM343			<0.01				
Endosulphan II	<0.02 µg/l	TM343			<0.02				
p,p'-DDT	<0.01 µg/l	TM343			<0.02				
o,p'-Methoxychlor	<0.01 µg/l	TM343			<0.01				
p,p'-Methoxychlor	<0.01 µg/l	TM343			<0.02				
Endosulphan Sulphate	<0.02 µg/l	TM343			<0.02				
Permethrin I	<0.01 µg/l	TM343			<0.01				
Permethrin II	<0.01 µg/l	TM343			<0.01				
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344			<0.01				
Hexachlorobutadiene	<0.01 µg/l	TM344			<0.01				

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS25	WS26	WS31	WS54	WS54	
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	.	0.00 - 0.00	
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	
			Date Sampled	18/11/2021	18/11/2021	18/11/2021	18/11/2021	17/11/2021	
			Sampled Time	.	.	.	.	.	
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021	
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164	
			Lab Sample No.(s)	25370296	25370314	25370332	25420547	25370208	
			AGS Reference	EW1	EW1	EW1		EW1	
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344			<0.01				
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344			<0.01				
Dichlorvos	<0.01 µg/l	TM344			<0.01				
Dichlobenil	<0.01 µg/l	TM344			<0.01				
Mevinphos	<0.01 µg/l	TM344			<0.01				
Tecnazene	<0.01 µg/l	TM344			<0.01				
Hexachlorobenzene	<0.01 µg/l	TM344			<0.01				
Demeton-S-methyl	<0.01 µg/l	TM344			<0.01				
Phorate	<0.01 µg/l	TM344			<0.01				
Diazinon	<0.01 µg/l	TM344			<0.01				
Triallate	<0.01 µg/l	TM344			<0.01				
Atrazine	<0.01 µg/l	TM344			<0.01				
Simazine	<0.01 µg/l	TM344			<0.01				
Disulfoton	<0.01 µg/l	TM344			<0.01				
Propetamphos	<0.01 µg/l	TM344			<0.01				
Chlorpyriphos-methyl	<0.01 µg/l	TM344			<0.01				
Dimethoate	<0.01 µg/l	TM344			<0.01				
Pirimiphos-methyl	<0.01 µg/l	TM344			<0.01				
Chlorpyriphos	<0.01 µg/l	TM344			<0.01				
Methyl Parathion	<0.01 µg/l	TM344			<0.01				
Malathion	<0.01 µg/l	TM344			<0.01				
Fenthion	<0.01 µg/l	TM344			<0.01				
Fenitrothion	<0.01 µg/l	TM344			<0.01				
Triadimefon	<0.01 µg/l	TM344			<0.01				
Pendimethalin	<0.01 µg/l	TM344			<0.01				
Parathion	<0.01 µg/l	TM344			<0.01				
Chlorfenvinphos	<0.01 µg/l	TM344			<0.01				
trans-Chlordane	<0.01 µg/l	TM344			<0.01				
cis-Chlordane	<0.01 µg/l	TM344			<0.01				
Ethion	<0.01 µg/l	TM344			<0.01				
Carbophenothion	<0.01 µg/l	TM344			<0.01				
Triazophos	<0.01 µg/l	TM344			<0.01				

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS25	WS26	WS31	WS54	WS54
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	.	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	18/11/2021	18/11/2021	18/11/2021	18/11/2021	17/11/2021
			Sampled Time	.	.	.	.	.
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164
			Lab Sample No.(s)	25370296	25370314	25370332	25420547	25370208
			AGS Reference	EW1	EW1	EW1		EW1
Phosalone	<0.01 µg/l	TM344			<0.01			
Azinphos methyl	<0.02 µg/l	TM344			<0.02			
Azinphos ethyl	<0.02 µg/l	TM344			<0.02			
Dinitro-o-cresol	<0.1 µg/l	TM411			<0.1			
Clopyralid	<0.04 µg/l	TM411			0.0603			
MCPA	<0.05 µg/l	TM411			<0.05			
Mecoprop	<0.04 µg/l	TM411			0.0623			
Dicamba	<0.04 µg/l	TM411			<0.04			
MCPB	<0.05 µg/l	TM411			<0.05			
2,4-DB	<0.1 µg/l	TM411			<0.1			
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411			<0.05			
Dichlorprop	<0.1 µg/l	TM411			<0.1			
Triclopyr	<0.05 µg/l	TM411			<0.05			
Fenoprop (Silvex)	<0.1 µg/l	TM411			<0.1			
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411			<0.05			
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411			<0.05			
Bromoxynil	<0.04 µg/l	TM411			<0.04			
Benazolin	<0.04 µg/l	TM411			<0.04			
Ioxynil	<0.05 µg/l	TM411			<0.1			
Pentachlorophenol	<0.04 µg/l	TM411			<0.04			
Fluoroxypyr	<0.1 µg/l	TM411			<0.1			

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

PAH Spec MS - Aqueous (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH01	BH02	BH05	BH06	BH07	BH09
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	17/11/2021	17/11/2021	18/11/2021	17/11/2021	18/11/2021	19/11/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164	211119-164
			Lab Sample No.(s)	25370225	25370235	25370263	25370503	25370341	25370372
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
Naphthalene (aq)	<0.01 µg/l	TM178		0.011 #	0.0121 #	0.0272 #	0.164 #	0.0201 #	0.0202 #
Acenaphthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	0.005 #	<0.005 #	<0.005 #
Acenaphthylene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Fluoranthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Phenanthrene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	0.0172 #	0.0147 #	0.0131 #	0.0121 #
Fluorene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	0.015 #	0.0182 #	0.0111 #	0.0107 #
Chrysene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Pyrene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Benzo(a)anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Benzo(b)fluoranthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Benzo(k)fluoranthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Benzo(a)pyrene (aq)	<0.002 µg/l	TM178		<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 #
Dibenzo(a,h)anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Benzo(g,h,i)perylene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Indeno(1,2,3-cd)pyrene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
PAH, Total Detected USEPA 16 (aq)	<0.082 µg/l	TM178		<0.082 #	<0.082 #	<0.082 #	0.202 #	<0.082 #	<0.082 #

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

PAH Spec MS - Aqueous (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH10	BH11	BH12	BH14	BH15	BH16
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	19/11/2021	19/11/2021	19/11/2021	18/11/2021	19/11/2021	16/11/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164	211119-164
			Lab Sample No.(s)	25370396	25370417	25379515	25370217	25370443	25370323
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
Naphthalene (aq)	<0.01 µg/l	TM178		0.0203 #	0.0219 #	<0.01 #	<0.01 #	0.021 #	<0.01 #
Acenaphthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Acenaphthylene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Fluoranthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	0.0097 #	<0.005 #	<0.005 #	<0.005 #
Anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Phenanthrene (aq)	<0.005 µg/l	TM178		0.0144 #	0.0148 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Fluorene (aq)	<0.005 µg/l	TM178		0.0114 #	0.0111 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Chrysene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Pyrene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	0.0089 #	<0.005 #	<0.005 #	<0.005 #
Benzo(a)anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Benzo(b)fluoranthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Benzo(k)fluoranthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Benzo(a)pyrene (aq)	<0.002 µg/l	TM178		<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 #
Dibenzo(a,h)anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Benzo(g,h,i)perylene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Indeno(1,2,3-cd)pyrene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
PAH, Total Detected USEPA 16 (aq)	<0.082 µg/l	TM178		<0.082 #	<0.082 #	<0.082 #	<0.082 #	<0.082 #	<0.082 #

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

PAH Spec MS - Aqueous (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH17	BH18	BH19	BH21	BH22	BH56
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	17/11/2021	16/11/2021	19/11/2021	16/11/2021	19/11/2021	18/11/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164	211119-164
			Lab Sample No.(s)	25370486	25370469	25379517	25370194	25379516	25370276
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
Naphthalene (aq)	<0.01 µg/l	TM178		<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #	0.0267 #
Acenaphthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	0.0082 #	<0.005 #	<0.005 #
Acenaphthylene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Fluoranthene (aq)	<0.005 µg/l	TM178		0.0111 #	<0.005 #	0.008 #	<0.005 #	0.0391 #	<0.005 #
Anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Phenanthrene (aq)	<0.005 µg/l	TM178		0.0135 #	<0.005 #	<0.005 #	0.0892 #	0.0205 #	<0.005 #
Fluorene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Chrysene (aq)	<0.005 µg/l	TM178		0.0083 #	<0.005 #	<0.005 #	0.143 #	0.0273 #	<0.005 #
Pyrene (aq)	<0.005 µg/l	TM178		0.0112 #	<0.005 #	0.0073 #	<0.005 #	0.0339 #	<0.005 #
Benzo(a)anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	0.171 #	0.0167 #	<0.005 #
Benzo(b)fluoranthene (aq)	<0.005 µg/l	TM178		0.0126 #	<0.005 #	<0.005 #	<0.005 #	0.0407 #	<0.005 #
Benzo(k)fluoranthene (aq)	<0.005 µg/l	TM178		0.0059 #	<0.005 #	<0.005 #	<0.005 #	0.0177 #	<0.005 #
Benzo(a)pyrene (aq)	<0.002 µg/l	TM178		0.009 #	<0.002 #	<0.002 #	<0.002 #	0.0275 #	<0.002 #
Dibenzo(a,h)anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Benzo(g,h,i)perylene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	0.128 #	0.0241 #	<0.005 #
Indeno(1,2,3-cd)pyrene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	0.0247 #	<0.005 #
PAH, Total Detected USEPA 16 (aq)	<0.082 µg/l	TM178		<0.082 #	<0.082 #	<0.082 #	0.539 #	0.272 #	<0.082 #

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

PAH Spec MS - Aqueous (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Customer Sample Ref.	BH60	BH61	BH03A	WS08	WS12	WS15
Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
Date Sampled	17/11/2021	17/11/2021	17/11/2021	18/11/2021	17/11/2021	18/11/2021
Sampled Time	.	.	.	.	.	.
Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164	211119-164
Lab Sample No.(s)	25370512	25370521	25370550	25370245	25370559	25370254
AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1

Component	LOD/Units	Method						
Naphthalene (aq)	<0.01 µg/l	TM178	0.241 #	0.0152 #	0.025 #	0.0195 #	0.0764 #	0.0194 #
Acenaphthene (aq)	<0.005 µg/l	TM178	0.0075 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Acenaphthylene (aq)	<0.005 µg/l	TM178	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Fluoranthene (aq)	<0.005 µg/l	TM178	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Anthracene (aq)	<0.005 µg/l	TM178	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Phenanthrene (aq)	<0.005 µg/l	TM178	0.0272 #	0.0107 #	0.0222 #	0.0113 #	0.0233 #	0.0118 #
Fluorene (aq)	<0.005 µg/l	TM178	0.0183 #	0.0074 #	0.0155 #	0.0095 #	0.0141 #	0.0103 #
Chrysene (aq)	<0.005 µg/l	TM178	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Pyrene (aq)	<0.005 µg/l	TM178	0.0072 #	<0.005 #	<0.005 #	<0.005 #	0.0055 #	<0.005 #
Benzo(a)anthracene (aq)	<0.005 µg/l	TM178	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Benzo(b)fluoranthene (aq)	<0.005 µg/l	TM178	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Benzo(k)fluoranthene (aq)	<0.005 µg/l	TM178	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Benzo(a)pyrene (aq)	<0.002 µg/l	TM178	<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 #
Dibenzo(a,h)anthracene (aq)	<0.005 µg/l	TM178	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Benzo(g,h,i)perylene (aq)	<0.005 µg/l	TM178	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Indeno(1,2,3-cd)pyrene (aq)	<0.005 µg/l	TM178	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
PAH, Total Detected USEPA 16 (aq)	<0.082 µg/l	TM178	0.301 #	<0.082 #	<0.082 #	<0.082 #	0.119 #	<0.082 #

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

PAH Spec MS - Aqueous (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS25	WS26	WS31	WS54		
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)		
			Date Sampled	18/11/2021	18/11/2021	18/11/2021	17/11/2021		
			Sampled Time	.	.	.	.		
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021		
			SDG Ref	211119-164	211119-164	211119-164	211119-164		
			Lab Sample No.(s)	25370296	25370314	25370332	25370208		
			AGS Reference	EW1	EW1	EW1	EW1		
Naphthalene (aq)	<0.01 µg/l	TM178		0.0297 #	0.0185 #	0.0149 #	0.0234 #		
Acenaphthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #		
Acenaphthylene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #		
Fluoranthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #		
Anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #		
Phenanthrene (aq)	<0.005 µg/l	TM178		0.0209 #	0.0105 #	0.0087 #	<0.005 #		
Fluorene (aq)	<0.005 µg/l	TM178		0.0158 #	0.0092 #	0.0076 #	<0.005 #		
Chrysene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #		
Pyrene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #		
Benzo(a)anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #		
Benzo(b)fluoranthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #		
Benzo(k)fluoranthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #		
Benzo(a)pyrene (aq)	<0.002 µg/l	TM178		<0.002 #	<0.002 #	<0.002 #	<0.002 #		
Dibenzo(a,h)anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #		
Benzo(g,h,i)perylene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #		
Indeno(1,2,3-cd)pyrene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #		
PAH, Total Detected USEPA 16 (aq)	<0.082 µg/l	TM178		<0.082 #	<0.082 #	<0.082 #	<0.082 #		

SVOC MS (W) - Aqueous

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH11	BH12	BH19	BH61	WS54
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	19/11/2021	19/11/2021	19/11/2021	17/11/2021	17/11/2021
			Sampled Time	.	.	.	.	.
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164
			Lab Sample No.(s)	25370417	25379515	25379517	25370521	25370208
			AGS Reference	EW1	EW1	EW1	EW1	EW1
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
2,4-Dichlorophenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
2,4-Dimethylphenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
2-Chloronaphthalene (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
2-Chlorophenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
2-Methylnaphthalene (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
2-Methylphenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
2-Nitroaniline (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
2-Nitrophenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
3-Nitroaniline (aq)	<1 µg/l	TM176		<1	<1	<10	<1	<1
4-Bromophenylphenylether (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
4-Chloroaniline (aq)	<1 µg/l	TM176		<1	<1	<10	<1	<1
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
4-Methylphenol (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
4-Nitroaniline (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
4-Nitrophenol (aq)	<1 µg/l	TM176		<1	<1	<10	<1	<1
Azobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
Acenaphthylene (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
Acenaphthene (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
Anthracene (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176		<2 #	<2 #	<20 #	<2 #	<2 #
Butylbenzyl phthalate (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #

SVOC MS (W) - Aqueous

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH11	BH12	BH19	BH61	WS54
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	19/11/2021	19/11/2021	19/11/2021	17/11/2021	17/11/2021
			Sampled Time	.	.	.	.	.
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164
			Lab Sample No.(s)	25370417	25379515	25379517	25370521	25370208
			AGS Reference	EW1	EW1	EW1	EW1	EW1
Benzo(a)anthracene (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
Benzo(a)pyrene (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
Carbazole (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
Chrysene (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
Dibenzofuran (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
n-Dibutyl phthalate (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
Diethyl phthalate (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
Dimethyl phthalate (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
n-Dioctyl phthalate (aq)	<5 µg/l	TM176		<5 #	<5 #	<50 #	<5 #	<5 #
Fluoranthene (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
Fluorene (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
Hexachlorobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
Hexachlorobutadiene (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
Pentachlorophenol (aq)	<1 µg/l	TM176		<1	<1	<10	<1	<1
Phenol (aq)	<1 µg/l	TM176		<1	<1	<10	<1	<1
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
Hexachloroethane (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
Nitrobenzene (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
Naphthalene (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
Isophorone (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176		<1	<1	<10	<1	<1
Phenanthrene (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #
Pyrene (aq)	<1 µg/l	TM176		<1 #	<1 #	<10 #	<1 #	<1 #

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

TPH CWG (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH01	BH02	BH05	BH06	BH07	BH09
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	17/11/2021	17/11/2021	18/11/2021	17/11/2021	18/11/2021	19/11/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164	211119-164
			Lab Sample No.(s)	25370225	25370235	25370263	25370503	25370341	25370372
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
GRO Surrogate % recovery**	%	TM245		108	105	99	100	102	107
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #	<50 #	<50 #	<50 #	<50 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Benzene	<7 µg/l	TM245		<7 #	<7 #	<7 #	<7 #	<7 #	<7 #
Toluene	<4 µg/l	TM245		<4 #	<4 #	<4 #	<4 #	<4 #	<4 #
Ethylbenzene	<5 µg/l	TM245		<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
m,p-Xylene	<8 µg/l	TM245		<8 #	<8 #	<8 #	<8 #	<8 #	<8 #
o-Xylene	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Sum of detected Xylenes	<11 µg/l	TM245		<11	<11	<11	<11	<11	<11
Sum of detected BTEX	<28 µg/l	TM245		<28	<28	<28	<28	<28	<28
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C16-C35 Aqueous	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

TPH CWG (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH10	BH11	BH12	BH14	BH15	BH16
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	19/11/2021	19/11/2021	19/11/2021	18/11/2021	19/11/2021	16/11/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164	211119-164
			Lab Sample No.(s)	25370396	25370417	25379515	25370217	25370443	25370323
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
GRO Surrogate % recovery**	%	TM245		101	101	98	104	103	106
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #	<50 #	<50 #	<50 #	<50 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	8 #
Benzene	<7 µg/l	TM245		<7 #	<7 #	<7 #	<7 #	<7 #	<7 #
Toluene	<4 µg/l	TM245		<4 #	<4 #	<4 #	<4 #	<4 #	<4 #
Ethylbenzene	<5 µg/l	TM245		<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
m,p-Xylene	<8 µg/l	TM245		<8 #	<8 #	<8 #	<8 #	<8 #	<8 #
o-Xylene	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Sum of detected Xylenes	<11 µg/l	TM245		<11	<11	<11	<11	<11	<11
Sum of detected BTEX	<28 µg/l	TM245		<28	<28	<28	<28	<28	<28
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	99
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	99
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	108
Aliphatics >C16-C35 Aqueous	<10 µg/l	TM174		<10	<10	<10	<10	<10	99

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

TPH CWG (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH17	BH18	BH19	BH21	BH22	BH56
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	17/11/2021	16/11/2021	19/11/2021	16/11/2021	19/11/2021	18/11/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164	211119-164
			Lab Sample No.(s)	25370486	25370469	25379517	25370194	25379516	25370276
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
GRO Surrogate % recovery**	%	TM245		102	100	94	102	91	108
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #	<50 #	<50 #	<50 #	<50 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Benzene	<7 µg/l	TM245		<7 #	<7 #	<7 #	<7 #	<7 #	<7 #
Toluene	<4 µg/l	TM245		<4 #	<4 #	<4 #	<4 #	<4 #	<4 #
Ethylbenzene	<5 µg/l	TM245		<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
m,p-Xylene	<8 µg/l	TM245		<8 #	<8 #	<8 #	<8 #	<8 #	<8 #
o-Xylene	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Sum of detected Xylenes	<11 µg/l	TM245		<11	<11	<11	<11	<11	<11
Sum of detected BTEX	<28 µg/l	TM245		<28	<28	<28	<28	<28	<28
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	53	14	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	53	14	<10
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		<10	<10	<10	53	14	<10
Aliphatics >C16-C35 Aqueous	<10 µg/l	TM174		<10	<10	<10	53	14	<10

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

TPH CWG (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH60	BH61	BH03A	WS08	WS12	WS15
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	17/11/2021	17/11/2021	17/11/2021	18/11/2021	17/11/2021	18/11/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164	211119-164
			Lab Sample No.(s)	25370512	25370521	25370550	25370245	25370559	25370254
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
GRO Surrogate % recovery**	%	TM245		104	106	101	99	106	104
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #	<50 #	<50 #	<50 #	<50 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Benzene	<7 µg/l	TM245		<7 #	<7 #	<7 #	<7 #	<7 #	<7 #
Toluene	<4 µg/l	TM245		<4 #	<4 #	<4 #	<4 #	<4 #	<4 #
Ethylbenzene	<5 µg/l	TM245		<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
m,p-Xylene	<8 µg/l	TM245		<8 #	<8 #	<8 #	<8 #	<8 #	<8 #
o-Xylene	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Sum of detected Xylenes	<11 µg/l	TM245		<11	<11	<11	<11	<11	<11
Sum of detected BTEX	<28 µg/l	TM245		<28	<28	<28	<28	<28	<28
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C16-C35 Aqueous	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS25	WS26	WS31	WS54		
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00		
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)		
			Date Sampled	18/11/2021	18/11/2021	18/11/2021	17/11/2021		
			Sampled Time	.	.	.	.		
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021		
			SDG Ref	211119-164	211119-164	211119-164	211119-164		
			Lab Sample No.(s)	25370296	25370314	25370332	25370208		
			AGS Reference	EW1	EW1	EW1	EW1		
GRO Surrogate % recovery**	%	TM245		110	104	105	95		
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #	<50 #	<50 #		
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #		
Benzene	<7 µg/l	TM245		<7 #	<7 #	<7 #	<7 #		
Toluene	<4 µg/l	TM245		<4 #	<4 #	<4 #	<4 #		
Ethylbenzene	<5 µg/l	TM245		<5 #	<5 #	<5 #	<5 #		
m,p-Xylene	<8 µg/l	TM245		<8 #	<8 #	<8 #	<8 #		
o-Xylene	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #		
Sum of detected Xylenes	<11 µg/l	TM245		<11	<11	<11	<11		
Sum of detected BTEX	<28 µg/l	TM245		<28	<28	<28	<28		
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	<10		
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10	<10		
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	<10	<10		
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	<10	<10		
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10		
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10		
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10		
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10		
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10	<10		
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10	<10		
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	<10	<10		
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	<10	<10		
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10		
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10		
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10		
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10		
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10		
Aliphatics >C16-C35 Aqueous	<10 µg/l	TM174		<10	<10	<10	<10		

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH11	BH12	BH19	BH61	WS54
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	19/11/2021	19/11/2021	19/11/2021	17/11/2021	17/11/2021
			Sampled Time	.	.	.	.	.
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164
			Lab Sample No.(s)	25370417	25379515	25379517	25370521	25370208
			AGS Reference	EW1	EW1	EW1	EW1	EW1
Dibromofluoromethane**	%	TM208		110	111	109	112	110
Toluene-d8**	%	TM208		98.9	101	101	99.7	99.5
4-Bromofluorobenzene**	%	TM208		98.9	101	102	99.3	100
Dichlorodifluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Chloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Vinyl chloride	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Bromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Chloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Trichlorofluoromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Carbon disulphide	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Dichloromethane	<3 µg/l	TM208		<3 #	<3 #	<3 #	<3 #	<3 #
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
trans-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
cis-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
2,2-Dichloropropane	<1 µg/l	TM208		<1	<1	<1	<1	<1
Bromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Chloroform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,1,1-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Carbontetrachloride	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Benzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Trichloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Dibromomethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Bromodichloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
cis-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Toluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
trans-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,1,2-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH11	BH12	BH19	BH61	WS54
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	19/11/2021	19/11/2021	19/11/2021	17/11/2021	17/11/2021
			Sampled Time	.	.	.	.	.
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164
			Lab Sample No.(s)	25370417	25379515	25379517	25370521	25370208
			AGS Reference	EW1	EW1	EW1	EW1	EW1
1,3-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Tetrachloroethene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Dibromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dibromoethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Chlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Ethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
m,p-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
o-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Styrene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Bromoform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Isopropylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,2,3-Trichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Bromobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Propylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
2-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,3,5-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
4-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
tert-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,2,4-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
sec-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
4-iso-Propyltoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,4-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
n-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208		<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Hexachlorobutadiene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Naphthalene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+S@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH11	BH12	BH19	BH61	WS54
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	19/11/2021	19/11/2021	19/11/2021	17/11/2021	17/11/2021
			Sampled Time	.	.	.	.	.
			Date Received	19/11/2021	19/11/2021	19/11/2021	19/11/2021	19/11/2021
			SDG Ref	211119-164	211119-164	211119-164	211119-164	211119-164
			Lab Sample No.(s)	25370417	25379515	25379517	25370521	25370208
			AGS Reference	EW1	EW1	EW1	EW1	EW1
1,2,3-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,3,5-Trichlorobenzene	<1 µg/l	TM208		<1	<1	<1	<1	<1

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Notification of NDPs (No determination possible)

Date Received : 19/11/2021 15:43:50

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
25370443	BH15 EW1	0.00 - 0.00	Ammonium Low	Sample(s) lost
25370443	BH15 EW1	0.00 - 0.00	Phenols by HPLC (W)	Sample(s) lost

Table of Results - Appendix

Method No	Reference	Description
SUB		Subcontracted Test
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM343	EPA 8270D - Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of Selected Pesticides (Suite I) in Liquids by GCMS
TM344	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite II) by GCMS
TM411	Acid_Herbs_GCMS	Acid Herbs in Water by GCMS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Test Completion Dates

Lab Sample No(s)	25370225	25370235	25370263	25370503	25370341	25370372	25370396	25370417	25379515	25370217
Customer Sample Ref.	BH01	BH02	BH05	BH06	BH07	BH09	BH10	BH11	BH12	BH14
AGS Ref.	EW1	EW1	EW1	EW1	EW1	EW1	EW1	EW1	EW1	EW1
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Acid Herbicides by GCMS	25-Nov-2021					25-Nov-2021				
Ammonium Low	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021
Anions by Kone (w)	24-Nov-2021	26-Nov-2021	23-Nov-2021	24-Nov-2021	23-Nov-2021	23-Nov-2021	23-Nov-2021	23-Nov-2021	24-Nov-2021	24-Nov-2021
Clostridium Perfringens*									01-Dec-2021	01-Dec-2021
Cyanide Comp/Free/Total/Thiocyanate	23-Nov-2021	25-Nov-2021	23-Nov-2021	24-Nov-2021	23-Nov-2021	23-Nov-2021	23-Nov-2021	23-Nov-2021	24-Nov-2021	23-Nov-2021
Dissolved Metals by ICP-MS	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	26-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021
Dissolved Organic/Inorganic Carbon	11-Dec-2021	10-Dec-2021	11-Dec-2021	10-Dec-2021	10-Dec-2021	10-Dec-2021	11-Dec-2021	10-Dec-2021	11-Dec-2021	11-Dec-2021
EPH CWG (Aliphatic) Aqueous GC (W)	28-Nov-2021	28-Nov-2021	28-Nov-2021	28-Nov-2021	28-Nov-2021	28-Nov-2021	28-Nov-2021	28-Nov-2021	28-Nov-2021	28-Nov-2021
EPH CWG (Aromatic) Aqueous GC (W)	28-Nov-2021	28-Nov-2021	28-Nov-2021	28-Nov-2021	28-Nov-2021	28-Nov-2021	28-Nov-2021	28-Nov-2021	28-Nov-2021	28-Nov-2021
Faecal Coliforms (W)*									29-Nov-2021	01-Dec-2021
Faecal Streptococci (W)*									01-Dec-2021	01-Dec-2021
GRO by GC-FID (W)	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021
Hexavalent Chromium (w)	25-Nov-2021	25-Nov-2021	23-Nov-2021	25-Nov-2021	23-Nov-2021	23-Nov-2021	23-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021
Mercury Dissolved	25-Nov-2021	25-Nov-2021	24-Nov-2021	25-Nov-2021	23-Nov-2021	24-Nov-2021	23-Nov-2021	24-Nov-2021	25-Nov-2021	24-Nov-2021
Nitrite by Kone (w)	23-Nov-2021	25-Nov-2021	23-Nov-2021	24-Nov-2021	23-Nov-2021	23-Nov-2021	23-Nov-2021	23-Nov-2021	24-Nov-2021	23-Nov-2021
PAH Spec MS - Aqueous (W)	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021
Pesticides (Suite I) by GCMS	29-Nov-2021					29-Nov-2021				
Pesticides (Suite II) by GCMS	29-Nov-2021					29-Nov-2021				
pH Value	25-Nov-2021	24-Nov-2021	24-Nov-2021	24-Nov-2021	24-Nov-2021	24-Nov-2021	24-Nov-2021	24-Nov-2021	24-Nov-2021	25-Nov-2021
Phenols by HPLC (W)	24-Nov-2021	25-Nov-2021	24-Nov-2021	24-Nov-2021	24-Nov-2021	24-Nov-2021	24-Nov-2021	24-Nov-2021	25-Nov-2021	24-Nov-2021
Sulphide	24-Nov-2021	26-Nov-2021	26-Nov-2021	24-Nov-2021	26-Nov-2021	26-Nov-2021	26-Nov-2021	24-Nov-2021	24-Nov-2021	24-Nov-2021
SVOC MS (W) - Aqueous								25-Nov-2021	25-Nov-2021	
Total Coliforms (W)*									01-Dec-2021	01-Dec-2021
Total Metals by ICP-MS	25-Nov-2021	25-Nov-2021	24-Nov-2021	25-Nov-2021	24-Nov-2021	24-Nov-2021	24-Nov-2021	24-Nov-2021	25-Nov-2021	25-Nov-2021
TPH CWG (W)	28-Nov-2021	28-Nov-2021	28-Nov-2021	28-Nov-2021	28-Nov-2021	28-Nov-2021	28-Nov-2021	28-Nov-2021	28-Nov-2021	28-Nov-2021
VOC MS (W)								24-Nov-2021	24-Nov-2021	

Lab Sample No(s)	25370443	25370323	25370486	25370469	25379517	25370194	25379516	25370276	25370512	25370521
Customer Sample Ref.	BH15	BH16	BH17	BH18	BH19	BH21	BH22	BH56	BH60	BH61
AGS Ref.	EW1	EW1	EW1	EW1	EW1	EW1	EW1	EW1	EW1	EW1
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Acid Herbicides by GCMS	25-Nov-2021					25-Nov-2021	25-Nov-2021			25-Nov-2021
Ammonium Low	01-Dec-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021
Anions by Kone (w)	24-Nov-2021	23-Nov-2021	23-Nov-2021	23-Nov-2021	24-Nov-2021	23-Nov-2021	24-Nov-2021	23-Nov-2021	24-Nov-2021	26-Nov-2021
Cyanide Comp/Free/Total/Thiocyanate	23-Nov-2021	23-Nov-2021	23-Nov-2021	23-Nov-2021	24-Nov-2021	23-Nov-2021	24-Nov-2021	23-Nov-2021	24-Nov-2021	25-Nov-2021
Dissolved Metals by ICP-MS	25-Nov-2021	25-Nov-2021	26-Nov-2021	25-Nov-2021	25-Nov-2021	26-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021
Dissolved Organic/Inorganic Carbon	10-Dec-2021	10-Dec-2021	10-Dec-2021	10-Dec-2021	10-Dec-2021	10-Dec-2021	11-Dec-2021	10-Dec-2021	10-Dec-2021	10-Dec-2021
EPH CWG (Aliphatic) Aqueous GC (W)	28-Nov-2021	28-Nov-2021	28-Nov-2021	28-Nov-2021	30-Nov-2021	28-Nov-2021	28-Nov-2021	28-Nov-2021	25-Nov-2021	28-Nov-2021
EPH CWG (Aromatic) Aqueous GC (W)	28-Nov-2021	28-Nov-2021	28-Nov-2021	28-Nov-2021	30-Nov-2021	28-Nov-2021	28-Nov-2021	28-Nov-2021	25-Nov-2021	28-Nov-2021
GRO by GC-FID (W)	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021
Hexavalent Chromium (w)	25-Nov-2021	23-Nov-2021	23-Nov-2021	23-Nov-2021	25-Nov-2021	23-Nov-2021	25-Nov-2021	23-Nov-2021	25-Nov-2021	25-Nov-2021
Mercury Dissolved	24-Nov-2021	24-Nov-2021	24-Nov-2021	23-Nov-2021	25-Nov-2021	24-Nov-2021	25-Nov-2021	23-Nov-2021	24-Nov-2021	25-Nov-2021
Nitrite by Kone (w)	23-Nov-2021	23-Nov-2021	23-Nov-2021	23-Nov-2021	24-Nov-2021	23-Nov-2021	24-Nov-2021	23-Nov-2021	24-Nov-2021	24-Nov-2021
PAH Spec MS - Aqueous (W)	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	26-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021
Pesticides (Suite I) by GCMS	29-Nov-2021					29-Nov-2021	29-Nov-2021			29-Nov-2021
Pesticides (Suite II) by GCMS	29-Nov-2021					29-Nov-2021	29-Nov-2021			29-Nov-2021
pH Value	25-Nov-2021	24-Nov-2021	24-Nov-2021	24-Nov-2021	24-Nov-2021	24-Nov-2021	24-Nov-2021	24-Nov-2021	24-Nov-2021	24-Nov-2021
Phenols by HPLC (W)	01-Dec-2021	24-Nov-2021	24-Nov-2021	24-Nov-2021	25-Nov-2021	24-Nov-2021	25-Nov-2021	24-Nov-2021	24-Nov-2021	25-Nov-2021
Sulphide	26-Nov-2021	26-Nov-2021	26-Nov-2021	26-Nov-2021	24-Nov-2021	26-Nov-2021	24-Nov-2021	26-Nov-2021	26-Nov-2021	24-Nov-2021
SVOC MS (W) - Aqueous					25-Nov-2021					25-Nov-2021
Total Metals by ICP-MS	25-Nov-2021	24-Nov-2021	24-Nov-2021	24-Nov-2021	25-Nov-2021	24-Nov-2021	25-Nov-2021	24-Nov-2021	25-Nov-2021	24-Nov-2021
TPH CWG (W)	28-Nov-2021	28-Nov-2021	28-Nov-2021	28-Nov-2021	30-Nov-2021	28-Nov-2021	28-Nov-2021	28-Nov-2021	25-Nov-2021	28-Nov-2021
VOC MS (W)					24-Nov-2021					24-Nov-2021

CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Lab Sample No(s)	25370550	25370245	25370559	25370254	25370296	25370314	25370332	25370208	25420547
Customer Sample Ref.	BH03A	WS08	WS12	WS15	WS25	WS26	WS31	WS54	WS54
AGS Ref.	EW1	EW1	EW1	EW1	EW1	EW1	EW1	EW1	
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Acid Herbicides by GCMS				25-Nov-2021		25-Nov-2021			
Ammonium Low	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	
Anions by Kone (w)	24-Nov-2021	24-Nov-2021	24-Nov-2021	26-Nov-2021	24-Nov-2021	26-Nov-2021	24-Nov-2021	26-Nov-2021	
Clostridium Perfringens*									01-Dec-2021
Cyanide Comp/Free/Total/Thiocyanate	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	24-Nov-2021	25-Nov-2021	24-Nov-2021	25-Nov-2021	
Dissolved Metals by ICP-MS	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	
Dissolved Organic/Inorganic Carbon	11-Dec-2021	10-Dec-2021	11-Dec-2021	10-Dec-2021	10-Dec-2021	11-Dec-2021	10-Dec-2021	10-Dec-2021	
EPH CWG (Aliphatic) Aqueous GC (W)	28-Nov-2021	28-Nov-2021	30-Nov-2021	28-Nov-2021	25-Nov-2021	30-Nov-2021	28-Nov-2021	28-Nov-2021	
EPH CWG (Aromatic) Aqueous GC (W)	28-Nov-2021	28-Nov-2021	30-Nov-2021	28-Nov-2021	25-Nov-2021	30-Nov-2021	28-Nov-2021	28-Nov-2021	
Faecal Coliforms (W)*									01-Dec-2021
Faecal Streptococci (W)*									01-Dec-2021
GRO by GC-FID (W)	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	25-Nov-2021	
Hexavalent Chromium (w)	25-Nov-2021	25-Nov-2021	25-Nov-2021	23-Nov-2021	25-Nov-2021	23-Nov-2021	25-Nov-2021	23-Nov-2021	
Mercury Dissolved	25-Nov-2021	25-Nov-2021	25-Nov-2021	24-Nov-2021	24-Nov-2021	25-Nov-2021	24-Nov-2021	25-Nov-2021	
Nitrite by Kone (w)	24-Nov-2021	24-Nov-2021	24-Nov-2021	25-Nov-2021	24-Nov-2021	24-Nov-2021	24-Nov-2021	24-Nov-2021	
PAH Spec MS - Aqueous (W)	25-Nov-2021	25-Nov-2021	26-Nov-2021	25-Nov-2021	25-Nov-2021	26-Nov-2021	25-Nov-2021	25-Nov-2021	
Pesticides (Suite I) by GCMS				29-Nov-2021		29-Nov-2021			
Pesticides (Suite II) by GCMS				29-Nov-2021		25-Nov-2021			
pH Value	24-Nov-2021	25-Nov-2021	25-Nov-2021	24-Nov-2021	24-Nov-2021	24-Nov-2021	25-Nov-2021	24-Nov-2021	
Phenols by HPLC (W)	25-Nov-2021	25-Nov-2021	25-Nov-2021	24-Nov-2021	24-Nov-2021	25-Nov-2021	24-Nov-2021	24-Nov-2021	
Sulphide	26-Nov-2021	26-Nov-2021	26-Nov-2021	26-Nov-2021	26-Nov-2021	26-Nov-2021	24-Nov-2021	26-Nov-2021	
SVOC MS (W) - Aqueous								25-Nov-2021	
Total Coliforms (W)*									01-Dec-2021
Total Metals by ICP-MS	25-Nov-2021	25-Nov-2021	25-Nov-2021	24-Nov-2021	25-Nov-2021	24-Nov-2021	25-Nov-2021	24-Nov-2021	
TPH CWG (W)	28-Nov-2021	28-Nov-2021	30-Nov-2021	28-Nov-2021	25-Nov-2021	30-Nov-2021	28-Nov-2021	28-Nov-2021	
VOC MS (W)								24-Nov-2021	

ASSOCIATED AQC DATA

Acid Herbicides by GCMS

Component	Method Code	QC 2567
2,3,6-TBA (Raw)	TM411	**104.96** 72.24 : 118.28
2,4,5-T (Raw)	TM411	**98.06** 66.88 : 130.00
2,4-D (Raw)	TM411	**105.5** 68.29 : 133.58
2,4-DB (Raw)	TM411	**112.01** 57.23 : 133.50
Benazolin (Raw)	TM411	**114.66** 78.76 : 146.78
Bromoxynil (Raw)	TM411	**106.01** 77.69 : 118.97
Clopyralid (Raw)	TM411	**101.24** 64.11 : 124.08
Dicamba (Raw)	TM411	**110.64** 77.45 : 123.02
Dichloroprop (Raw)	TM411	**100.47** 74.86 : 126.35
DNOC (Raw)	TM411	**95.57** 65.53 : 129.07
Fenoprop (Raw)	TM411	**104.67** 74.33 : 126.19
Fluroxypyr (Raw)	TM411	**111.13** 80.51 : 140.78
Ioxynil (Raw)	TM411	**89.25** 42.19 : 122.44
MCPA (Raw)	TM411	**104.52** 79.83 : 124.11
MCPB (Raw)	TM411	**103.28** 33.12 : 147.97
Mecoprop (Raw)	TM411	**110.11** 80.77 : 125.74
Pentachlorophenol (Raw)	TM411	**108.4** 76.67 : 131.12
Triclopyr (Raw)	TM411	**103.98** 69.64 : 132.21

Ammonium Low

Component	Method Code	QC 2544	QC 2524	QC 2566	QC 2525	QC 2543	QC 2539
Ammoniacal Nitrogen as N	TM099	**100.4** 91.04 : 105.68	**103.2** 94.00 : 106.00	**103.6** 94.00 : 106.00	**103.4** 94.00 : 106.00	**103.8** 94.00 : 106.00	**103.0** 94.00 : 106.00

Anions by Kone (w)

Anions by Kone (w)

Component	Method Code	QC 2530	QC 2576
Sulphate (soluble)	TM184	**99.6** 91.99 : 109.30	**104.4** 90.53 : 113.03
TON as NO3	TM184	**98.0** 90.35 : 108.35	**107.0** 99.15 : 110.25

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2502	QC 2554	QC 2581	QC 2538
Free Cyanide (W)	TM227	**85.25** 90.67 : 122.67	**84.5** 90.67 : 122.67	**88.75** 90.67 : 122.67	**86.0** 90.67 : 122.67
Thiocyanate (W)	TM227	**108.5** 92.25 : 117.75	**103.0** 92.25 : 117.75	**108.75** 92.25 : 117.75	**107.25** 92.25 : 117.75
Total Cyanide (W)	TM227	**106.25** 96.25 : 112.75	**102.0** 96.25 : 112.75	**109.5** 96.25 : 112.75	**102.5** 96.25 : 112.75

Dissolved Metals by ICP-MS

Component	Method Code	QC 2516	QC 2591	QC 2596	QC 2592	QC 2559	QC 2526
Aluminium	TM152	**100.33** 90.98 : 111.82	**101.33** 90.98 : 111.82	**100.67** 90.98 : 111.82	**102.0** 90.98 : 111.82	**102.33** 90.98 : 111.82	**103.0** 90.98 : 111.82
Antimony	TM152	**102.67** 90.44 : 113.04	**101.0** 90.44 : 113.04	**103.5** 90.44 : 113.04	**103.0** 90.44 : 113.04	**105.5** 90.44 : 113.04	**105.0** 90.44 : 113.04
Arsenic	TM152	**102.67** 88.00 : 112.00	**101.17** 88.00 : 112.00	**101.33** 88.00 : 112.00	**102.0** 88.00 : 112.00	**103.0** 88.00 : 112.00	**101.33** 88.00 : 112.00
Barium	TM152	**102.67** 90.20 : 111.19	**100.5** 90.20 : 111.19	**102.83** 90.20 : 111.19	**101.17** 90.20 : 111.19	**103.33** 90.20 : 111.19	**102.0** 90.20 : 111.19
Beryllium	TM152	**100.67** 87.77 : 113.97	**101.0** 87.77 : 113.97	**100.5** 87.77 : 113.97	**101.0** 87.77 : 113.97	**104.0** 87.77 : 113.97	**102.33** 87.77 : 113.97
Bismuth	TM152	**101.5** 91.90 : 112.20	**100.17** 91.90 : 112.20	**101.83** 91.90 : 112.20	**102.33** 91.90 : 112.20	**101.83** 91.90 : 112.20	**104.83** 91.90 : 112.20
Borate	TM152	**101.85** 88.00 : 112.00	**104.94** 88.00 : 112.00	**102.47** 88.00 : 112.00	**101.23** 88.00 : 112.00	**104.32** 88.00 : 112.00	**103.7** 88.00 : 112.00
Boron	TM152	**101.67** 92.27 : 112.40	**105.0** 92.27 : 112.40	**102.33** 92.27 : 112.40	**101.67** 92.27 : 112.40	**104.0** 92.27 : 112.40	**104.0** 92.27 : 112.40
Cadmium	TM152	**102.83** 96.43 : 110.53	**102.5** 96.43 : 110.53	**104.17** 96.43 : 110.53	**103.33** 96.43 : 110.53	**103.33** 96.43 : 110.53	**103.33** 96.43 : 110.53
Calcium	TM152	**102.0** 95.14 : 110.01	**102.0** 95.14 : 110.01	**102.67** 95.14 : 110.01	**101.33** 95.14 : 110.01	**104.0** 95.14 : 110.01	**102.67** 95.14 : 110.01
Chromium	TM152	**101.33** 91.84 : 108.67	**101.0** 91.84 : 108.67	**100.83** 91.84 : 108.67	**101.33** 91.84 : 108.67	**102.67** 91.84 : 108.67	**101.83** 91.84 : 108.67
Cobalt	TM152	**102.17** 88.00 : 112.00	**100.67** 88.00 : 112.00	**102.0** 88.00 : 112.00	**101.33** 88.00 : 112.00	**103.17** 88.00 : 112.00	**100.83** 88.00 : 112.00
Copper	TM152	**102.67** 94.47 : 109.05	**102.17** 94.47 : 109.05	**102.17** 94.47 : 109.05	**102.83** 94.47 : 109.05	**104.17** 94.47 : 109.05	**103.0** 94.47 : 109.05
Iron	TM152	**102.0** 93.23 : 106.27	**101.33** 93.23 : 106.27	**100.67** 93.23 : 106.27	**100.67** 93.23 : 106.27	**103.33** 93.23 : 106.27	**101.33** 93.23 : 106.27
Lead	TM152	**101.17** 88.00 : 112.00	**100.0** 88.00 : 112.00	**101.5** 88.00 : 112.00	**101.67** 88.00 : 112.00	**101.33** 88.00 : 112.00	**103.17** 88.00 : 112.00
Lithium	TM152	**99.33** 91.62 : 113.12	**101.17** 91.62 : 113.12	**99.17** 91.62 : 113.12	**100.0** 91.62 : 113.12	**104.0** 91.62 : 113.12	**103.0** 91.62 : 113.12
Magnesium	TM152	**100.67** 87.77 : 110.48	**102.0** 87.77 : 110.48	**100.67** 87.77 : 110.48	**100.67** 87.77 : 110.48	**104.67** 87.77 : 110.48	**102.67** 87.77 : 110.48

Dissolved Metals by ICP-MS

		QC 2516	QC 2591	QC 2596	QC 2592	QC 2559	QC 2526
Manganese	TM152	102.33 95.03 : 110.58	101.33 95.03 : 110.58	100.83 95.03 : 110.58	100.5 95.03 : 110.58	103.33 95.03 : 110.58	101.33 95.03 : 110.58
Molybdenum	TM152	101.17 88.00 : 112.00	99.17 88.00 : 112.00	102.0 88.00 : 112.00	101.83 88.00 : 112.00	102.83 88.00 : 112.00	102.0 88.00 : 112.00
Nickel	TM152	103.67 88.00 : 112.00	102.0 88.00 : 112.00	102.67 88.00 : 112.00	102.5 88.00 : 112.00	104.0 88.00 : 112.00	102.5 88.00 : 112.00
Phosphorus	TM152	99.33 91.54 : 107.12	100.33 91.54 : 107.12	98.33 91.54 : 107.12	97.83 91.54 : 107.12	103.83 91.54 : 107.12	99.67 91.54 : 107.12
Potassium	TM152	101.33 92.16 : 109.93	100.67 92.16 : 109.93	101.33 92.16 : 109.93	100.67 92.16 : 109.93	104.0 92.16 : 109.93	102.0 92.16 : 109.93
Selenium	TM152	101.17 91.58 : 115.98	101.67 91.58 : 115.98	100.83 91.58 : 115.98	99.83 91.58 : 115.98	103.17 91.58 : 115.98	102.5 91.58 : 115.98
Silver	TM152	101.67 92.75 : 111.05	99.33 92.75 : 111.05	102.0 92.75 : 111.05	103.0 92.75 : 111.05	102.83 92.75 : 111.05	103.0 92.75 : 111.05
Sodium	TM152	98.67 89.47 : 109.62	100.0 89.47 : 109.62	100.0 89.47 : 109.62	98.67 89.47 : 109.62	104.0 89.47 : 109.62	98.67 89.47 : 109.62
Strontium	TM152	103.0 88.00 : 112.00	102.0 88.00 : 112.00	102.67 88.00 : 112.00	100.67 88.00 : 112.00	101.67 88.00 : 112.00	102.67 88.00 : 112.00
Tellurium	TM152	106.0 93.32 : 114.66	103.0 93.32 : 114.66	107.17 93.32 : 114.66	104.17 93.32 : 114.66	105.67 93.32 : 114.66	104.17 93.32 : 114.66
Thallium	TM152	97.17 88.00 : 112.00	95.0 88.00 : 112.00	98.0 88.00 : 112.00	96.17 88.00 : 112.00	96.33 88.00 : 112.00	100.17 88.00 : 112.00
Tin	TM152	103.33 92.63 : 109.70	102.17 92.63 : 109.70	103.5 92.63 : 109.70	103.17 92.63 : 109.70	103.83 92.63 : 109.70	105.0 92.63 : 109.70
Titanium	TM152	104.17 95.58 : 111.68	103.67 95.58 : 111.68	103.33 95.58 : 111.68	101.5 95.58 : 111.68	105.67 95.58 : 111.68	104.67 95.58 : 111.68
Tungsten	TM152	101.0 81.32 : 124.72	102.17 81.32 : 124.72	102.0 81.32 : 124.72	102.0 81.32 : 124.72	101.33 81.32 : 124.72	102.17 81.32 : 124.72
Uranium	TM152	100.17 88.00 : 112.00	100.83 88.00 : 112.00	101.67 88.00 : 112.00	101.5 88.00 : 112.00	100.17 88.00 : 112.00	103.5 88.00 : 112.00
Vanadium	TM152	102.33 88.00 : 112.00	99.83 88.00 : 112.00	99.5 88.00 : 112.00	100.67 88.00 : 112.00	105.17 88.00 : 112.00	102.33 88.00 : 112.00
Zinc	TM152	102.67 92.98 : 118.95	101.67 92.98 : 118.95	102.67 92.98 : 118.95	104.0 92.98 : 118.95	104.0 92.98 : 118.95	104.0 92.98 : 118.95

Component	Method Code	QC 2563
Aluminium	TM152	102.33 90.98 : 111.82
Antimony	TM152	101.17 90.44 : 113.04
Arsenic	TM152	100.83 88.00 : 112.00
Barium	TM152	100.5 90.20 : 111.19
Beryllium	TM152	101.67 87.77 : 113.97
Bismuth	TM152	100.67 91.90 : 112.20
Borate	TM152	103.7 88.00 : 112.00
Boron	TM152	103.67 92.27 : 112.40
Cadmium	TM152	102.5 96.43 : 110.53

Dissolved Metals by ICP-MS

		QC 2563
Calcium	TM152	**102.67** 95.14 : 110.01
Chromium	TM152	**101.67** 91.84 : 108.67
Cobalt	TM152	**100.83** 88.00 : 112.00
Copper	TM152	**100.5** 94.47 : 109.05
Iron	TM152	**101.33** 93.23 : 106.27
Lead	TM152	**101.0** 88.00 : 112.00
Lithium	TM152	**101.83** 91.62 : 113.12
Magnesium	TM152	**103.33** 87.77 : 110.48
Manganese	TM152	**101.67** 95.03 : 110.58
Molybdenum	TM152	**100.0** 88.00 : 112.00
Nickel	TM152	**100.5** 88.00 : 112.00
Phosphorus	TM152	**100.0** 91.54 : 107.12
Potassium	TM152	**102.0** 92.16 : 109.93
Selenium	TM152	**102.33** 91.58 : 115.98
Silver	TM152	**99.5** 92.75 : 111.05
Sodium	TM152	**101.33** 89.47 : 109.62
Strontium	TM152	**102.0** 88.00 : 112.00
Tellurium	TM152	**102.83** 93.32 : 114.66
Thallium	TM152	**97.17** 88.00 : 112.00
Tin	TM152	**101.67** 92.63 : 109.70
Titanium	TM152	**102.5** 95.58 : 111.68
Tungsten	TM152	**101.5** 81.32 : 124.72
Uranium	TM152	**100.33** 88.00 : 112.00
Vanadium	TM152	**102.67** 88.00 : 112.00
Zinc	TM152	**101.67** 92.98 : 118.95

Dissolved Organic/Inorganic Carbon

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2544	QC 2510
Dissolved Inorganic Carbon	TM090	**113.5** 93.58 : 112.28	**103.5** 93.58 : 112.28
Dissolved Organic Carbon	TM090	**103.5** 97.80 : 107.10	**103.67** 97.80 : 107.10

EPH CWG (Aliphatic) Aqueous GC (W)

Component	Method Code	QC 2534	QC 2567	QC 2534	QC 2564
Total Aliphatics >C10-C40	TM174	**102.15** 68.59 : 134.82	**97.52** 65.58 : 141.57	**103.3** 65.58 : 141.57	**106.11** 69.79 : 134.39

EPH CWG (Aromatic) Aqueous GC (W)

Component	Method Code	QC 2546	QC 2574	QC 2579	QC 2569
Total Aromatics >EC10-EC40	TM174	**94.15** 60.75 : 129.09	**93.17** 60.75 : 129.09	**83.17** 60.75 : 129.09	**89.02** 59.92 : 128.54

GRO by GC-FID (W)

Component	Method Code	QC 2525	QC 2540	QC 2564
Benzene by GC	TM245	**100.0** 83.48 : 117.21	**101.5** 83.48 : 117.21	**105.5** 79.13 : 118.84
Ethylbenzene by GC	TM245	**99.0** 84.11 : 114.89	**100.0** 84.11 : 114.89	**105.0** 79.54 : 115.99
m & p Xylene by GC	TM245	**97.75** 83.73 : 116.33	**98.0** 83.73 : 116.33	**103.0** 78.44 : 116.32
MTBE GC-FID	TM245	**95.0** 84.42 : 117.50	**97.0** 84.42 : 117.50	**100.0** 81.43 : 120.09
o Xylene by GC	TM245	**100.5** 85.03 : 117.59	**101.0** 85.03 : 117.59	**106.0** 76.85 : 120.29
QC	TM245	**78.27** 60.71 : 137.65	**73.97** 60.71 : 137.65	**100.56** 71.58 : 131.01
Toluene by GC	TM245	**98.0** 84.73 : 116.85	**99.0** 84.73 : 116.85	**103.5** 79.00 : 121.96

Hexavalent Chromium (w)

Component	Method Code	QC 2575	QC 2590	QC 2556	QC 2520
Hexavalent Chromium	TM241	**99.6** 94.17 : 106.17	**98.8** 94.17 : 106.17	**97.8** 94.17 : 106.17	**99.2** 94.17 : 106.17

Mercury Dissolved

Mercury Dissolved

Component	Method Code	QC 2532	QC 2544	QC 2544	QC 2561	QC 2569	QC 2522
Mercury Dissolved (CVAF)	TM183	**96.2** 0.00 : 0.00	**97.2** 0.00 : 0.00	**94.9** 0.00 : 0.00	**91.7** 0.00 : 0.00	**95.5** 0.00 : 0.00	**92.6** 0.00 : 0.00

Component	Method Code	QC 2554
Mercury Dissolved (CVAF)	TM183	**90.1** 0.00 : 0.00

PAH Spec MS - Aqueous (W)

Component	Method Code	QC 2558	QC 2584	QC 2507	QC 2586
Acenaphthene by GCMS	TM178	**110.0** 90.45 : 118.63	**103.2** 90.45 : 118.63	**104.8** 90.45 : 118.63	**104.4** 90.45 : 118.63
Acenaphthylene by GCMS	TM178	**110.8** 90.13 : 116.27	**97.6** 90.13 : 116.27	**104.0** 90.13 : 116.27	**104.8** 90.13 : 116.27
Anthracene by GCMS	TM178	**107.6** 92.40 : 114.00	**97.2** 92.40 : 114.00	**102.4** 92.40 : 114.00	**105.6** 92.40 : 114.00
Benz(a)anthracene by GCMS	TM178	**108.4** 89.51 : 117.69	**95.6** 89.51 : 117.69	**100.0** 89.51 : 117.69	**103.6** 89.51 : 117.69
Benzo(a)pyrene by GCMS	TM178	**104.4** 89.43 : 118.57	**98.0** 89.43 : 118.57	**99.6** 89.43 : 118.57	**104.4** 89.43 : 118.57
Benzo(b)fluoranthene by GCMS	TM178	**103.6** 87.80 : 121.80	**106.4** 87.80 : 121.80	**101.2** 87.80 : 121.80	**101.6** 87.80 : 121.80
Benzo(ghi)perylene by GCMS	TM178	**108.4** 87.10 : 119.30	**103.2** 87.10 : 119.30	**108.0** 87.10 : 119.30	**106.8** 87.10 : 119.30
Benzo(k)fluoranthene by GCMS	TM178	**109.6** 93.23 : 123.57	**96.4** 93.23 : 123.57	**100.4** 93.23 : 123.57	**104.8** 93.23 : 123.57
Chrysene by GCMS	TM178	**110.0** 88.68 : 116.92	**105.2** 88.68 : 116.92	**106.8** 88.68 : 116.92	**105.2** 88.68 : 116.92
Dibenzo(ah)anthracene by GCMS	TM178	**106.4** 86.24 : 118.56	**100.8** 86.24 : 118.56	**97.2** 86.24 : 118.56	**104.8** 86.24 : 118.56
Fluoranthene by GCMS	TM178	**107.6** 86.04 : 121.96	**86.8** 86.04 : 121.96	**96.0** 86.04 : 121.96	**101.6** 86.04 : 121.96
Fluorene by GCMS	TM178	**111.2** 90.76 : 121.24	**90.8** 90.76 : 121.24	**101.6** 90.76 : 121.24	**102.4** 90.76 : 121.24
Indeno(123cd)pyrene by GCMS	TM178	**98.0** 88.39 : 119.61	**98.8** 88.39 : 119.61	**100.0** 88.39 : 119.61	**98.4** 88.39 : 119.61
Naphthalene by GCMS	TM178	**111.6** 89.40 : 121.80	**108.4** 89.40 : 121.80	**108.0** 89.40 : 121.80	**106.4** 89.40 : 121.80
Phenanthrene by GCMS	TM178	**111.6** 90.41 : 119.19	**91.2** 90.41 : 119.19	**103.2** 90.41 : 119.19	**105.2** 90.41 : 119.19
Pyrene by GCMS	TM178	**109.2** 91.00 : 120.20	**92.0** 91.00 : 120.20	**96.4** 91.00 : 120.20	**102.8** 91.00 : 120.20

Pesticides (Suite I) by GCMS

Pesticides (Suite I) by GCMS

Component	Method Code	QC 2577	QC 2519
Aldrin - (Inst.)	TM343	**79.31** 59.75 : 143.00	**105.84** 59.75 : 143.00
alpha-HCH - (Inst.)	TM343	**107.18** 75.13 : 166.63	**99.38** 75.13 : 166.63
beta-HCH - (Inst.)	TM343	**99.82** 85.48 : 166.48	**95.44** 85.48 : 166.48
cis-Chlordane - (Inst.)	TM343	**103.62** 71.70 : 156.00	**100.55** 71.70 : 156.00
delta-HCH - (Inst.)	TM343	**114.16** 83.98 : 156.58	**104.2** 83.98 : 156.58
Dieldrin - (Inst.)	TM343	**115.33** 77.45 : 154.10	**106.95** 77.45 : 154.10
Endosulphan I - (Inst.)	TM343	**105.96** 91.30 : 168.70	**112.32** 91.30 : 168.70
Endosulphan II - (Inst.)	TM343	**115.63** 82.68 : 161.13	**114.09** 82.68 : 161.13
Endosulphan Sulphate - (Inst.)	TM343	**90.58** 69.65 : 165.95	**96.69** 69.65 : 165.95
Endrin - (Inst.)	TM343	**117.63** 81.33 : 178.68	**98.75** 81.33 : 178.68
gamma-HCH (Lindane) - (Inst.)	TM343	**94.64** 83.15 : 175.40	**114.91** 83.15 : 175.40
Heptachlor - (Inst.)	TM343	**83.08** 63.65 : 167.80	**115.01** 63.65 : 167.80
Heptachlor epoxide - (Inst.)	TM343	**103.16** 73.28 : 159.38	**98.52** 73.28 : 159.38
Isodrin - (Inst.)	TM343	**104.69** 58.34 : 153.81	**117.04** 58.34 : 153.81
o,p-DDD (TDE) - (Inst.)	TM343	**93.43** 66.93 : 162.03	**85.91** 66.93 : 162.03
o,p-DDE - (Inst.)	TM343	**90.88** 64.68 : 156.78	**87.54** 64.68 : 156.78
o,p-DDT - (Inst.)	TM343	**100.87** 72.20 : 170.15	**95.21** 72.20 : 170.15
o,p-Methoxychlor - (Inst.)	TM343	**110.98** 73.33 : 171.13	**98.08** 73.33 : 171.13
p,p-DDD (TDE) - (Inst.)	TM343	**94.24** 67.95 : 160.20	**85.25** 67.95 : 160.20
p,p-DDE - (Inst.)	TM343	**91.11** 67.80 : 159.45	**86.27** 67.80 : 159.45
p,p-DDT - (Inst.)	TM343	**113.22** 68.30 : 178.25	**95.84** 68.30 : 178.25
p,p-Methoxychlor - (Inst.)	TM343	**120.52** 66.94 : 176.47	**102.77** 66.94 : 176.47
Permethrin I - (Inst.)	TM343	**96.49** 63.25 : 146.35	**81.75** 63.25 : 146.35
Permethrin II - (Inst.)	TM343	**92.29** 66.00 : 151.80	**78.6** 66.00 : 151.80
trans-Chlordane - (Inst.)	TM343	**101.81** 71.68 : 165.88	**103.01** 71.68 : 165.88
Trifluralin - (Inst.)	TM343	**104.82** 64.73 : 161.48	**106.81** 64.73 : 161.48

pH Value

Component	Method Code	QC 2576	QC 2578	QC 2582	QC 2590	QC 2592	QC 2547
pH	TM256	**100.13** 99.33 : 102.54	**100.27** 99.33 : 102.54	**100.53** 99.33 : 102.54	**100.8** 99.33 : 102.54	**100.94** 99.33 : 102.54	**100.53** 99.33 : 102.54

Component	Method Code	QC 2550	QC 2511	QC 2514	QC 2521
pH	TM256	**100.67** 99.33 : 102.54	**99.87** 99.33 : 102.54	**100.53** 99.33 : 102.54	**100.4** 99.33 : 102.54

Phenols by HPLC (W)

Component	Method Code	QC 2583	QC 2514	QC 2515	QC 2594	QC 2566
2.3.5 Trimethyl-Phenol by HPLC (W)	TM259	**95.7** 73.97 : 135.63	**95.7** 73.97 : 135.63	**95.7** 76.00 : 124.00	**93.75** 76.00 : 124.00	**101.56** 73.97 : 135.63
2-Isopropyl Phenol by HPLC (W)	TM259	**93.69** 80.00 : 116.00	**91.78** 80.00 : 116.00	**93.69** 76.00 : 124.00	**91.78** 76.00 : 124.00	**97.51** 80.00 : 116.00
Cresols by HPLC (W)	TM259	**96.05** 85.46 : 124.01	**96.71** 85.46 : 124.01	**97.37** 76.00 : 124.00	**95.39** 76.00 : 124.00	**102.63** 85.46 : 124.01
Napthol by HPLC (W)	TM259	**91.8** 75.83 : 130.17	**89.84** 75.83 : 130.17	**91.8** 76.00 : 124.00	**89.84** 76.00 : 124.00	**101.56** 75.83 : 130.17
Phenol by HPLC (W)	TM259	**90.74** 82.00 : 118.00	**92.63** 82.00 : 118.00	**92.63** 76.00 : 124.00	**90.74** 76.00 : 124.00	**96.41** 82.00 : 118.00
Xylenols by HPLC (W)	TM259	**94.3** 88.33 : 112.33	**93.67** 88.33 : 112.33	**95.25** 76.00 : 124.00	**93.04** 76.00 : 124.00	**99.37** 88.33 : 112.33

Sulphide

Component	Method Code	QC 2542	QC 2522	QC 2592	QC 2537	QC 2547	QC 2547
Sulphide	TM101	**106.67** 88.90 : 112.50	**100.67** 88.90 : 112.50	**100.67** 88.90 : 112.50	**102.0** 88.90 : 112.50	**101.33** 88.90 : 112.50	**100.67** 88.90 : 112.50

Component	Method Code	QC 2586
Sulphide	TM101	**102.67** 88.90 : 112.50

SVOC MS (W) - Aqueous

Component	Method Code	QC 2547	QC 2561
4-Bromophenylphenylether	TM176	**81.6** 52.80 : 111.84	**94.4** 61.60 : 106.72
Benzo(a)anthracene	TM176	**83.2** 59.28 : 107.76	**92.0** 64.64 : 115.52
Benzo(a)pyrene	TM176	**80.8** 54.40 : 105.76	**88.0** 60.56 : 115.28

SVOC MS (W) - Aqueous

		QC 2547	QC 2561
Butylbenzyl phthalate	TM176	**72.8** 51.68 : 117.92	**88.0** 57.12 : 116.16
Hexachlorobutadiene	TM176	**73.44** 46.40 : 93.44	**81.6** 50.48 : 92.72
Naphthalene	TM176	**92.8** 63.04 : 111.04	**102.4** 65.68 : 110.32
Nitrobenzene	TM176	**86.4** 59.92 : 108.40	**88.0** 57.12 : 109.44
Phenol	TM176	**55.76** 36.88 : 72.40	**56.8** 37.60 : 70.72

Total Metals by ICP-MS

Component	Method Code	QC 2573	QC 2581	QC 2596	QC 2553	QC 2505
Aluminium	TM152	**103.0** 87.78 : 113.42	**101.67** 87.78 : 113.42	**103.0** 87.78 : 113.42	**100.67** 87.78 : 113.42	**104.33** 87.78 : 113.42
Antimony	TM152	**103.5** 80.12 : 122.32	**103.17** 80.12 : 122.32	**104.67** 80.12 : 122.32	**99.83** 80.12 : 122.32	**102.17** 80.12 : 122.32
Arsenic	TM152	**103.0** 83.73 : 114.66	**102.0** 83.73 : 114.66	**102.0** 83.73 : 114.66	**101.5** 83.73 : 114.66	**102.67** 83.73 : 114.66
Barium	TM152	**101.83** 90.49 : 110.95	**103.83** 90.49 : 110.95	**101.67** 90.49 : 110.95	**101.5** 90.49 : 110.95	**103.83** 90.49 : 110.95
Beryllium	TM152	**103.83** 88.73 : 120.94	**103.0** 88.73 : 120.94	**104.33** 88.73 : 120.94	**100.0** 88.73 : 120.94	**105.83** 88.73 : 120.94
Bismuth	TM152	**101.83** 92.53 : 110.53	**102.5** 92.53 : 110.53	**101.33** 92.53 : 110.53	**100.0** 92.53 : 110.53	**101.17** 92.53 : 110.53
Boron	TM152	**104.33** 87.74 : 118.72	**102.33** 87.74 : 118.72	**105.0** 87.74 : 118.72	**101.0** 87.74 : 118.72	**107.67** 87.74 : 118.72
Cadmium	TM152	**102.33** 91.09 : 114.09	**102.67** 91.09 : 114.09	**102.67** 91.09 : 114.09	**100.5** 91.09 : 114.09	**103.0** 91.09 : 114.09
Calcium	TM152	**103.33** 90.50 : 119.25	**104.67** 90.50 : 119.25	**103.33** 90.50 : 119.25	**102.67** 90.50 : 119.25	**104.0** 90.50 : 119.25
Chromium	TM152	**101.5** 91.28 : 114.16	**101.83** 91.28 : 114.16	**100.33** 91.28 : 114.16	**101.0** 91.28 : 114.16	**103.0** 91.28 : 114.16
Cobalt	TM152	**101.0** 84.39 : 114.26	**101.33** 84.39 : 114.26	**101.17** 84.39 : 114.26	**101.5** 84.39 : 114.26	**103.0** 84.39 : 114.26
Copper	TM152	**103.0** 90.45 : 117.64	**102.67** 90.45 : 117.64	**101.83** 90.45 : 117.64	**103.5** 90.45 : 117.64	**116.83** 90.45 : 117.64
Iron	TM152	**101.33** 91.83 : 115.96	**102.67** 91.83 : 115.96	**101.33** 91.83 : 115.96	**101.33** 91.83 : 115.96	**102.67** 91.83 : 115.96
Lead	TM152	**100.33** 89.83 : 110.95	**102.83** 89.83 : 110.95	**100.67** 89.83 : 110.95	**98.67** 89.83 : 110.95	**102.33** 89.83 : 110.95
Lithium	TM152	**103.83** 90.36 : 116.55	**100.67** 90.36 : 116.55	**103.33** 90.36 : 116.55	**99.33** 90.36 : 116.55	**103.67** 90.36 : 116.55
Magnesium	TM152	**102.0** 88.50 : 112.03	**104.67** 88.50 : 112.03	**102.67** 88.50 : 112.03	**101.33** 88.50 : 112.03	**104.0** 88.50 : 112.03
Manganese	TM152	**101.67** 91.78 : 117.32	**102.83** 91.78 : 117.32	**101.83** 91.78 : 117.32	**100.5** 91.78 : 117.32	**103.5** 91.78 : 117.32
Molybdenum	TM152	**100.83** 87.74 : 113.43	**102.0** 87.74 : 113.43	**100.5** 87.74 : 113.43	**103.33** 87.74 : 113.43	**101.67** 87.74 : 113.43
Nickel	TM152	**102.17** 91.70 : 116.41	**102.67** 91.70 : 116.41	**101.0** 91.70 : 116.41	**102.83** 91.70 : 116.41	**103.5** 91.70 : 116.41
Phosphorus	TM152	**101.67** 88.86 : 115.41	**102.0** 88.86 : 115.41	**101.17** 88.86 : 115.41	**98.5** 88.86 : 115.41	**101.0** 88.86 : 115.41

Total Metals by ICP-MS

		QC 2573	QC 2581	QC 2596	QC 2553	QC 2505
Potassium	TM152	**102.0** 88.98 : 120.64	**102.67** 88.98 : 120.64	**102.0** 88.98 : 120.64	**99.33** 88.98 : 120.64	**101.33** 88.98 : 120.64
Selenium	TM152	**104.5** 88.44 : 113.86	**101.0** 88.44 : 113.86	**101.83** 88.44 : 113.86	**101.83** 88.44 : 113.86	**102.83** 88.44 : 113.86
Silver	TM152	**100.0** 83.55 : 115.15	**101.0** 83.55 : 115.15	**100.17** 83.55 : 115.15	**100.17** 83.55 : 115.15	**100.17** 83.55 : 115.15
Sodium	TM152	**100.67** 87.45 : 116.43	**102.0** 87.45 : 116.43	**100.67** 87.45 : 116.43	**99.33** 87.45 : 116.43	**102.67** 87.45 : 116.43
Strontium	TM152	**102.33** 90.72 : 114.82	**103.67** 90.72 : 114.82	**103.67** 90.72 : 114.82	**100.33** 90.72 : 114.82	**104.0** 90.72 : 114.82
Tellurium	TM152	**101.83** 88.31 : 113.91	**101.5** 88.31 : 113.91	**99.67** 88.31 : 113.91	**99.17** 88.31 : 113.91	**99.67** 88.31 : 113.91
Thallium	TM152	**91.33** 80.92 : 114.72	**89.33** 80.92 : 114.72	**88.0** 80.92 : 114.72	**91.33** 80.92 : 114.72	**97.17** 80.92 : 114.72
Tin	TM152	**103.33** 89.73 : 116.53	**104.17** 89.73 : 116.53	**103.67** 89.73 : 116.53	**100.17** 89.73 : 116.53	**103.17** 89.73 : 116.53
Titanium	TM152	**102.67** 92.44 : 117.88	**103.0** 92.44 : 117.88	**108.67** 92.44 : 117.88	**101.67** 92.44 : 117.88	**106.33** 92.44 : 117.88
Uranium	TM152	**99.67** 88.33 : 111.03	**101.33** 88.33 : 111.03	**98.33** 88.33 : 111.03	**98.67** 88.33 : 111.03	**100.17** 88.33 : 111.03
Vanadium	TM152	**101.17** 88.43 : 114.30	**99.67** 88.43 : 114.30	**98.83** 88.43 : 114.30	**102.33** 88.43 : 114.30	**103.5** 88.43 : 114.30
Zinc	TM152	**104.33** 91.97 : 115.86	**103.33** 91.97 : 115.86	**103.33** 91.97 : 115.86	**103.67** 91.97 : 115.86	**107.0** 91.97 : 115.86

VOC MS (W)

Component	Method Code	QC 2585	QC 2538
1,1,1,2-Tetrachloroethane	TM208	**97.0** 87.33 : 109.74	**105.5** 82.46 : 105.32
1,1,1-Trichloroethane	TM208	**97.0** 84.96 : 115.65	**111.0** 81.01 : 112.00
1,1-Dichloroethane	TM208	**99.5** 79.60 : 118.57	**111.5** 82.09 : 116.41
1,2-Dichloroethane	TM208	**101.0** 77.72 : 133.33	**116.5** 80.28 : 123.63
2-Chlorotoluene	TM208	**97.5** 82.89 : 116.61	**107.5** 83.31 : 110.91
4-Chlorotoluene	TM208	**98.5** 79.46 : 115.88	**105.5** 84.01 : 111.46
Benzene	TM208	**103.0** 88.14 : 120.48	**113.5** 87.46 : 118.30
Bromomethane	TM208	**97.0** 79.31 : 116.90	**103.0** 76.99 : 118.39
Carbontetrachloride	TM208	**101.5** 86.16 : 119.10	**111.0** 81.73 : 114.22
Chlorobenzene	TM208	**99.0** 87.25 : 116.65	**108.0** 90.24 : 109.71
Chloroform	TM208	**102.0** 83.01 : 121.64	**111.5** 83.67 : 118.08
Chloromethane	TM208	**103.5** 71.84 : 134.90	**112.5** 70.42 : 127.06
Cis-1,2-Dichloroethene	TM208	**101.5** 85.03 : 112.75	**109.0** 83.95 : 112.60

VOC MS (W)

		QC 2585	QC 2538
Dichloromethane	TM208	**103.0** 78.23 : 120.65	**112.0** 81.65 : 120.83
Ethylbenzene	TM208	**94.0** 79.55 : 110.51	**103.0** 85.59 : 106.44
Hexachlorobutadiene	TM208	**82.0** 68.58 : 117.78	**102.5** 66.83 : 108.27
o-Xylene	TM208	**97.5** 85.06 : 114.91	**103.0** 78.40 : 110.68
p/m-Xylene	TM208	**96.0** 82.09 : 109.18	**103.0** 82.64 : 112.12
Tert-butyl methyl ether	TM208	**95.5** 68.39 : 125.81	**111.5** 68.23 : 127.69
Tetrachloroethene	TM208	**96.0** 82.09 : 113.14	**105.5** 81.10 : 112.63
Toluene	TM208	**96.0** 79.88 : 116.83	**106.5** 87.40 : 109.78
Trichloroethene	TM208	**96.5** 82.30 : 112.45	**105.5** 81.17 : 111.80
Vinyl Chloride	TM208	**100.5** 71.34 : 122.34	**102.5** 72.73 : 123.40

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

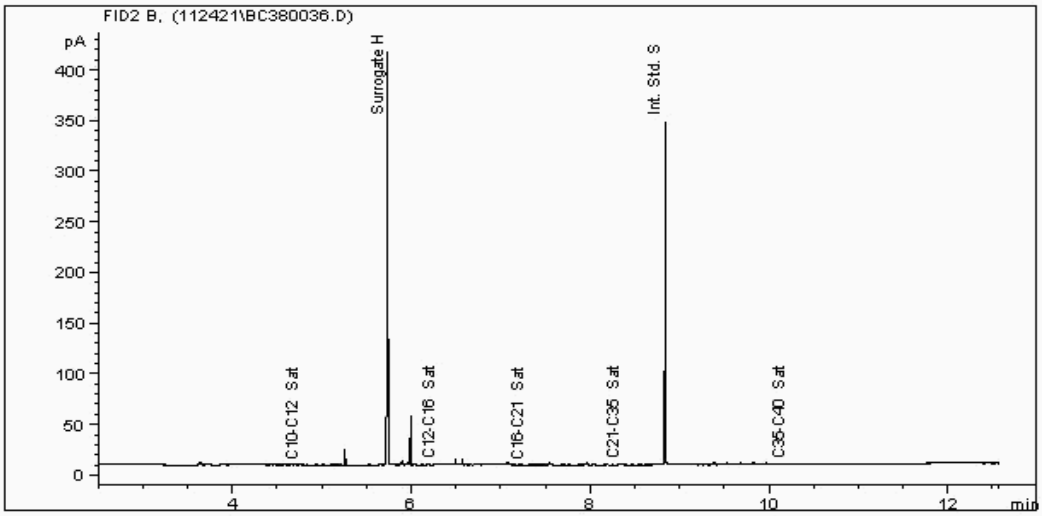
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25384913 **Depth :** 0.00 - 0.00
Sample ID : WS25

Speciated TPH - SATS (C12 - C40)

Sample Identity: 23709386-
Date Acquired : 25/11/21 03:59:06 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	292.2	0.180
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	296.5	0.250
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	588.7	



CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

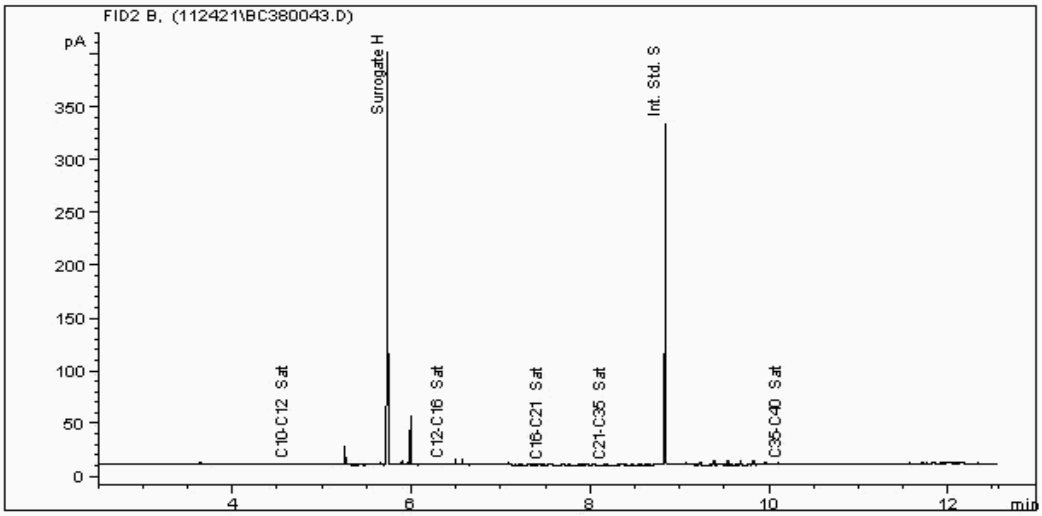
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25384919 **Depth :** 0.00 - 0.00
Sample ID : BH60

Speciated TPH - SATS (C12 - C40)

Sample Identity: 23709651-
Date Acquired : 25/11/21 06:40:26 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	292.3	0.211
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	253.2	0.250
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	545.5	



CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

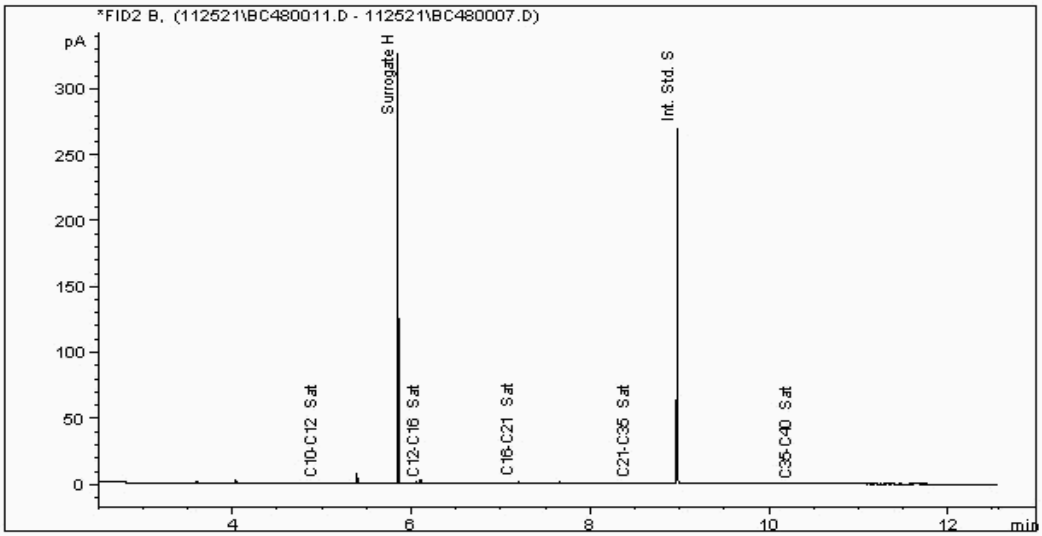
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25388151 **Depth :** 0.00 - 0.00
Sample ID : BH19

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23717792-
Date Acquired : 25/11/2021 19:37:12 PM
Units : ppb
Dilution : SE BH19[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	238.3	0.216
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	219.8	0.250
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	458.1	

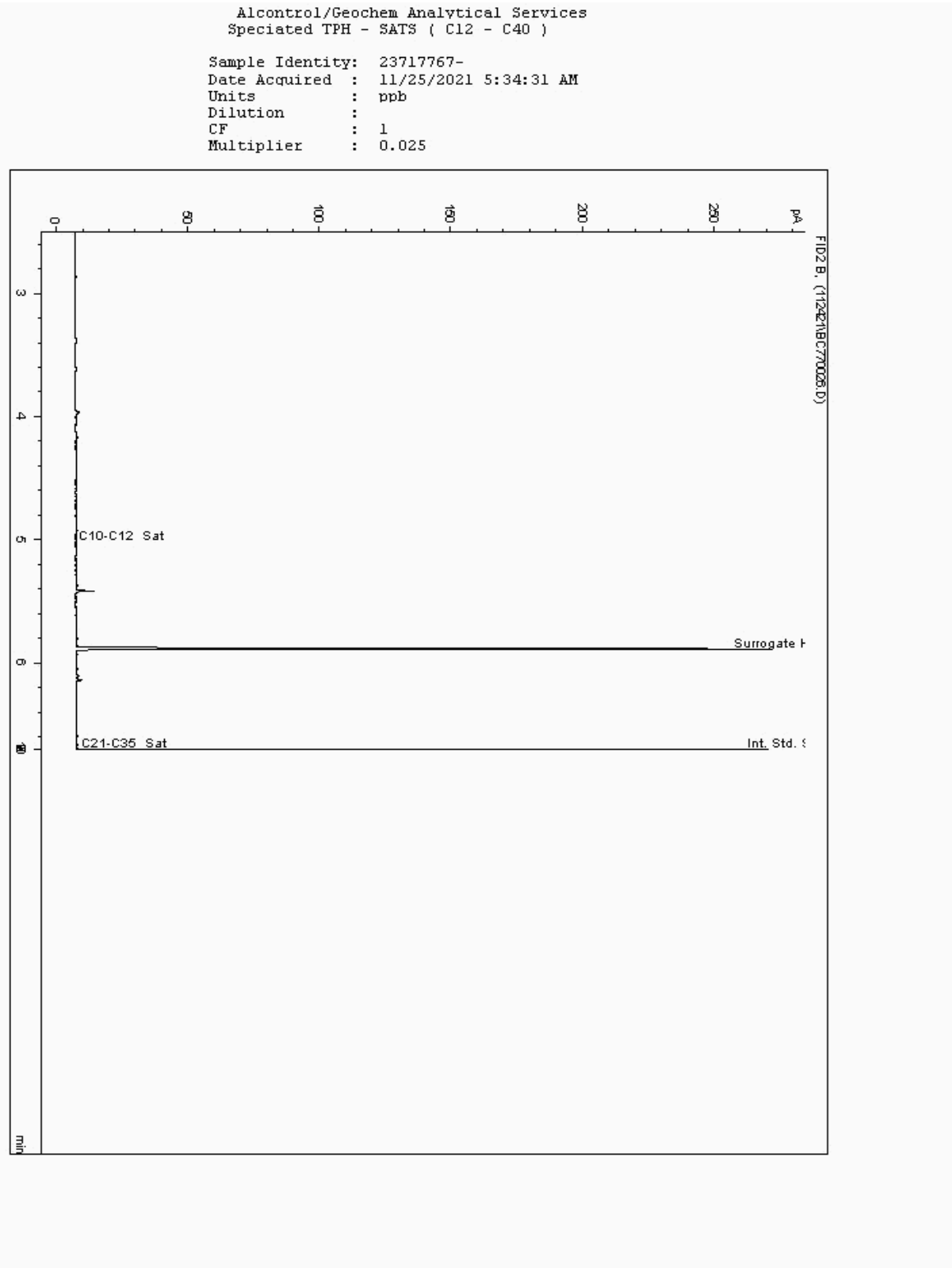


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25388184 **Depth :** 0.00 - 0.00
Sample ID : BH22



CERTIFICATE OF ANALYSIS

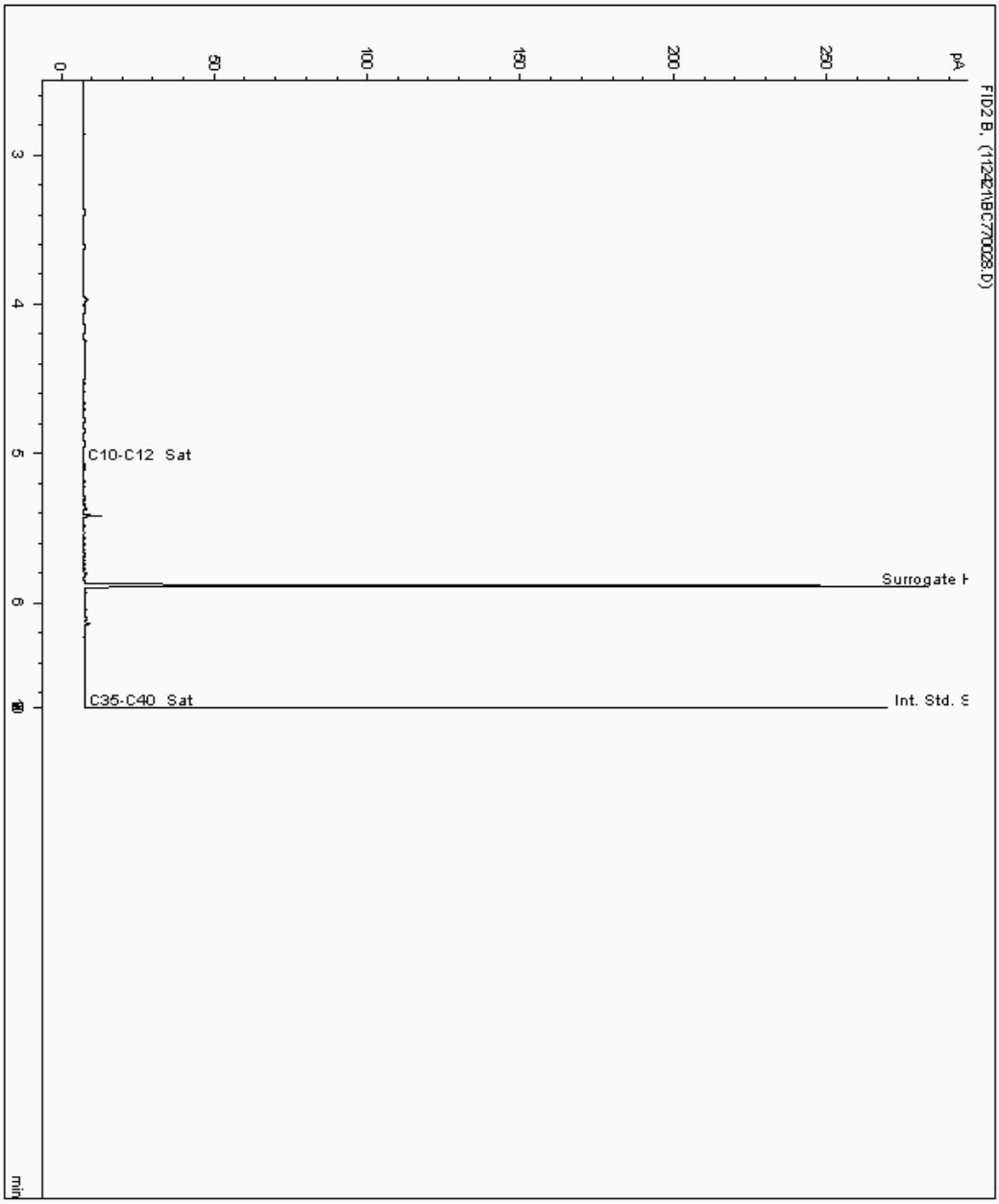
SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25388193 **Depth :** 0.00 - 0.00
Sample ID : BH12

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23717747-
Date Acquired : 11/25/2021 6:22:24 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

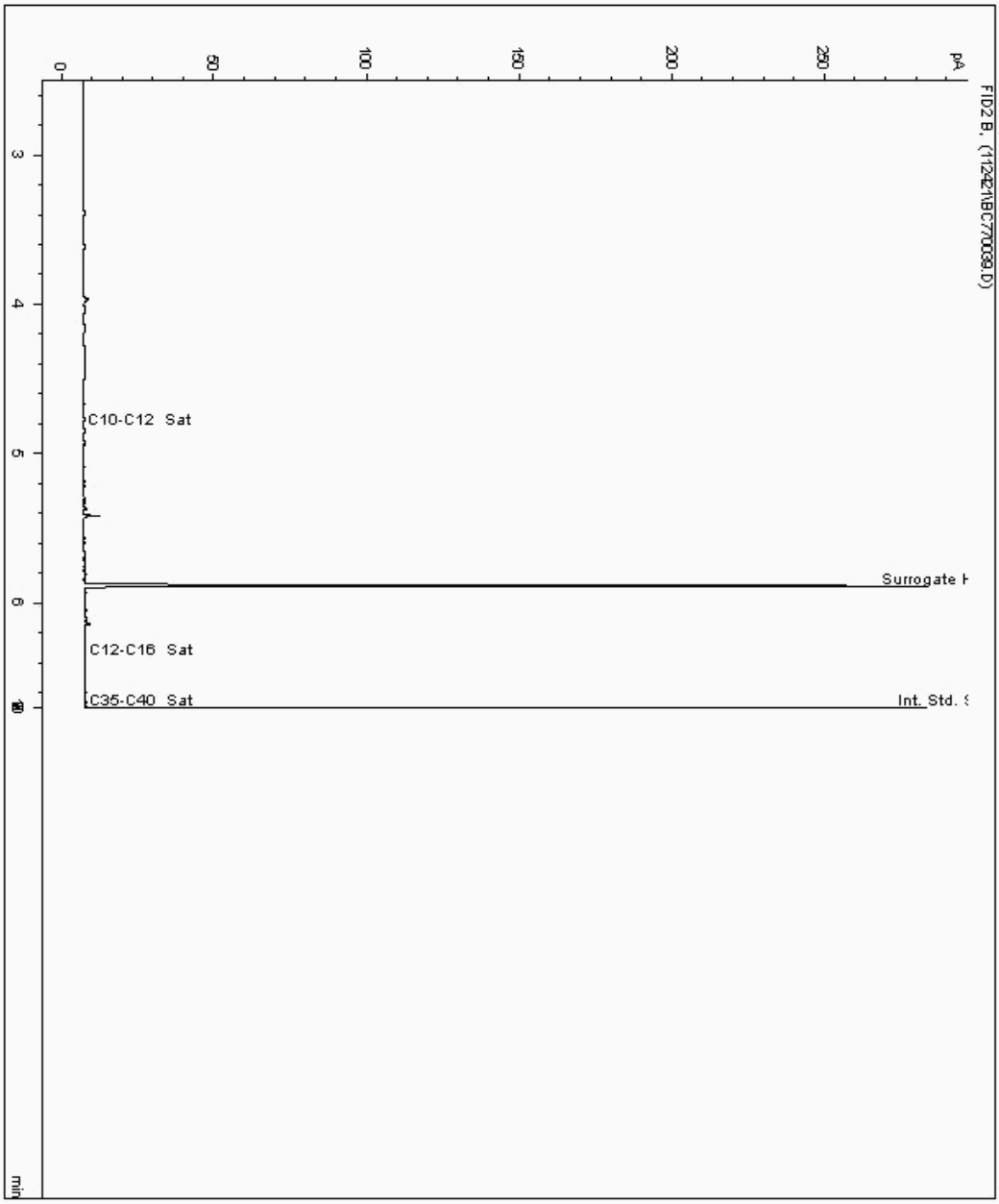
SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25388900 **Depth :** 0.00 - 0.00
Sample ID : BH02

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23709229-
Date Acquired : 11/25/2021 10:47:29 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

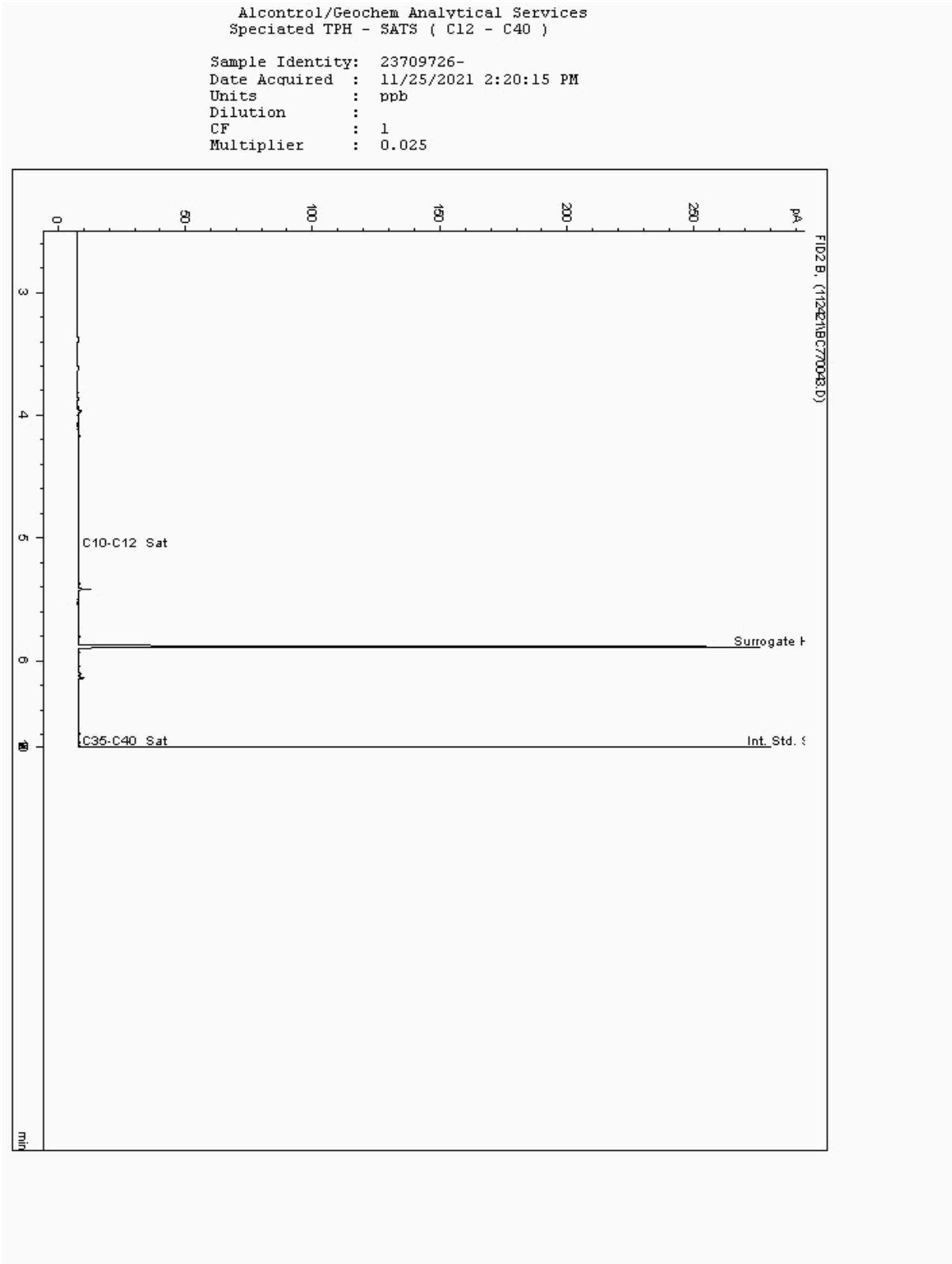


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25388905 **Depth :** 0.00 - 0.00
Sample ID : BH03A

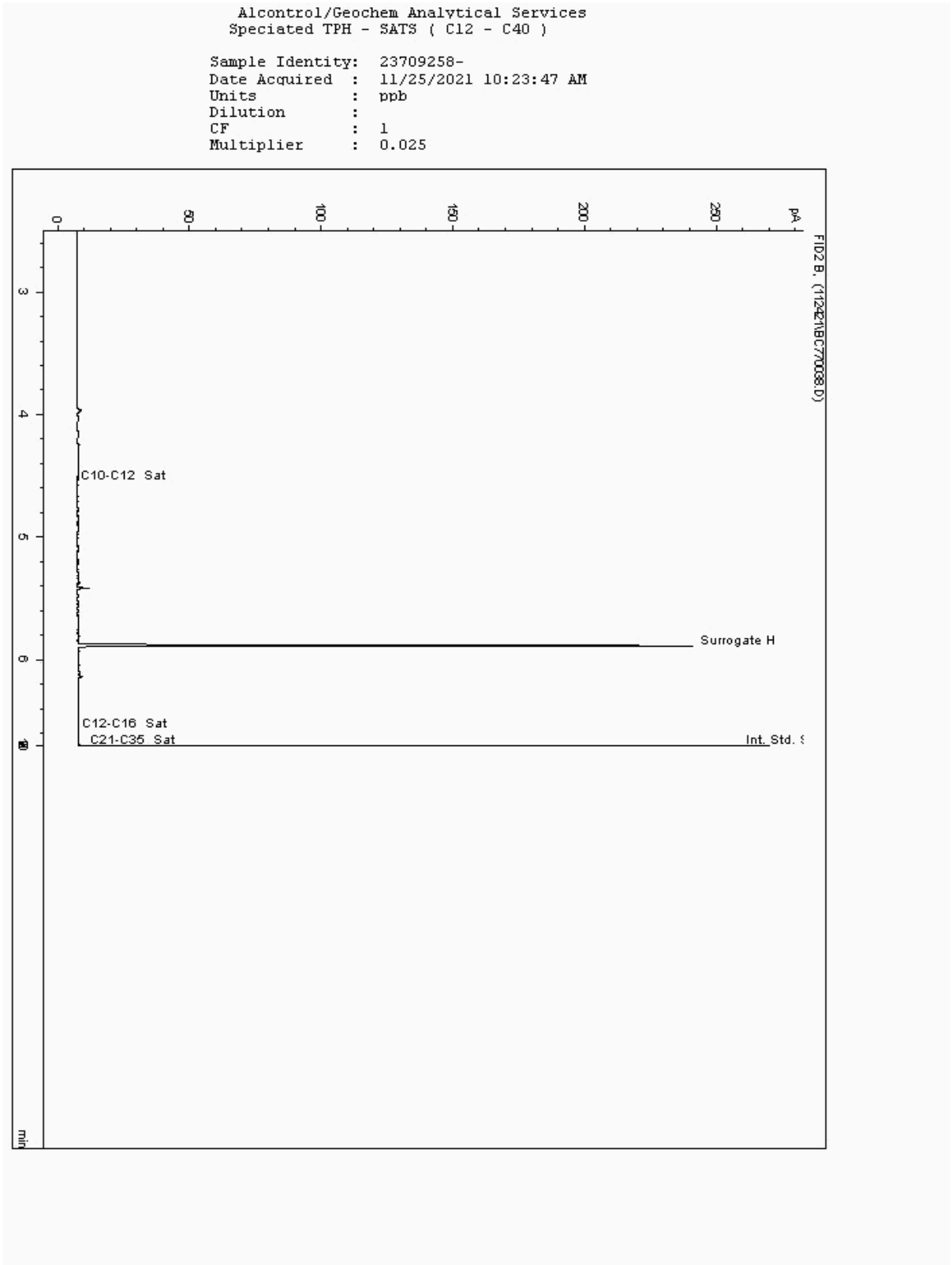


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25388908 **Depth :** 0.00 - 0.00
Sample ID : WS08



CERTIFICATE OF ANALYSIS

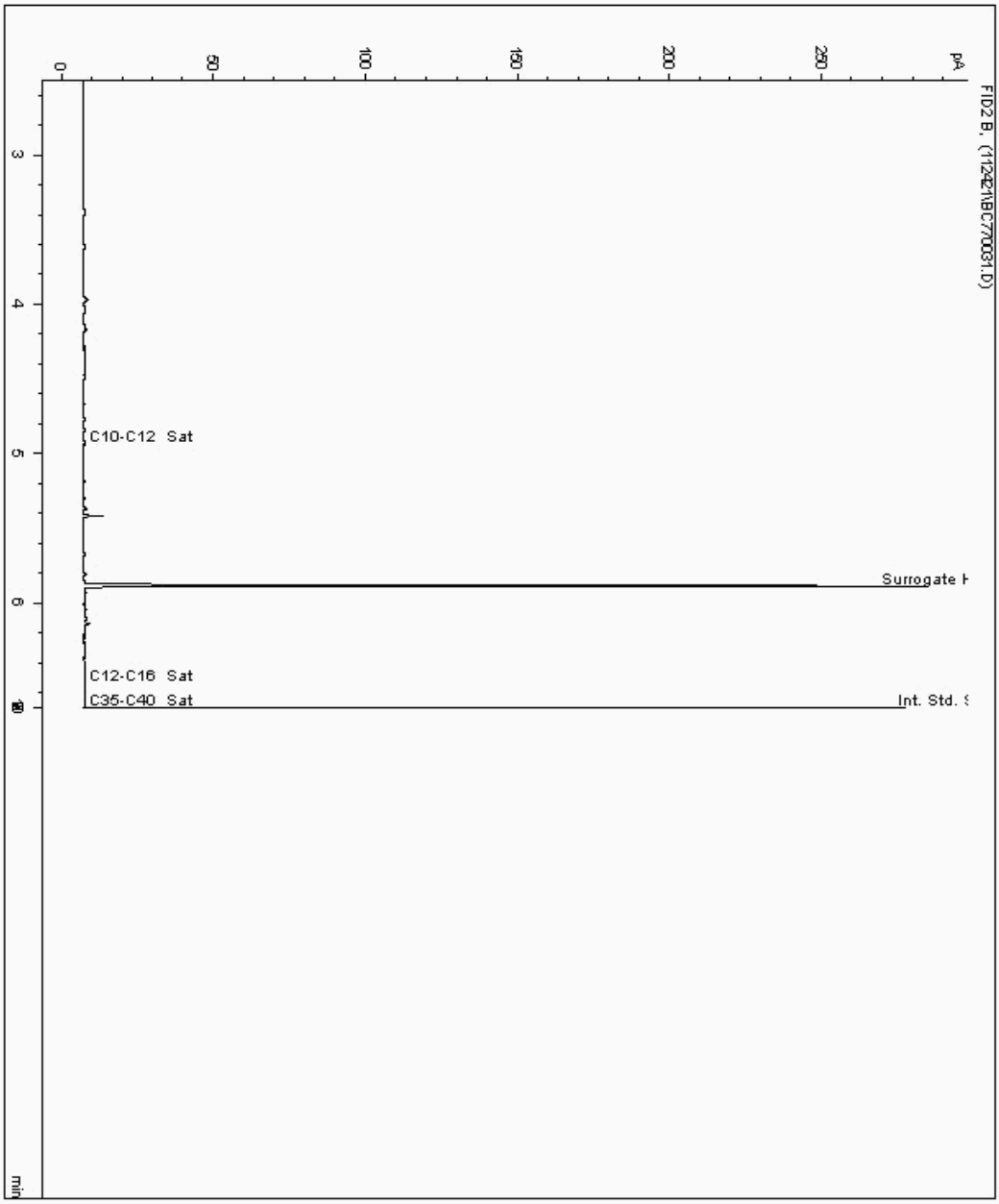
SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25388937 **Depth :** 0.00 - 0.00
Sample ID : BH07

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23709485-
Date Acquired : 11/25/2021 7:34:47 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

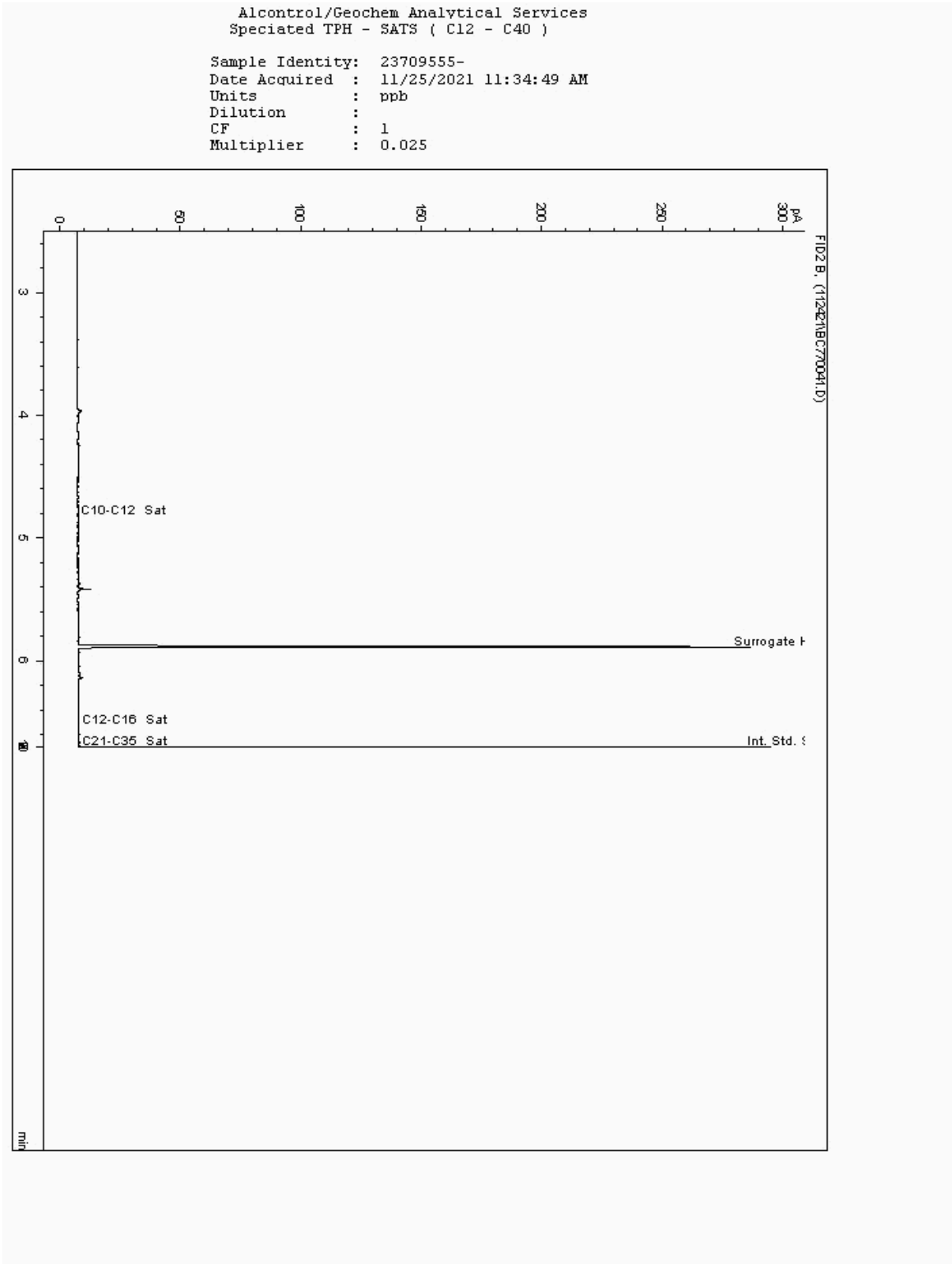


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25388939 **Depth :** 0.00 - 0.00
Sample ID : BH11

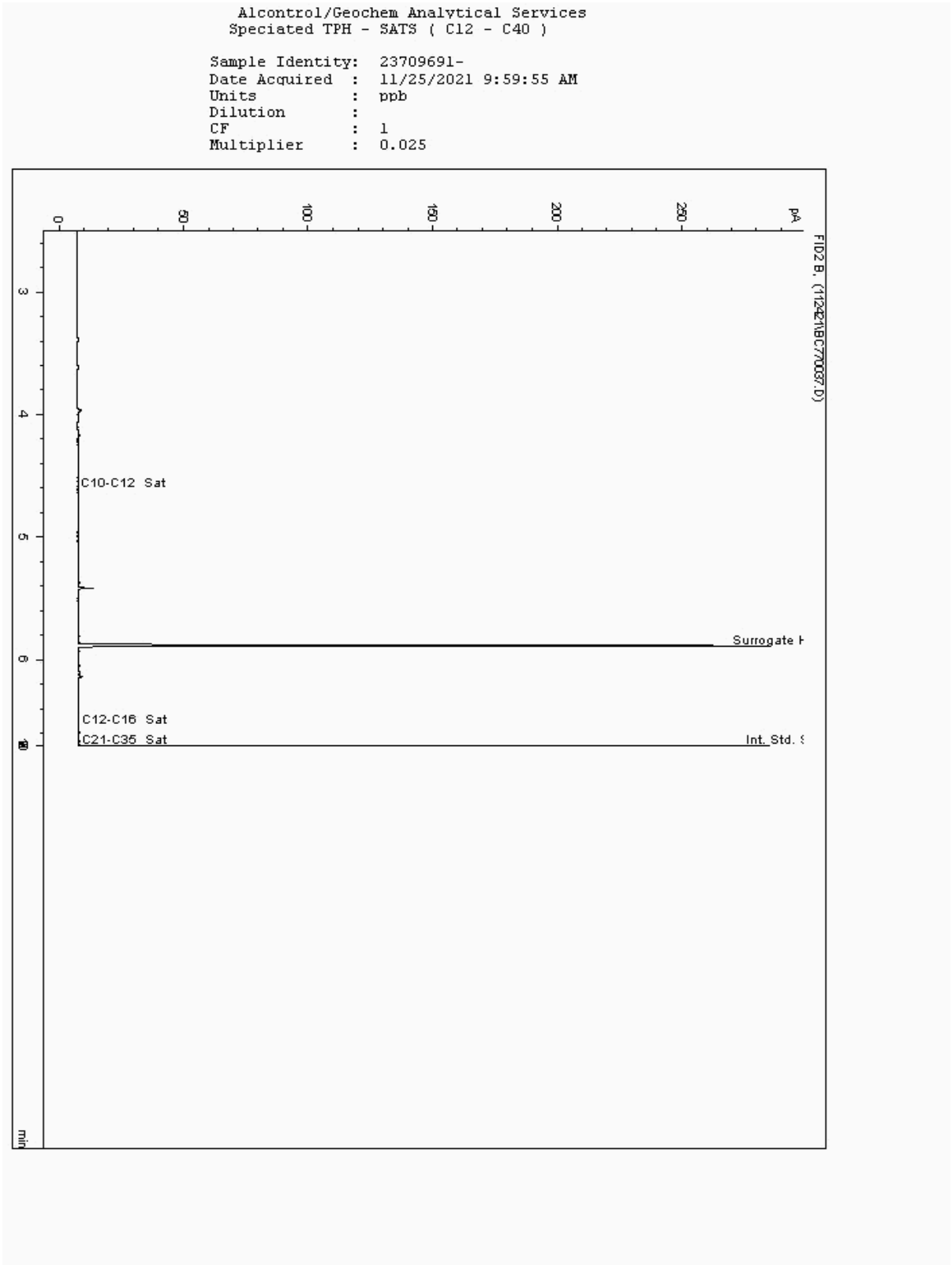


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25388960 **Depth :** 0.00 - 0.00
Sample ID : BH61



CERTIFICATE OF ANALYSIS

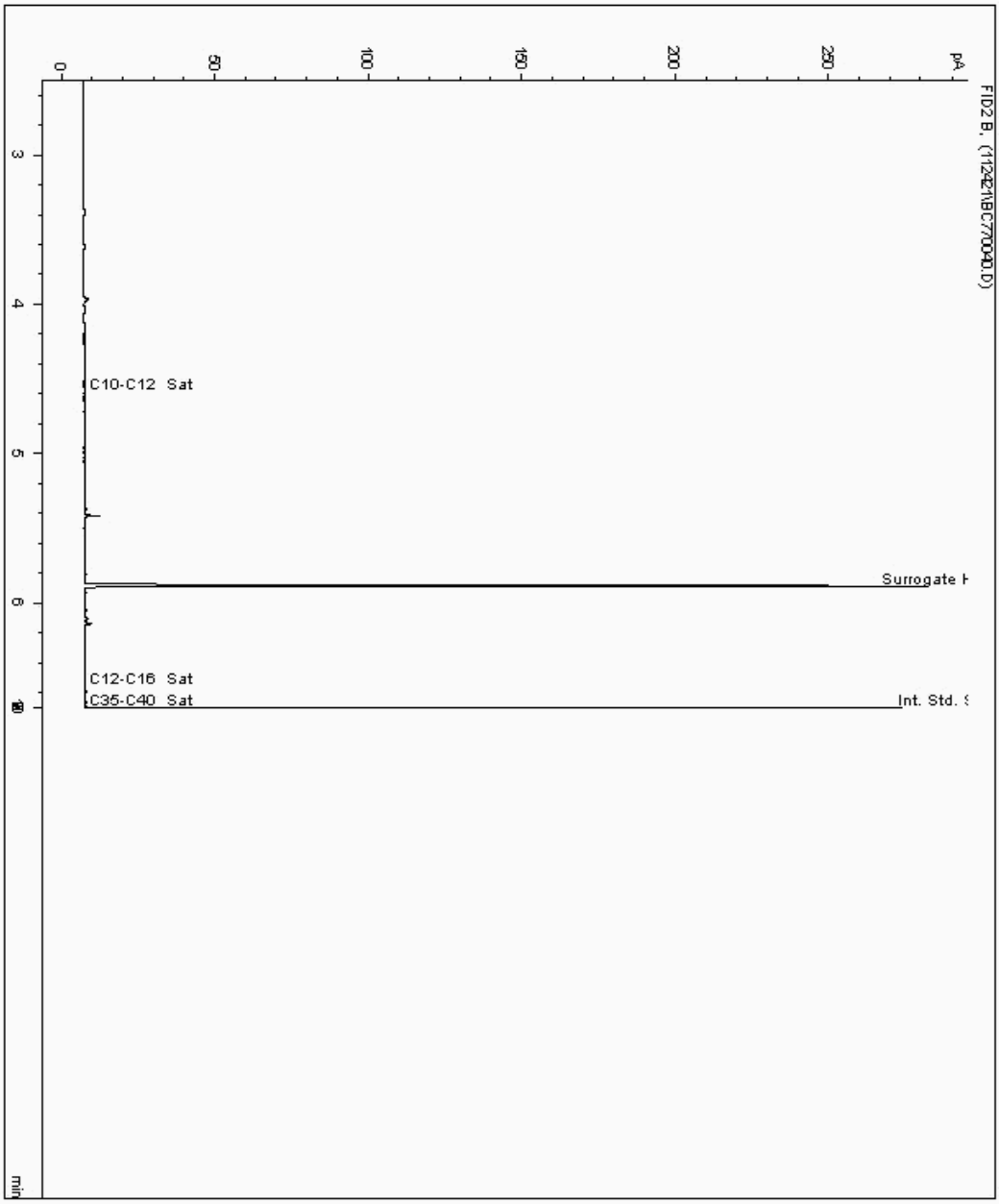
SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25388971 **Depth :** 0.00 - 0.00
Sample ID : BH14

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23709170-
Date Acquired : 11/25/2021 11:11:06 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

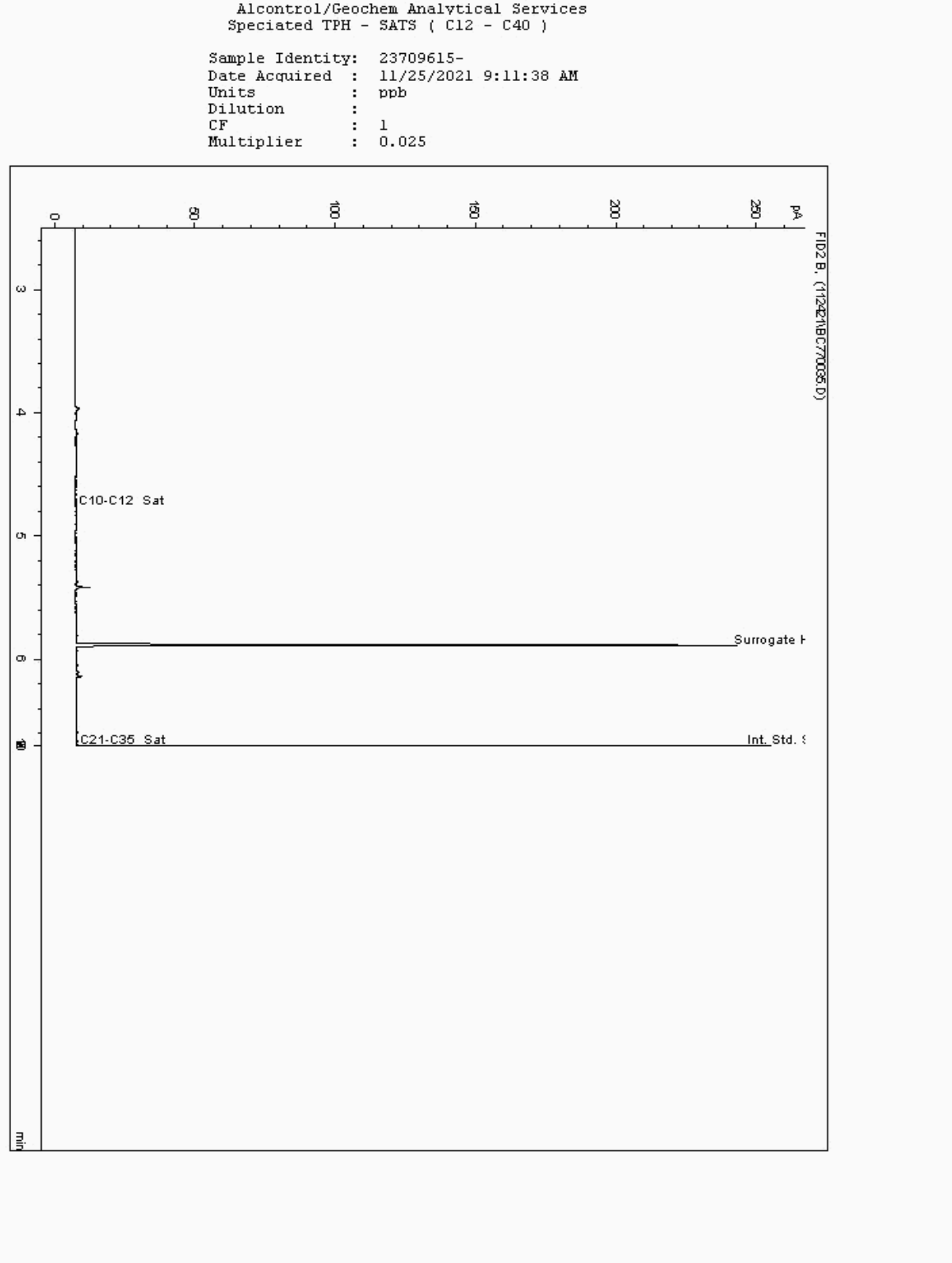


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25388998 **Depth :** 0.00 - 0.00
Sample ID : BH17

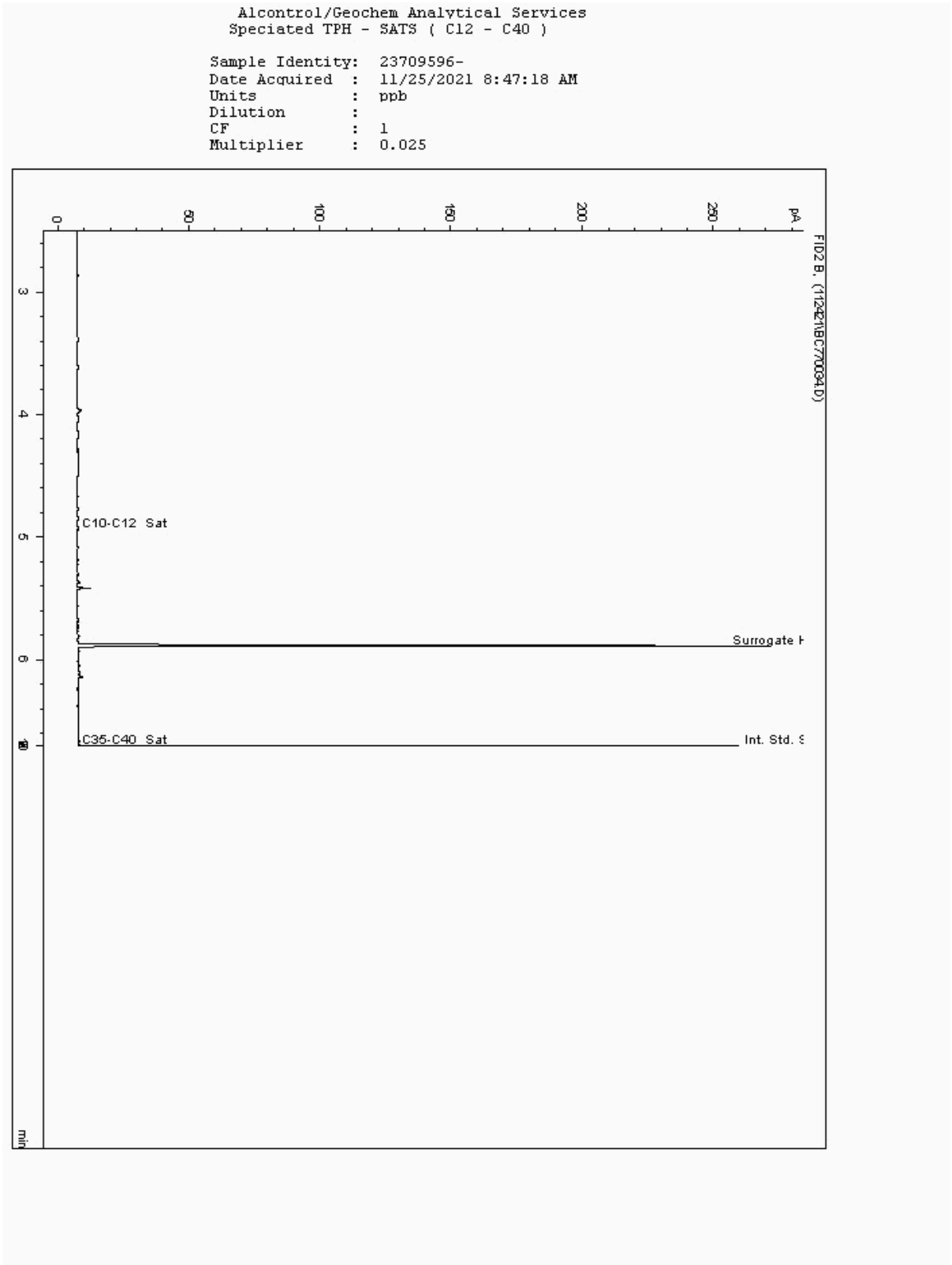


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25389002 **Depth :** 0.00 - 0.00
Sample ID : BH18

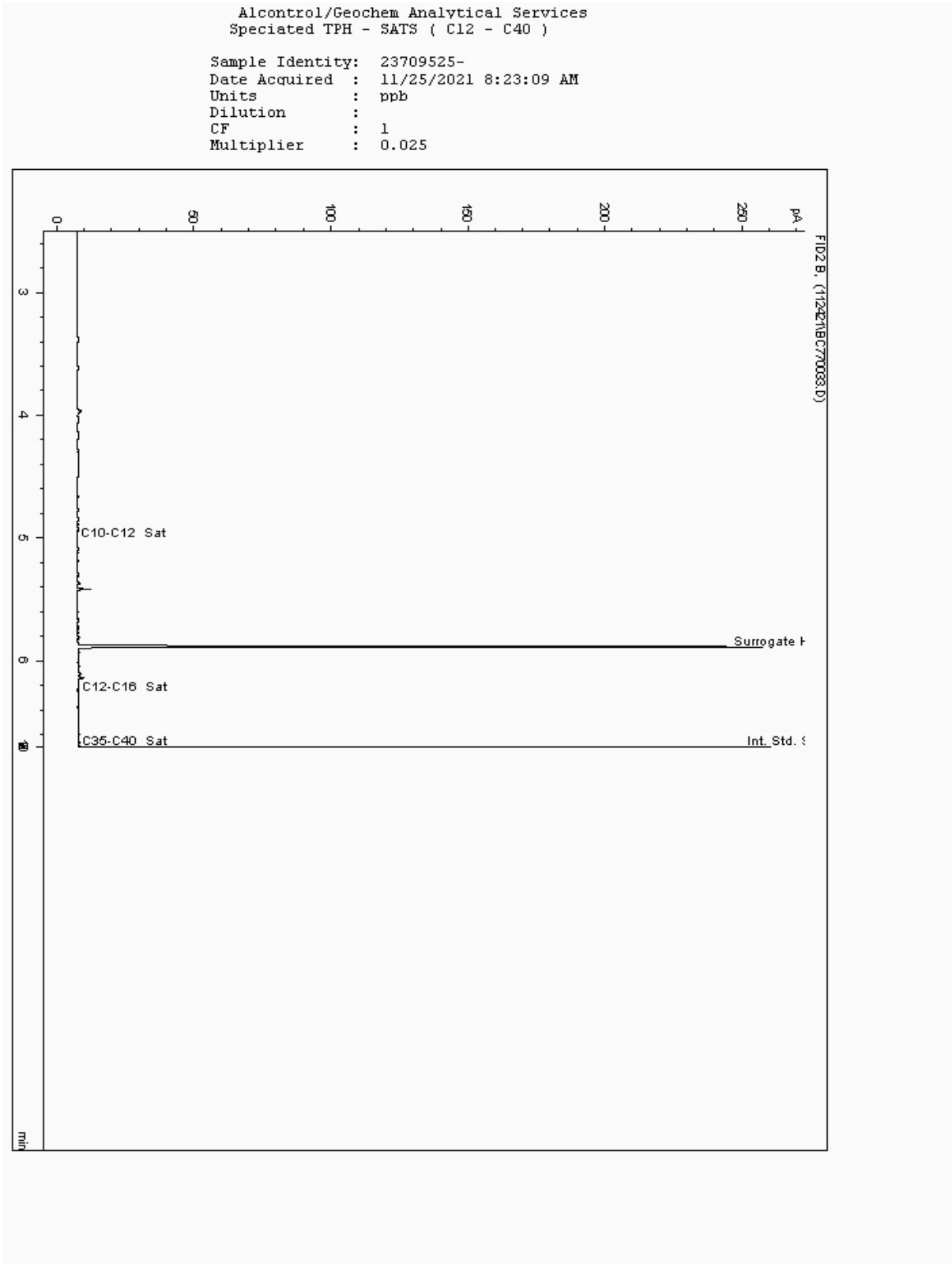


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25389030 **Depth :** 0.00 - 0.00
Sample ID : BH10

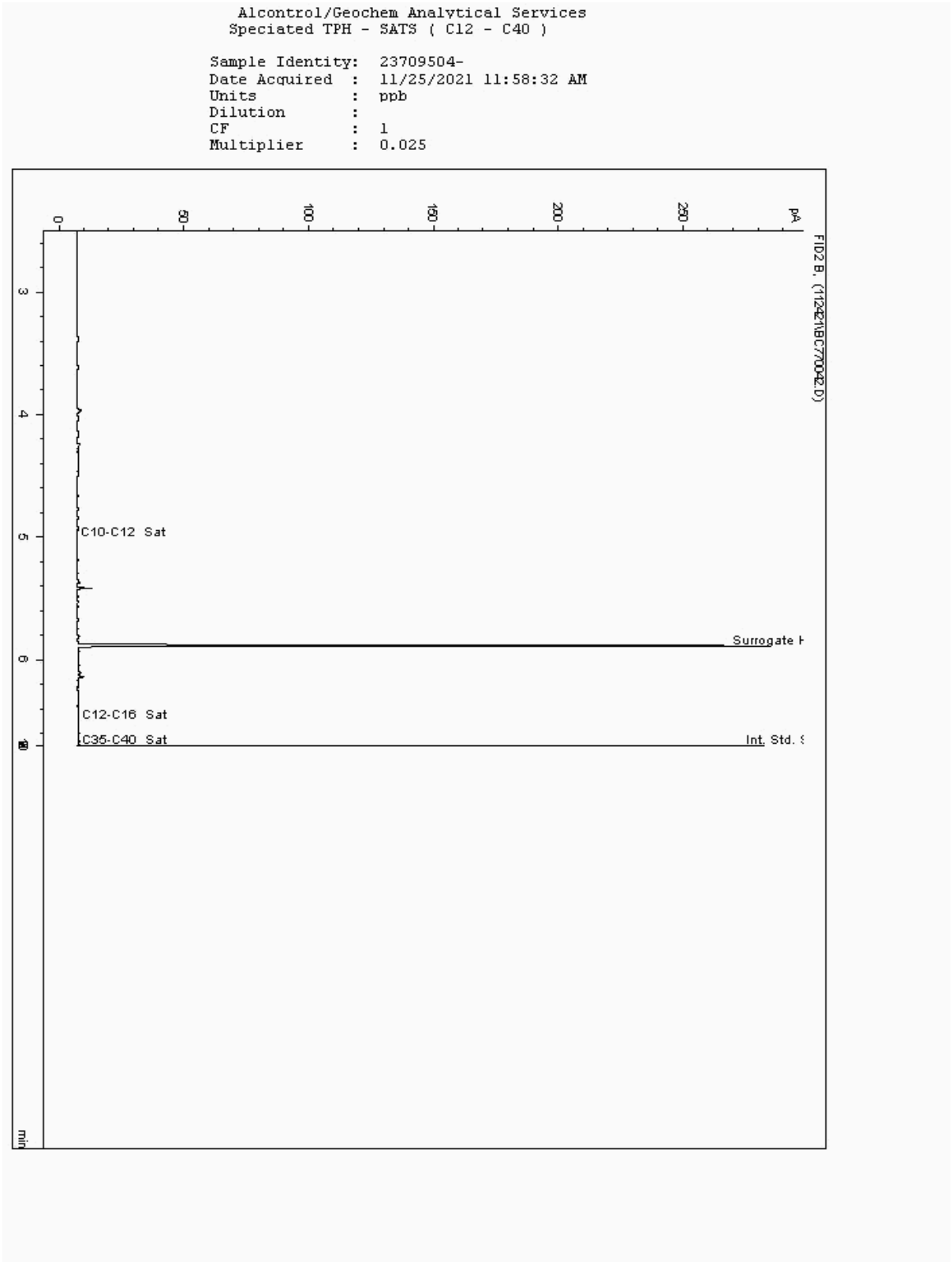


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25389032 **Depth :** 0.00 - 0.00
Sample ID : BH09



CERTIFICATE OF ANALYSIS

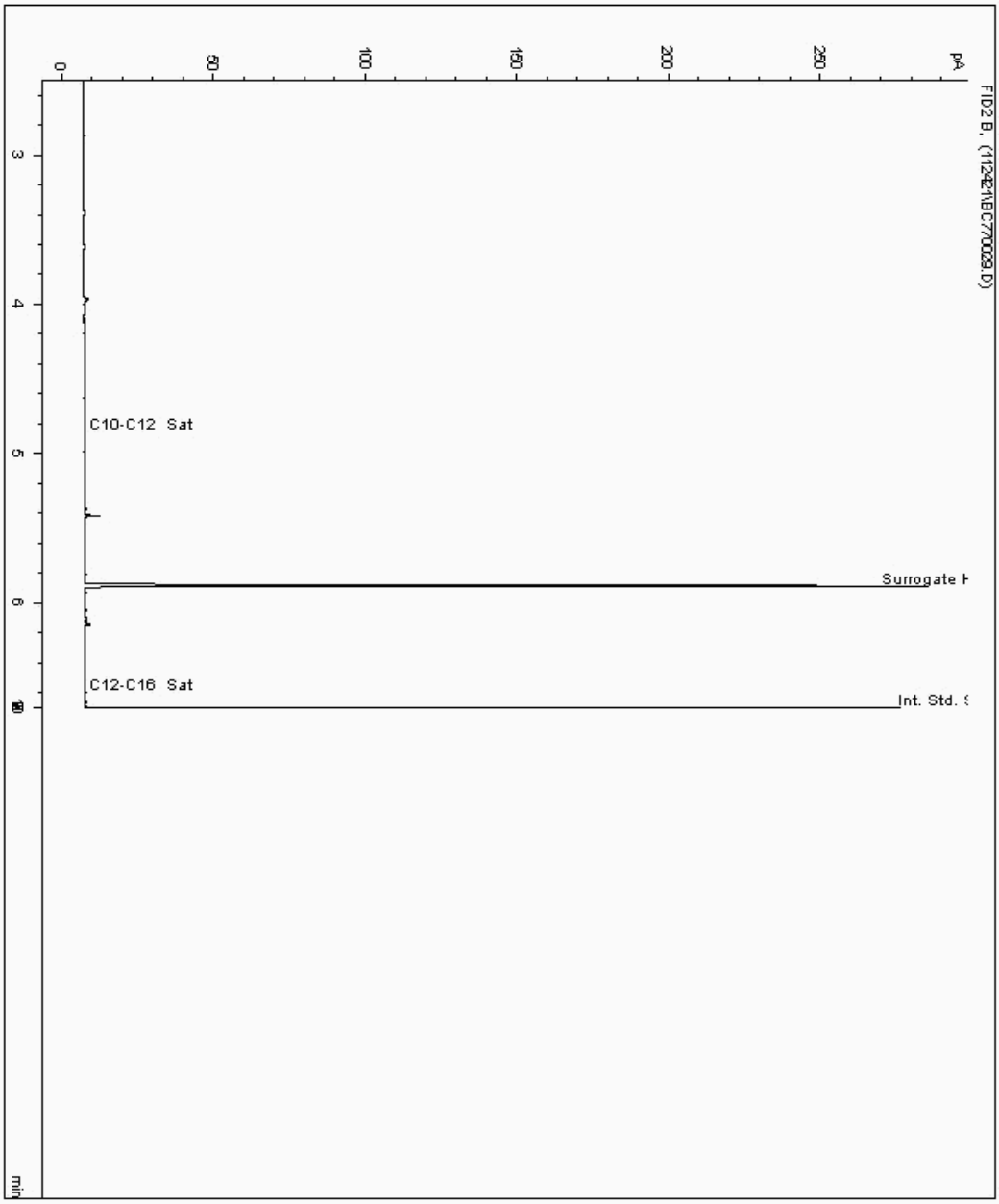
SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25389040 **Depth :** 0.00 - 0.00
Sample ID : BH01

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23709193-
Date Acquired : 11/25/2021 6:46:36 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



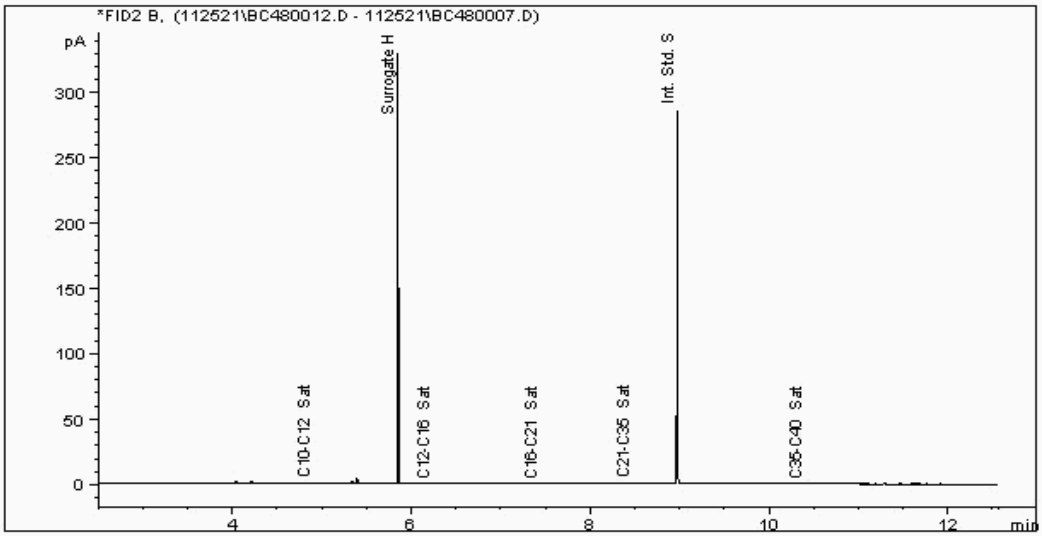
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25389477 **Depth :** 0.00 - 0.00
Sample ID : WS12

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23709744-
Date Acquired : 25/11/2021 20:00:33 PM
Units : ppb
Dilution : SE WS12[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	241.2	0.213
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	225.8	0.250
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	467.0	



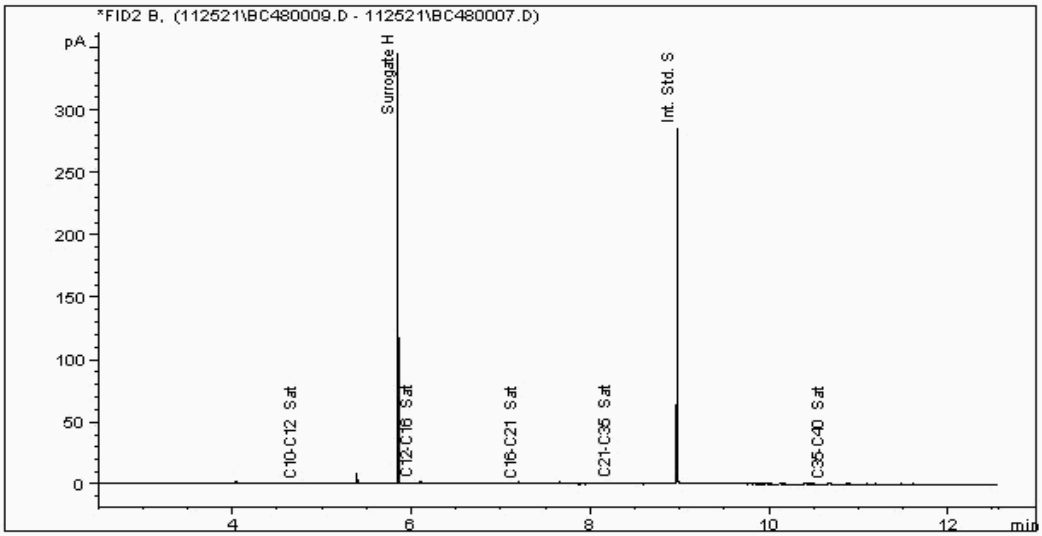
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25389479 **Depth :** 0.00 - 0.00
Sample ID : WS26

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23709412-
Date Acquired : 25/11/2021 18:50:00 PM
Units : ppb
Dilution : SE WS26[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	244.1	0.214
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	227.8	0.250
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	471.9	

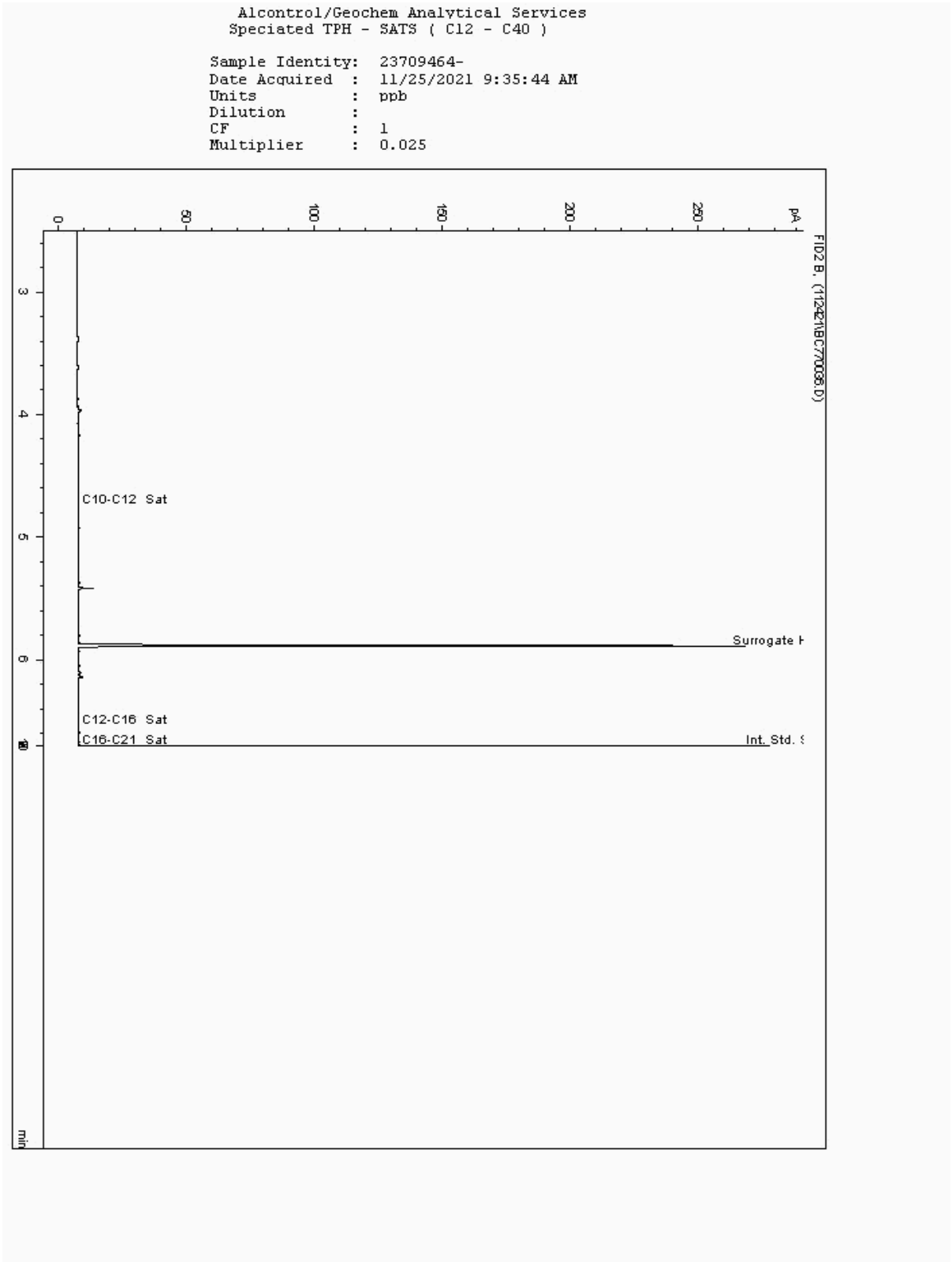


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25389488 **Depth :** 0.00 - 0.00
Sample ID : WS31



CERTIFICATE OF ANALYSIS

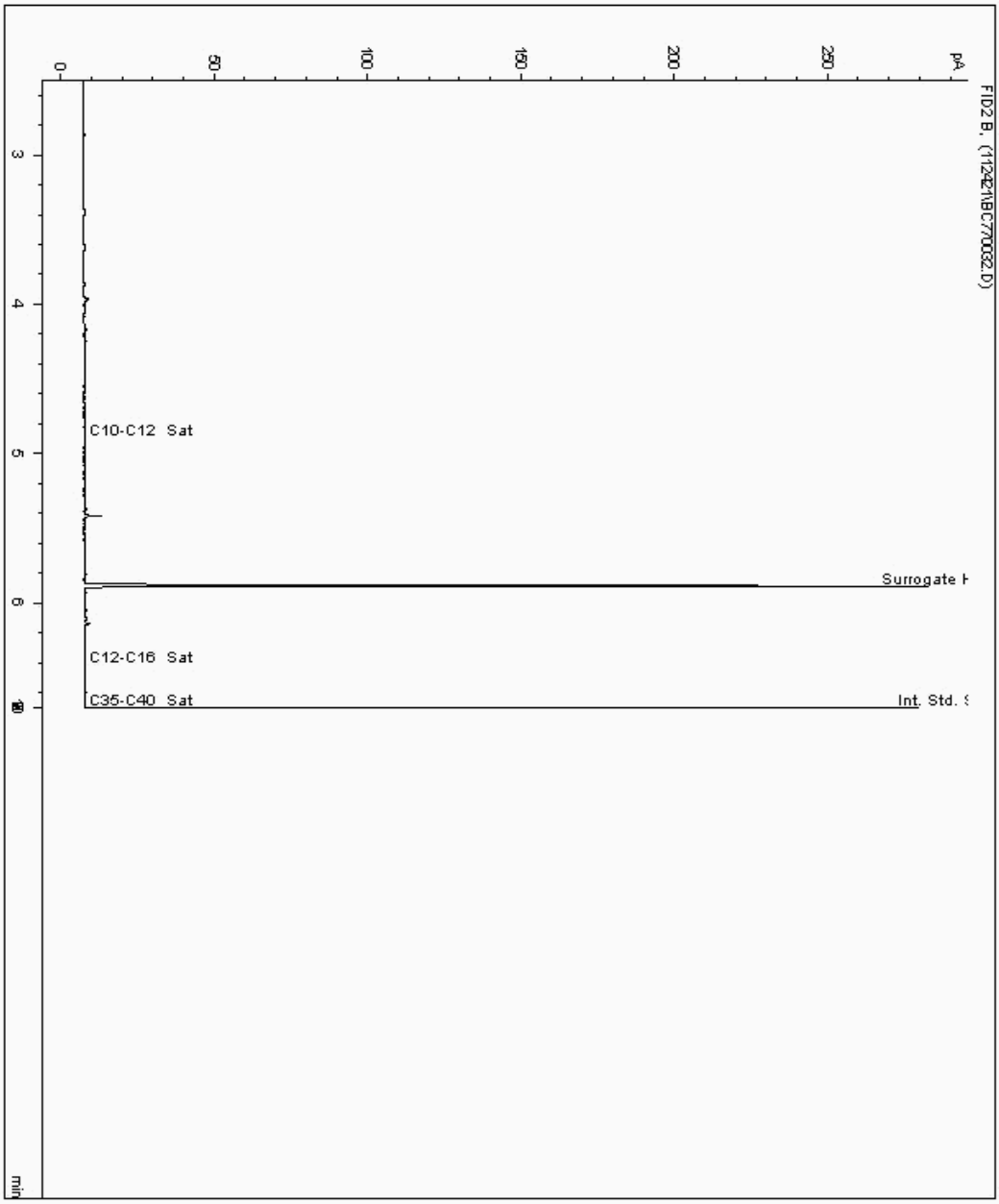
SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25389494 **Depth :** 0.00 - 0.00
Sample ID : BH06

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23709633-
Date Acquired : 11/25/2021 7:58:58 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

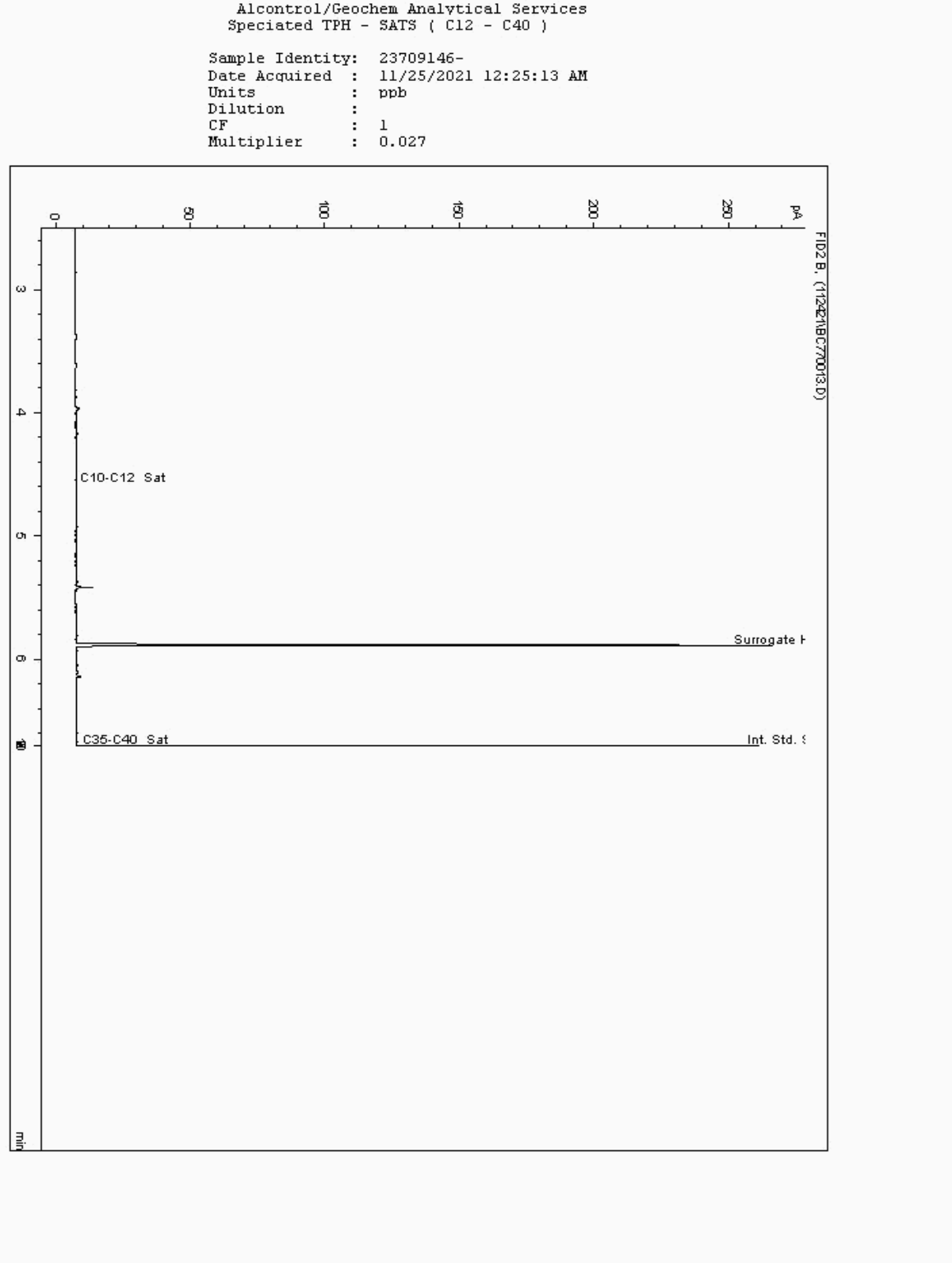


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25391102 **Depth :** 0.00 - 0.00
Sample ID : WS54



CERTIFICATE OF ANALYSIS

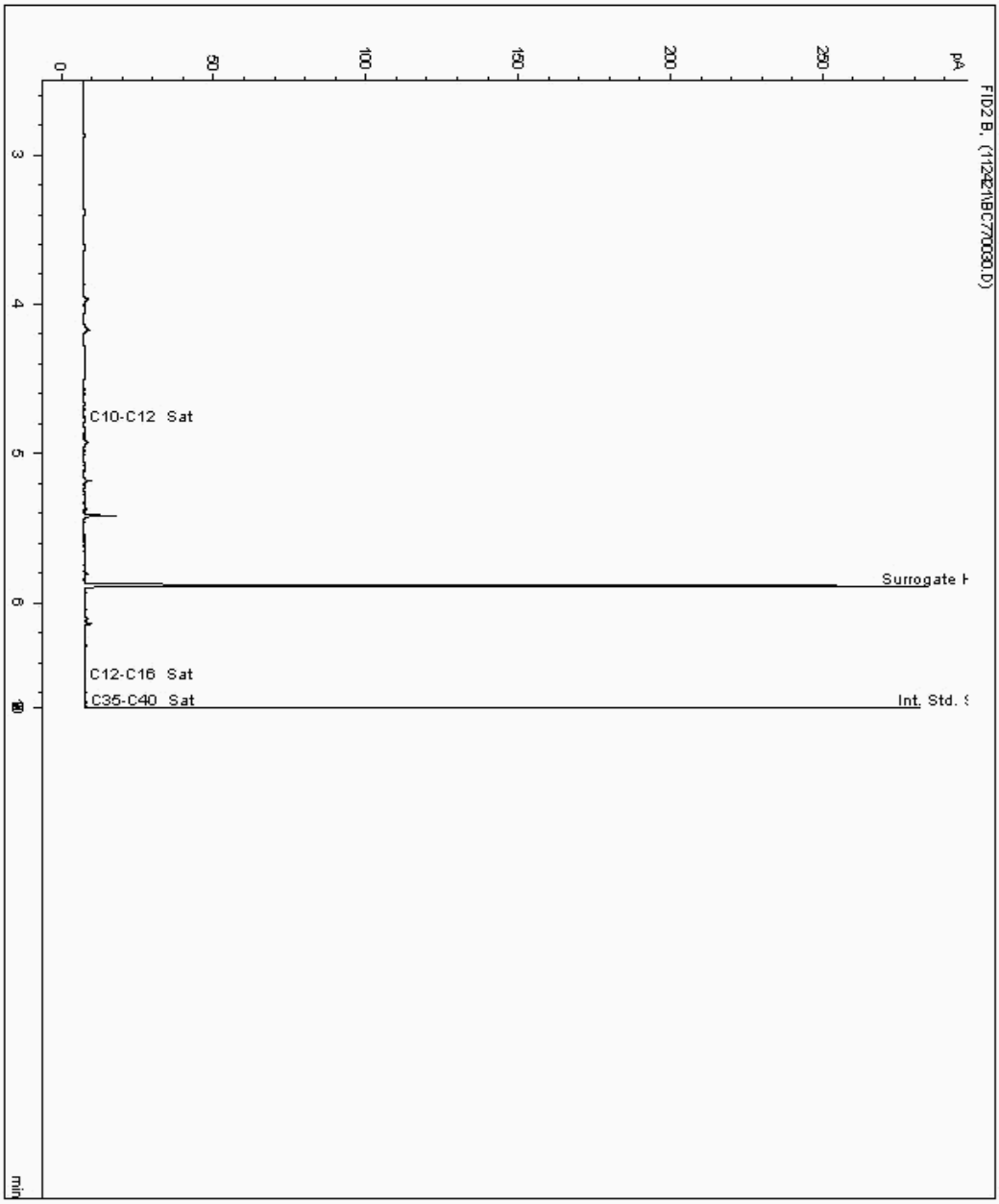
SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25391105 **Depth :** 0.00 - 0.00
Sample ID : BH05

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23709328-
Date Acquired : 11/25/2021 7:10:39 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

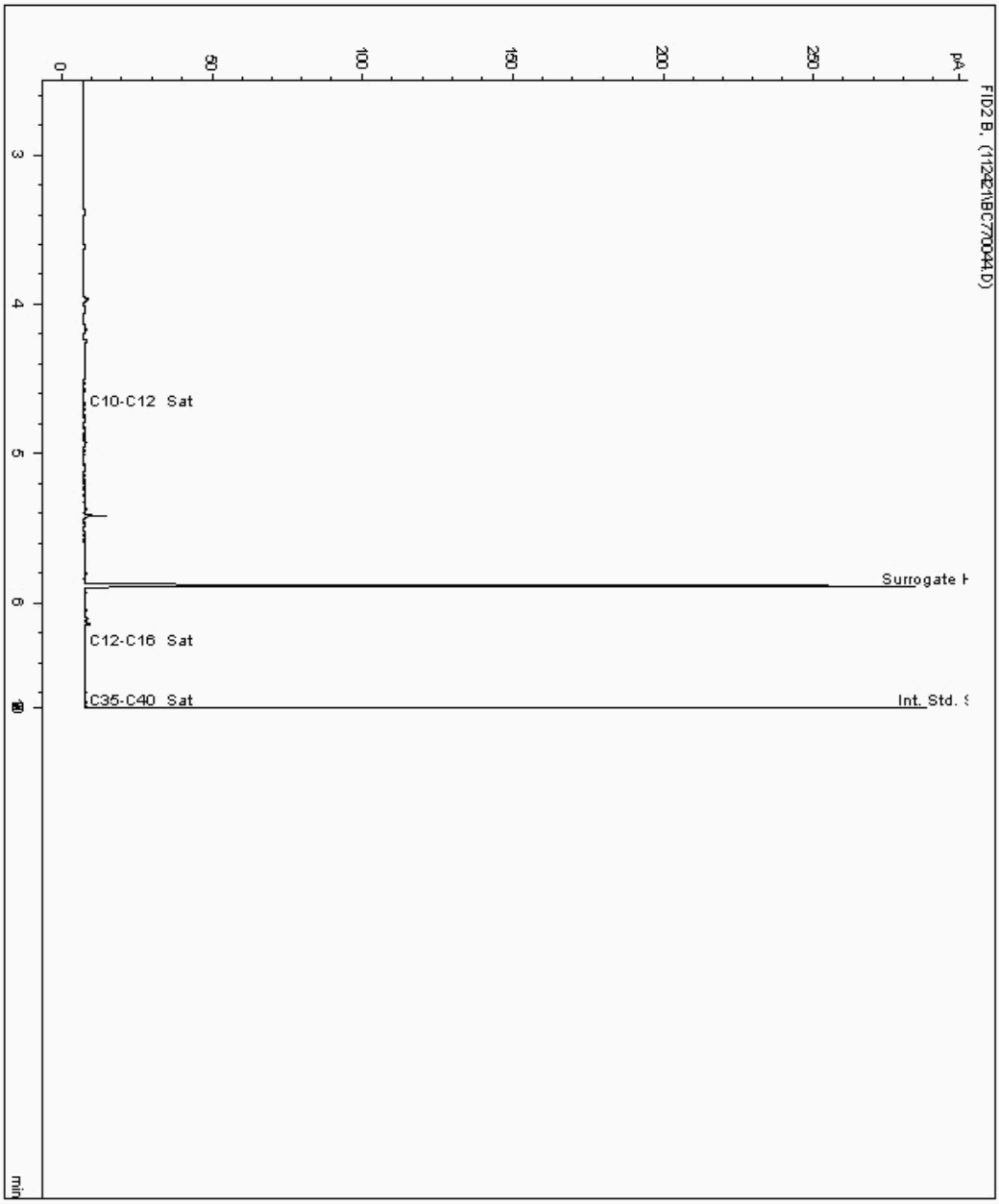


Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25391107 **Depth :** 0.00 - 0.00
Sample ID : WS15

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23709286-
Date Acquired : 11/25/2021 2:44:14 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

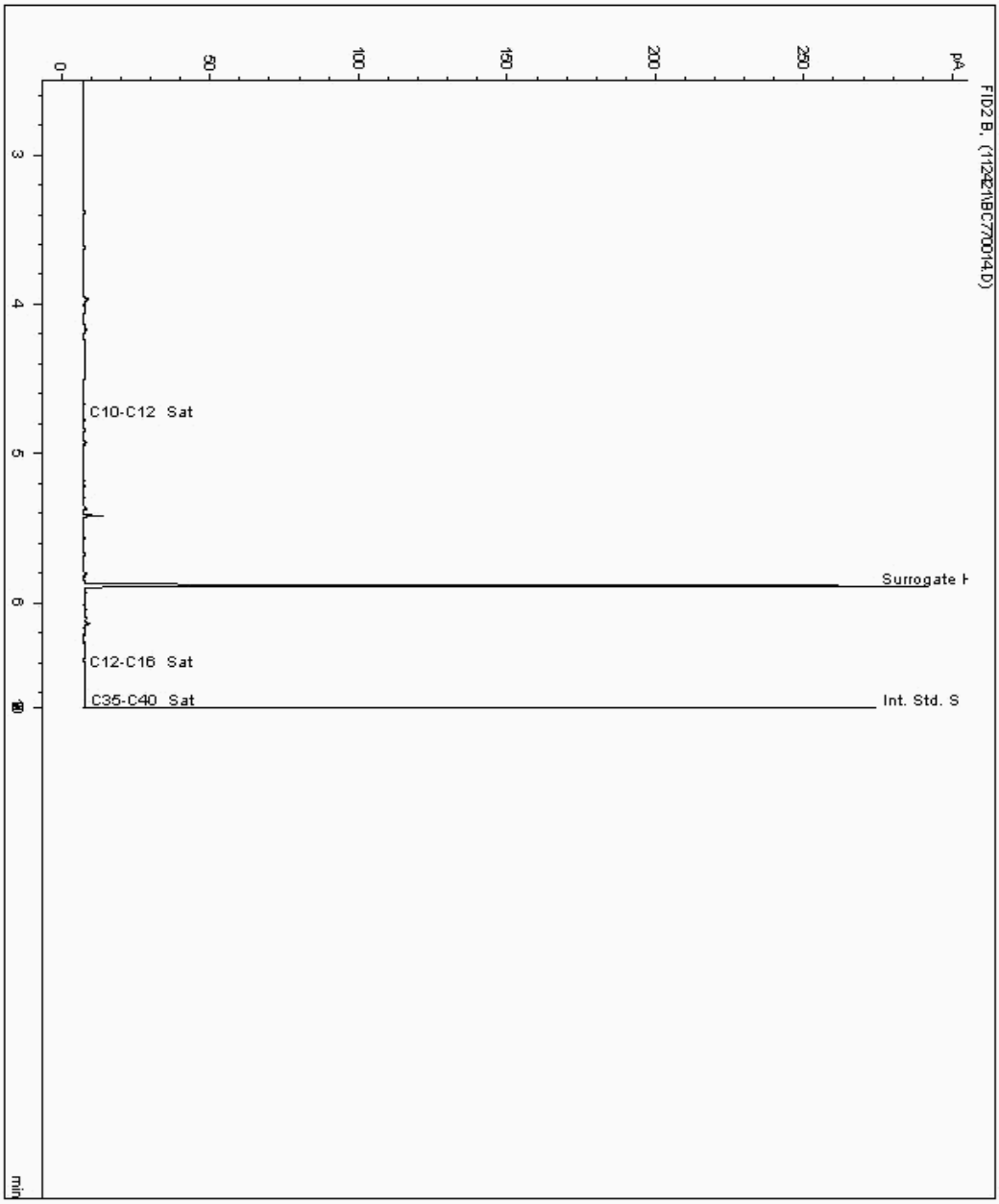
SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25391110 **Depth :** 0.00 - 0.00
Sample ID : BH56

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23709360-
Date Acquired : 11/25/2021 12:49:12 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

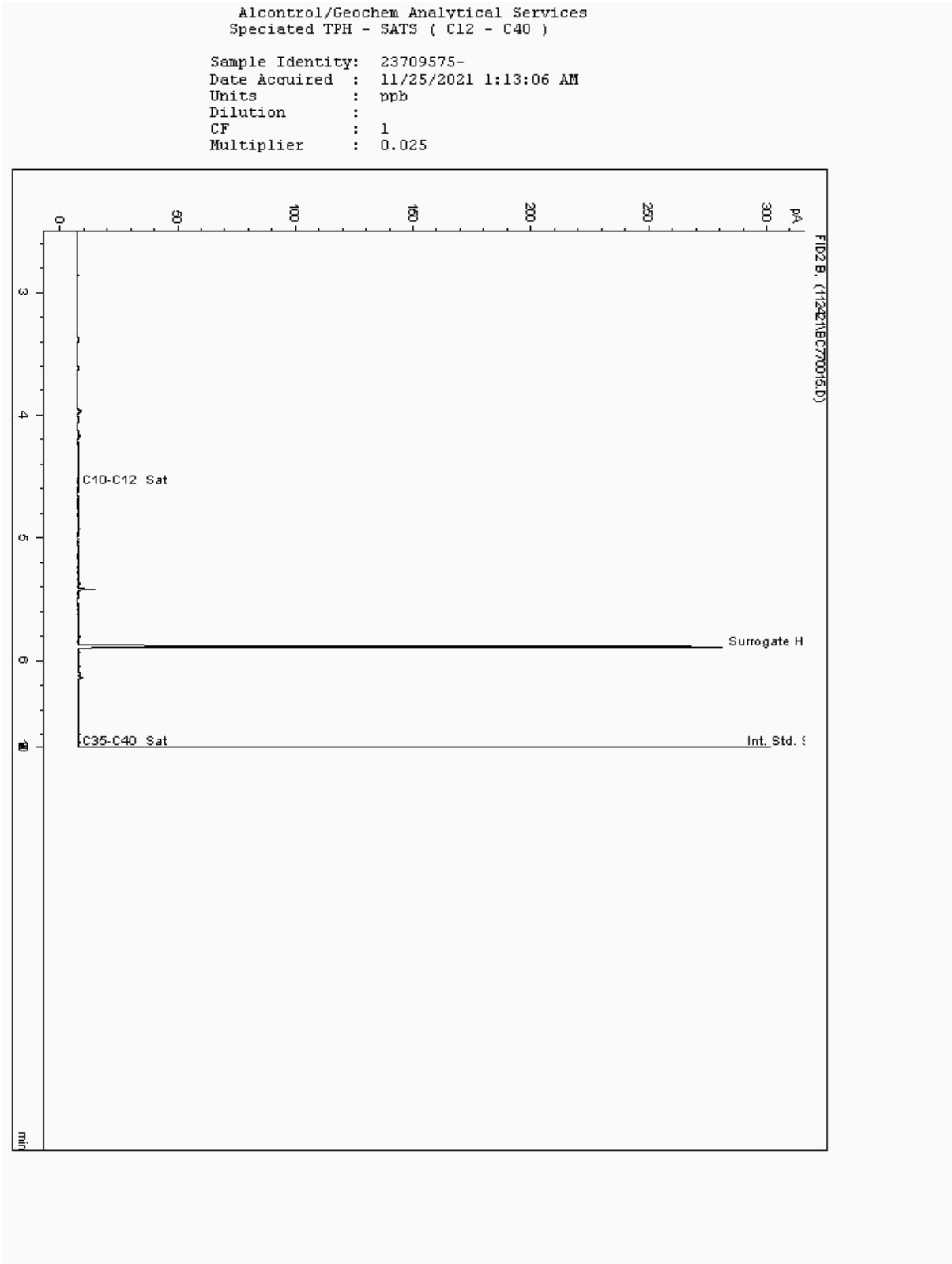


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25391129 **Depth :** 0.00 - 0.00
Sample ID : BH15



CERTIFICATE OF ANALYSIS

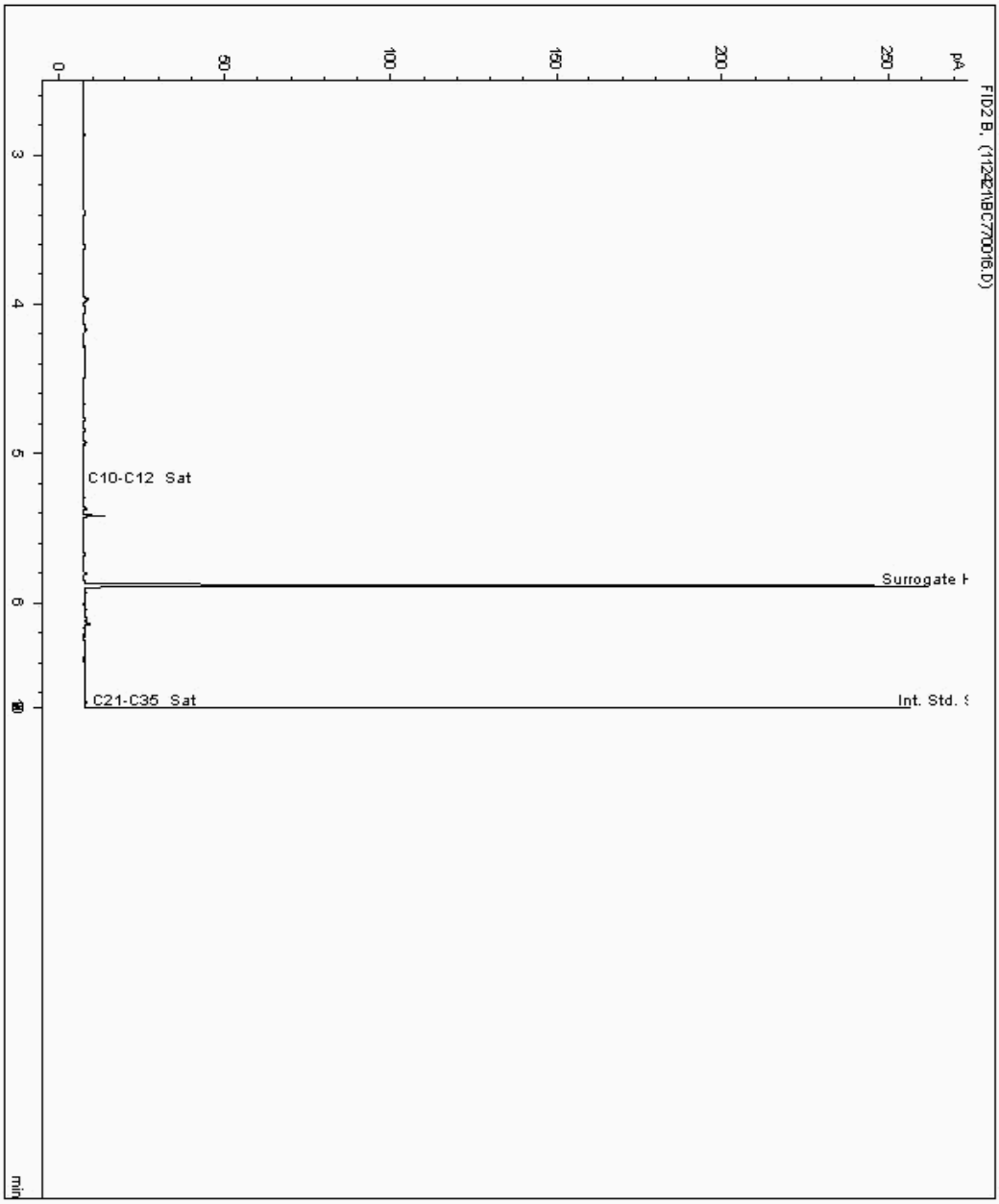
SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25391159 **Depth :** 0.00 - 0.00
Sample ID : BH16

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23709442-
Date Acquired : 11/25/2021 1:36:58 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

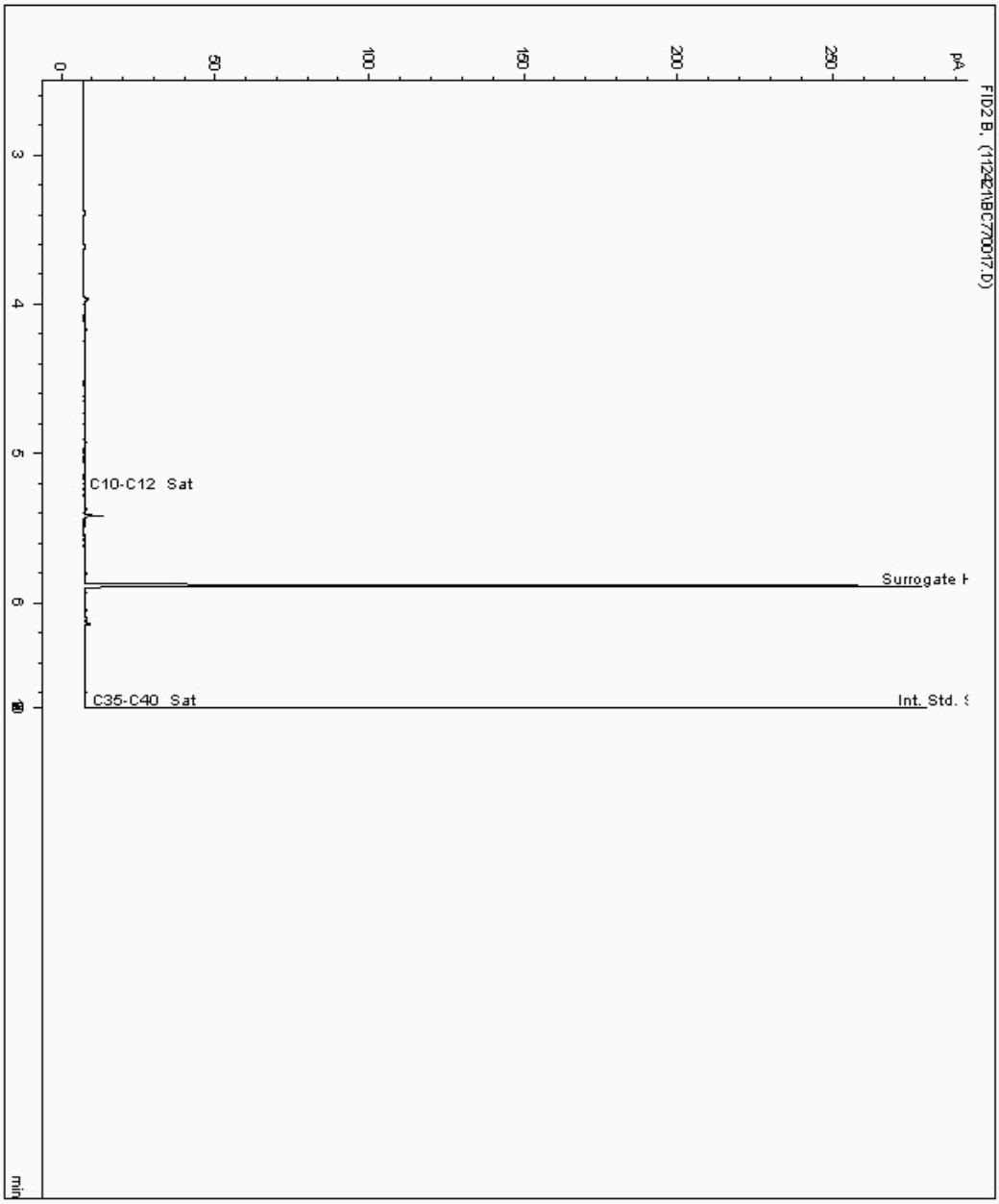
SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25391215 **Depth :** 0.00 - 0.00
Sample ID : BH21

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23709073-
Date Acquired : 11/25/2021 2:00:51 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



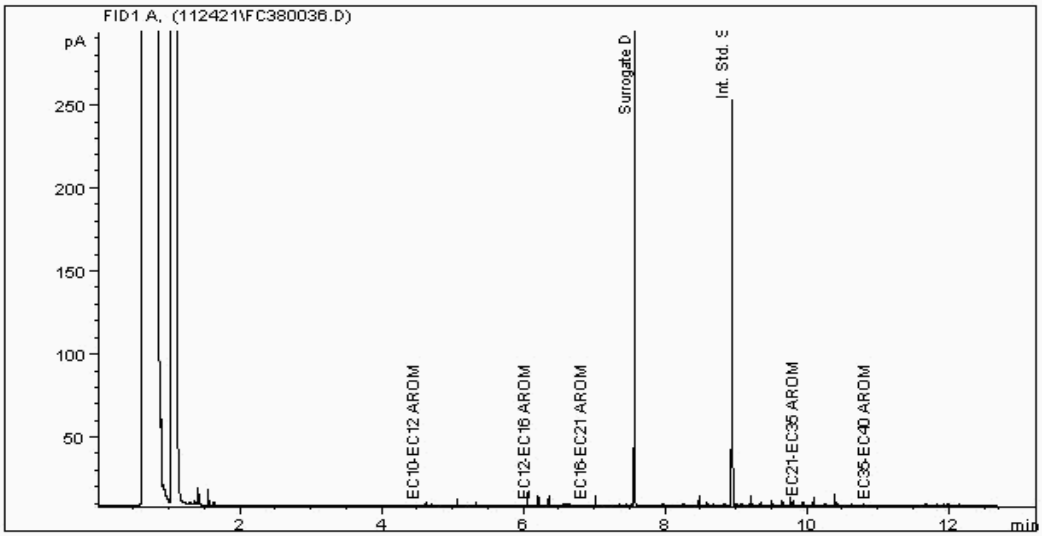
Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25384913 **Depth :** 0.00 - 0.00
Sample ID : WS25

Speciated TPH - AROM (C12 - C40)

Sample Identity: 23709387-
Date Acquired : 25/11/21 03:59:06 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	EC10-EC12 AROM	0.0	0.000
2	EC12-EC16 AROM	0.0	0.000
3	EC16-EC21 AROM	0.0	0.000
4	Surrogate D	199.8	0.228
5	Int. Std. S	203.0	0.250
6	EC21-EC35 AROM	0.0	0.000
7	EC35-EC40 AROM	0.0	0.000
	Total Peak Area	402.9	



CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

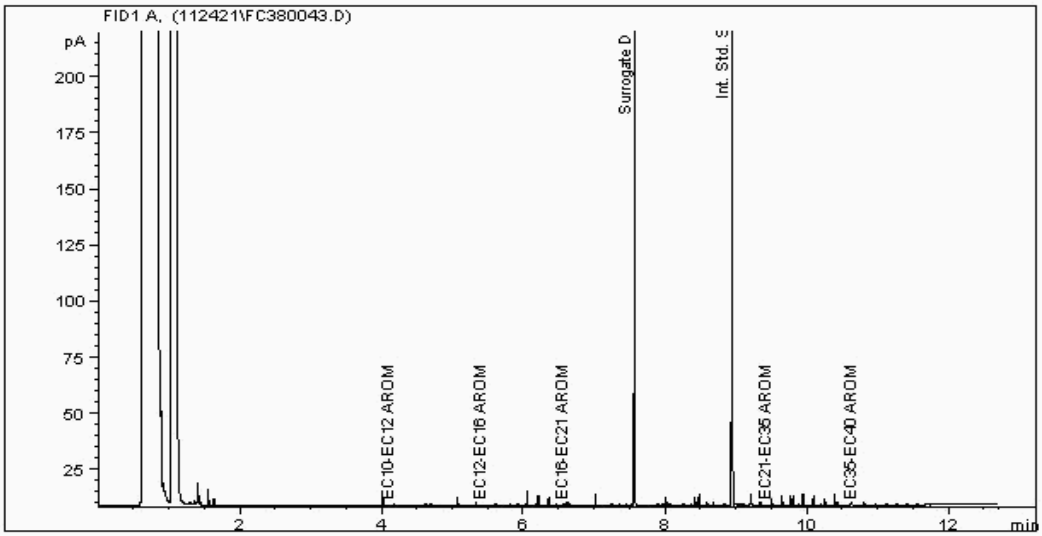
Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25384919 **Depth :** 0.00 - 0.00
Sample ID : BH60

Speciated TPH - AROM (C12 - C40)

Sample Identity: 23709652-
Date Acquired : 25/11/21 06:40:25 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	EC10-EC12 AROM	0.0	0.000
2	EC12-EC16 AROM	0.0	0.000
3	EC16-EC21 AROM	0.0	0.000
4	Surrogate D	210.6	0.245
5	Int. Std. S	198.9	0.250
6	EC21-EC35 AROM	0.0	0.000
7	EC35-EC40 AROM	0.0	0.000
	Total Peak Area	409.5	



CERTIFICATE OF ANALYSIS

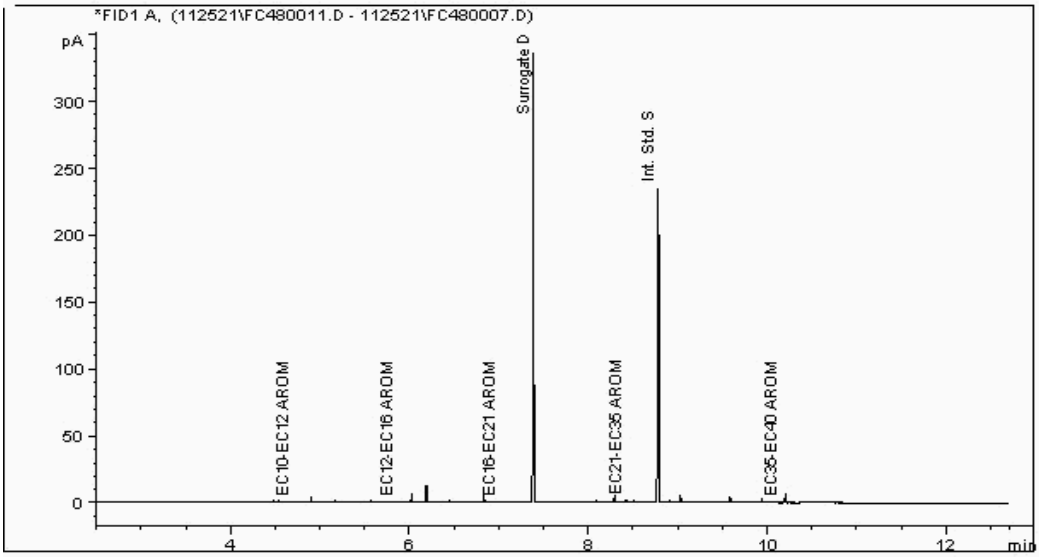
SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25388151 **Depth :** 0.00 - 0.00
Sample ID : BH19

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 23717793-
Date Acquired : 25/11/2021 19:37:12 PM
Units : ppb
Dilution : SE BH19[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

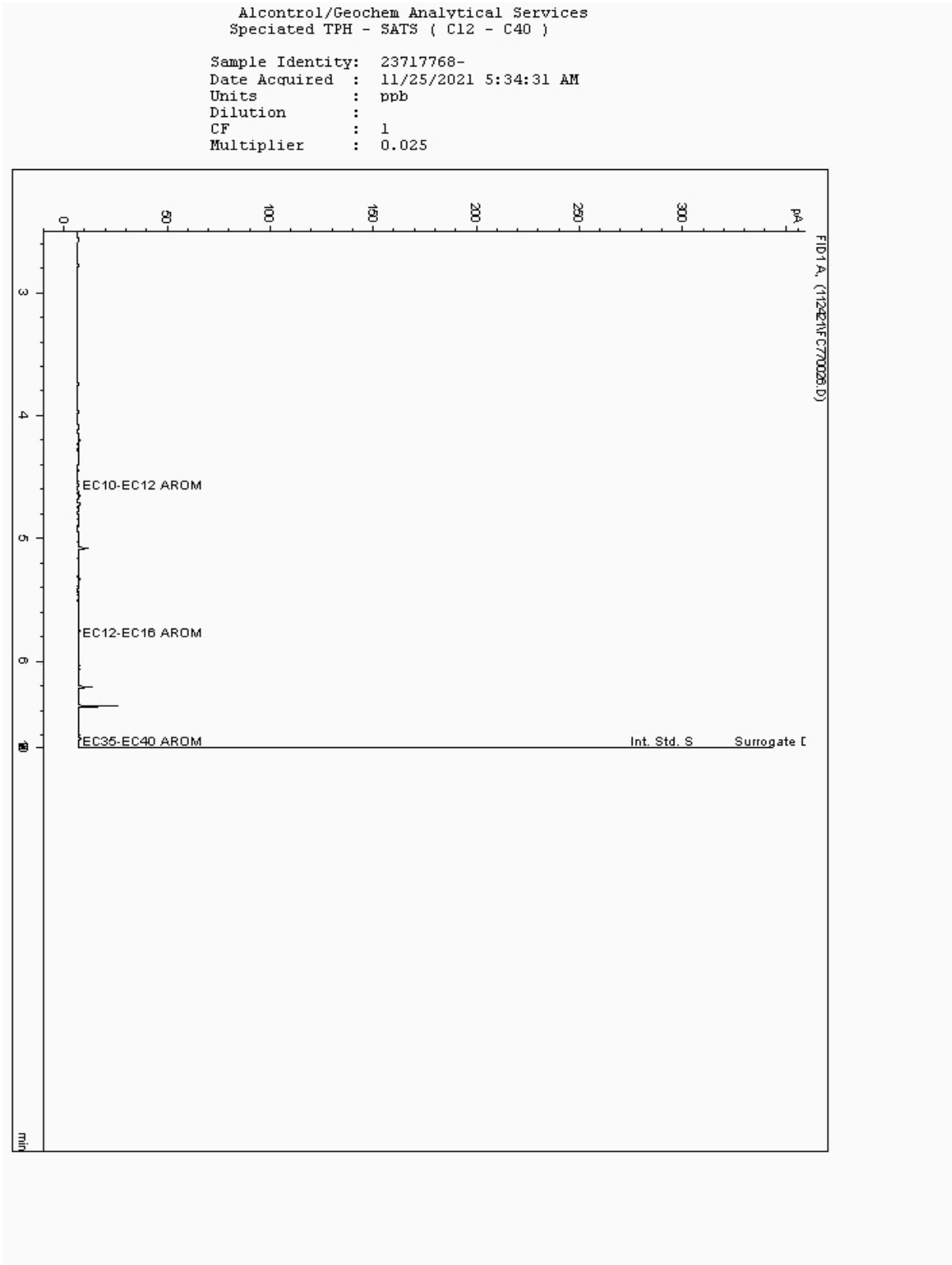


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25388184 **Depth :** 0.00 - 0.00
Sample ID : BH22

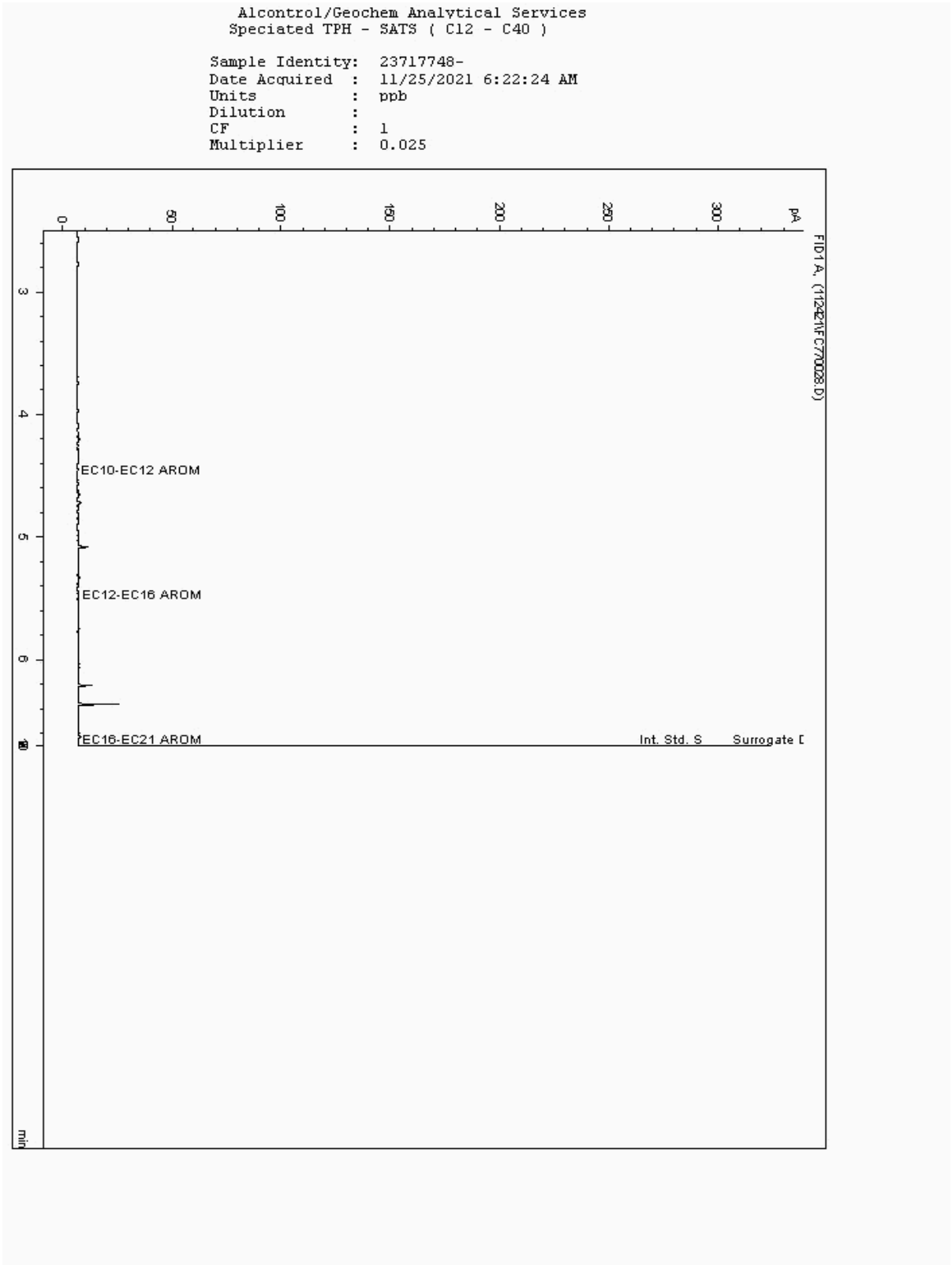


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25388193 **Depth :** 0.00 - 0.00
Sample ID : BH12



CERTIFICATE OF ANALYSIS

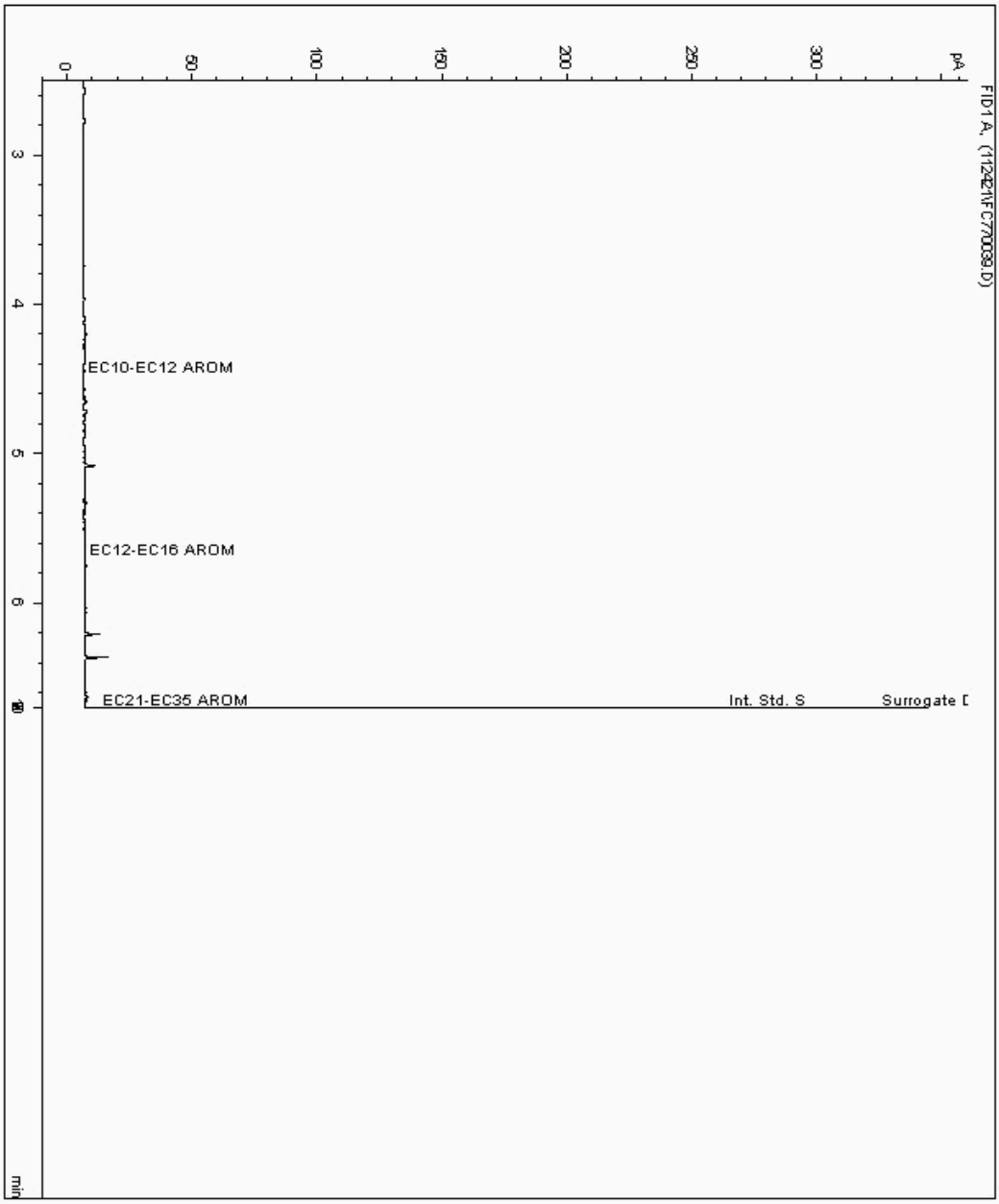
SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25388900 **Depth :** 0.00 - 0.00
Sample ID : BH02

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23709230-
Date Acquired : 11/25/2021 10:47:29 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

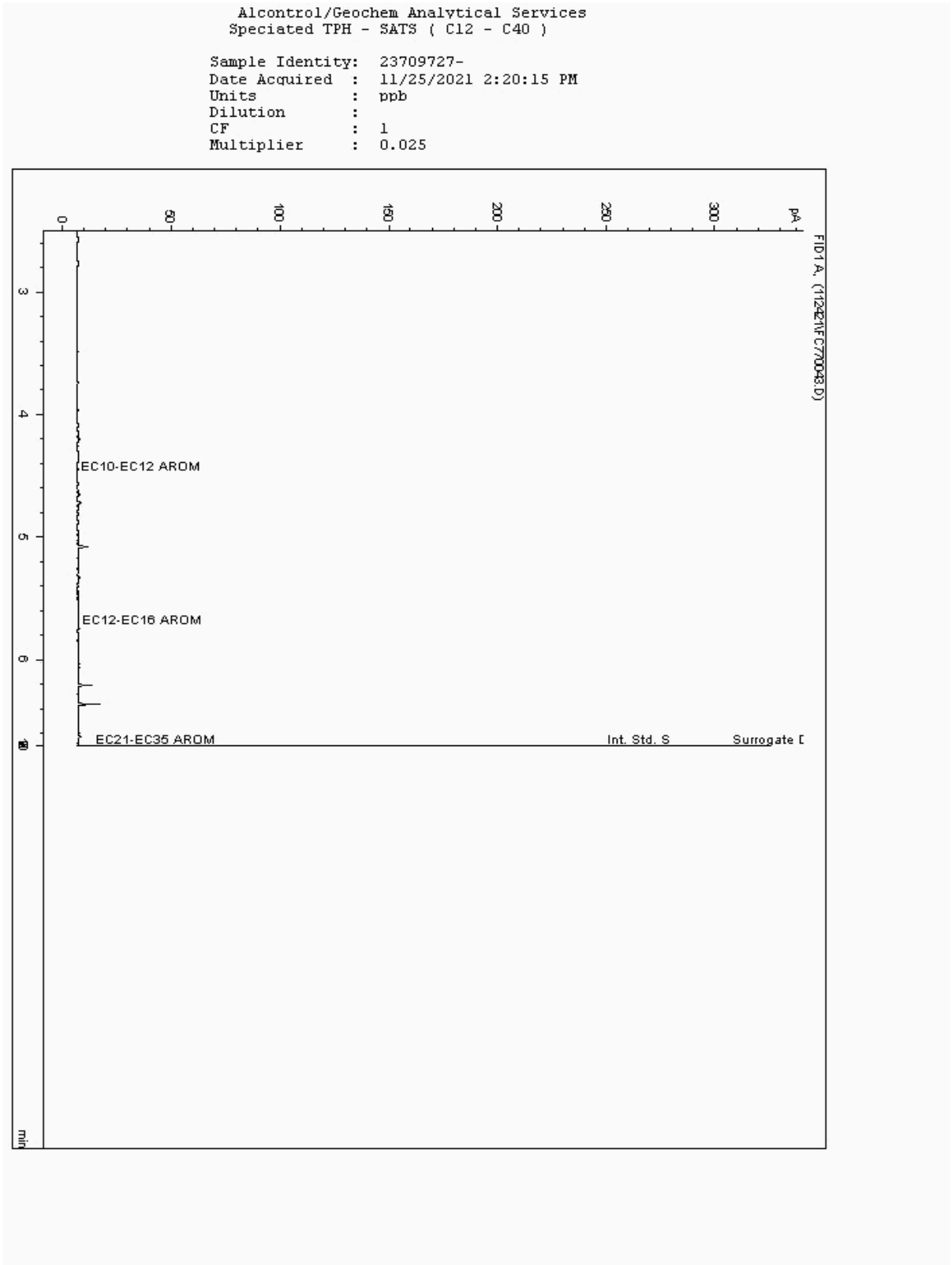


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25388905 **Depth :** 0.00 - 0.00
Sample ID : BH03A

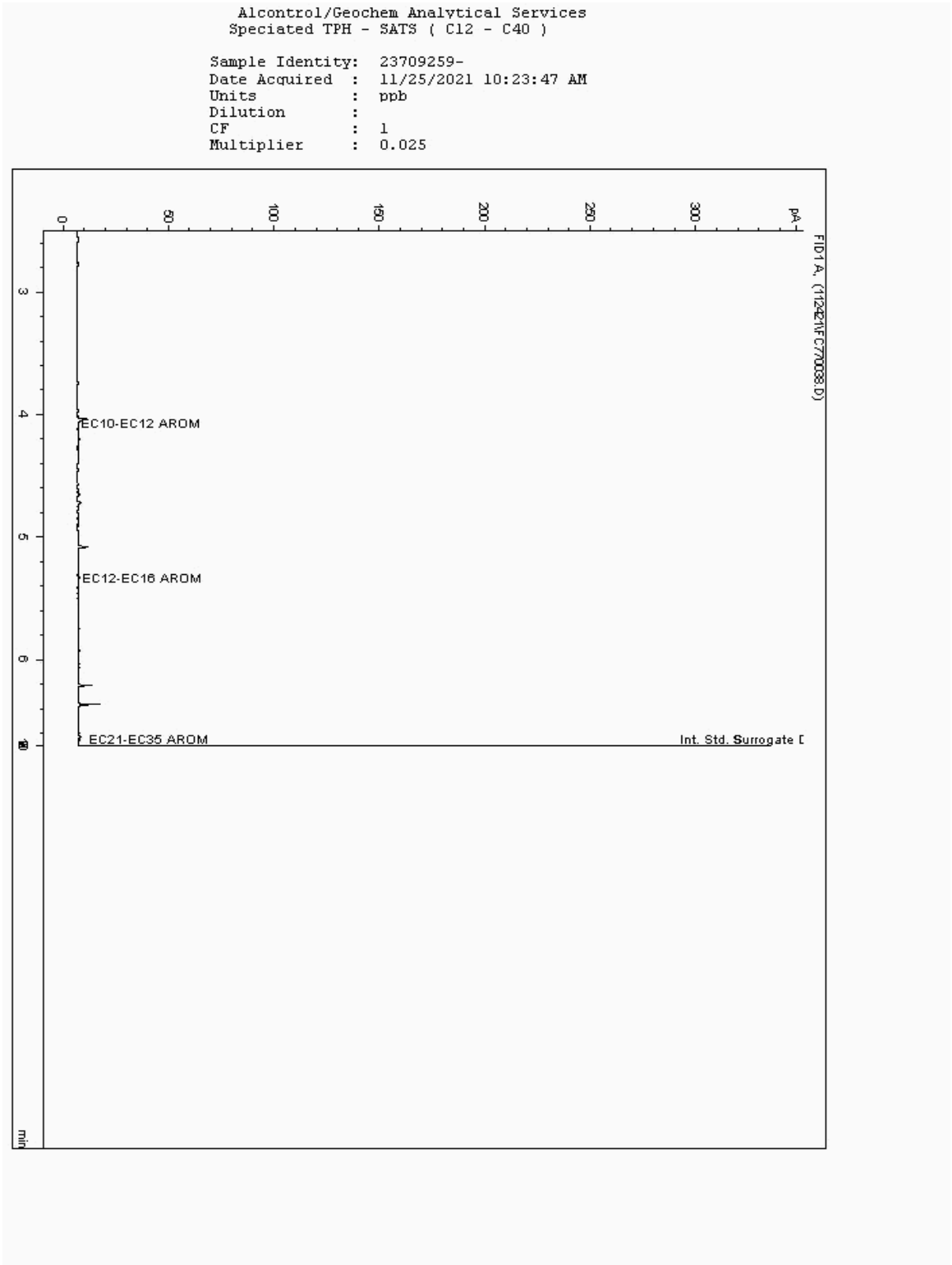


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25388908 **Depth :** 0.00 - 0.00
Sample ID : WS08

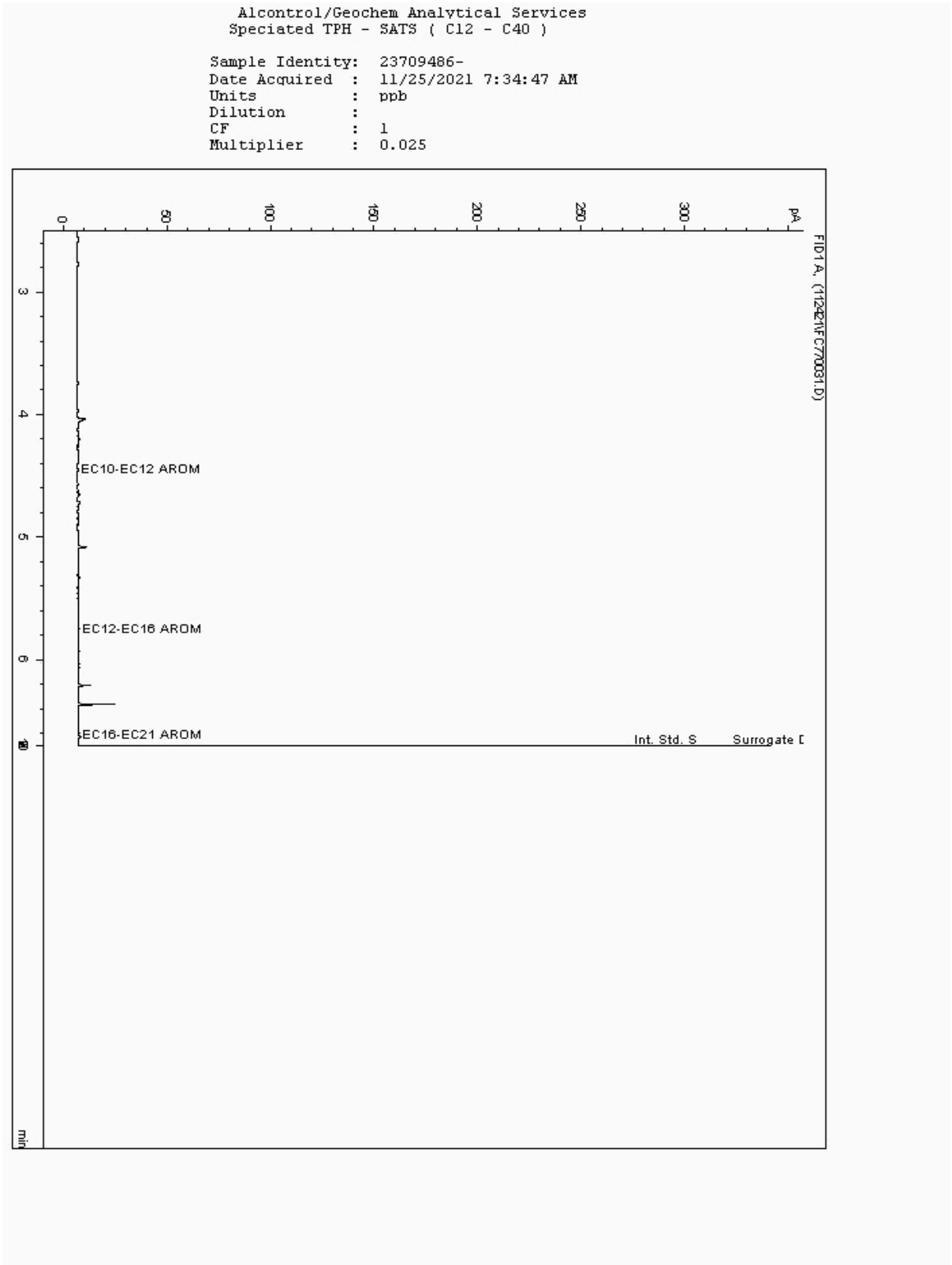


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25388937 **Depth :** 0.00 - 0.00
Sample ID : BH07

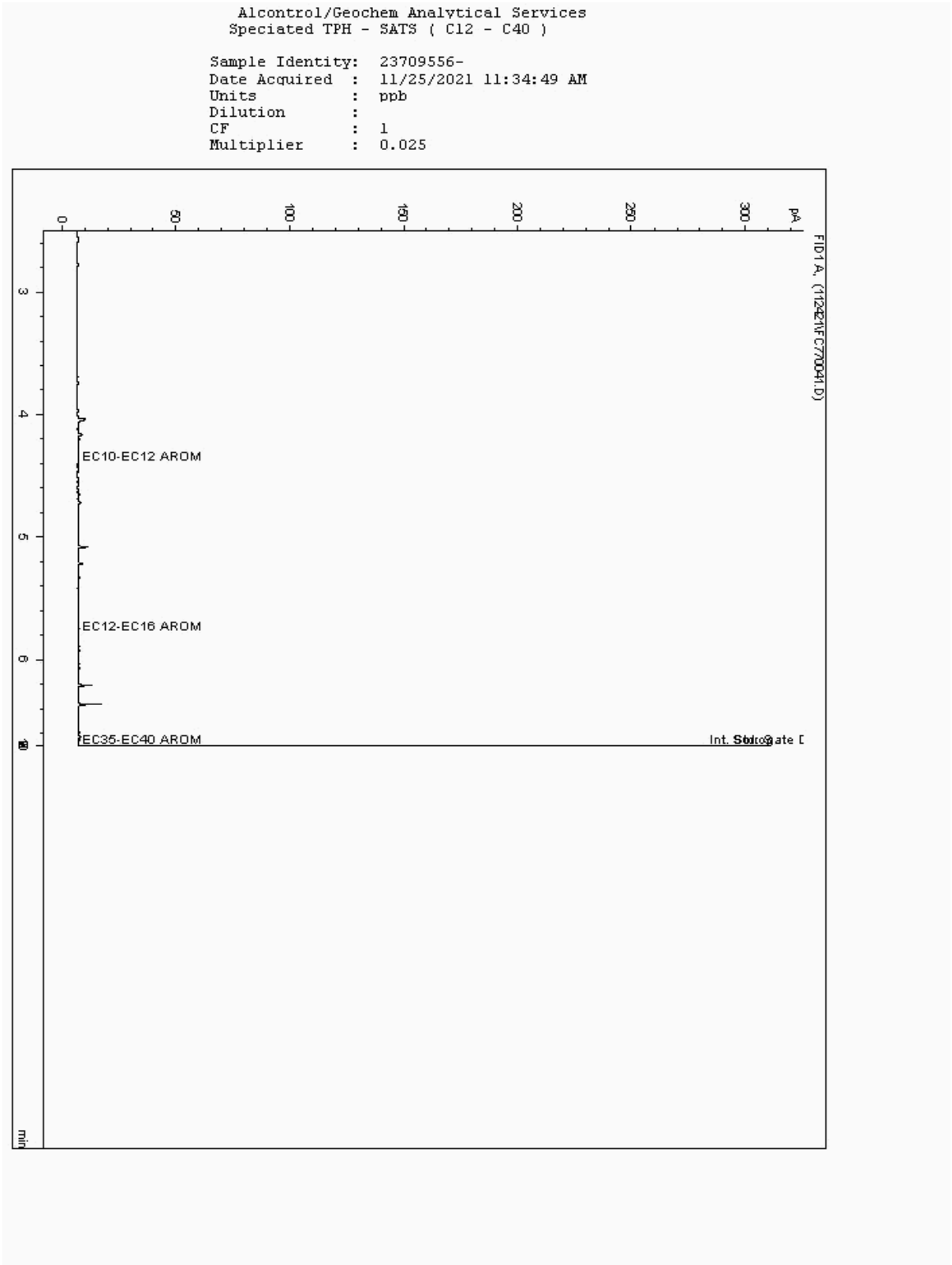


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25388939 **Depth :** 0.00 - 0.00
Sample ID : BH11



CERTIFICATE OF ANALYSIS

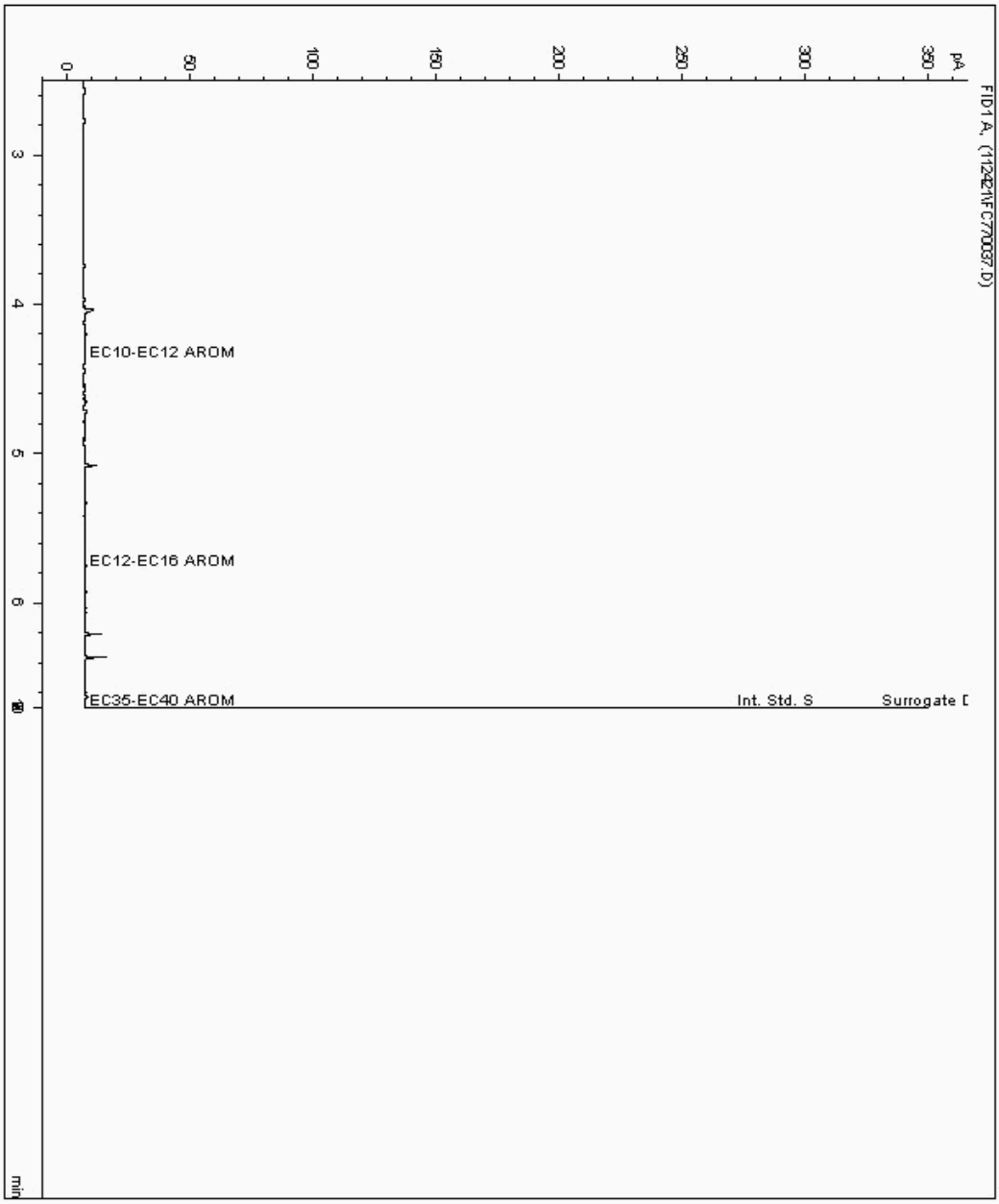
SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25388960 **Depth :** 0.00 - 0.00
Sample ID : BH61

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23709692-
Date Acquired : 11/25/2021 9:59:55 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

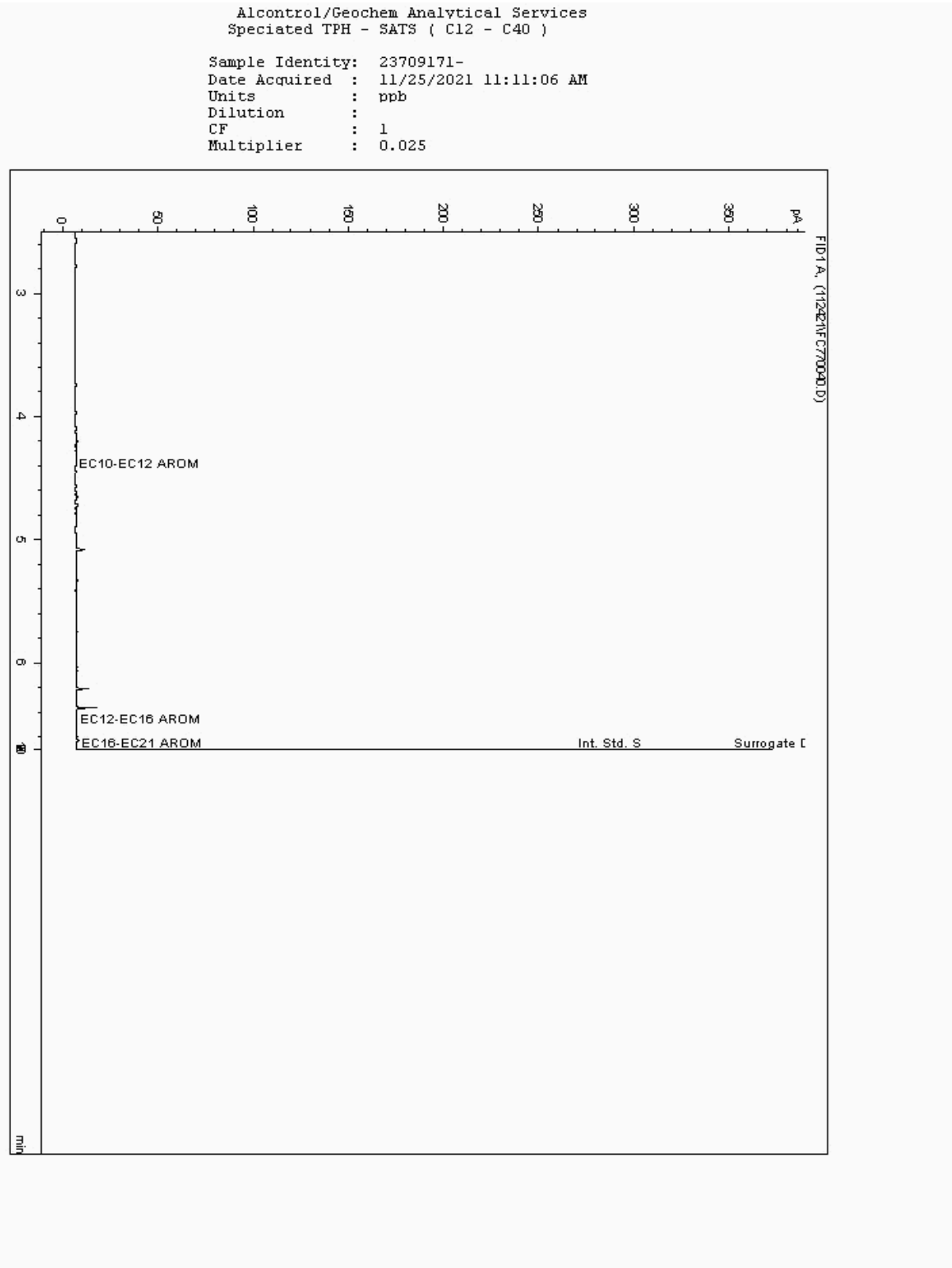


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25388971 **Depth :** 0.00 - 0.00
Sample ID : BH14



CERTIFICATE OF ANALYSIS

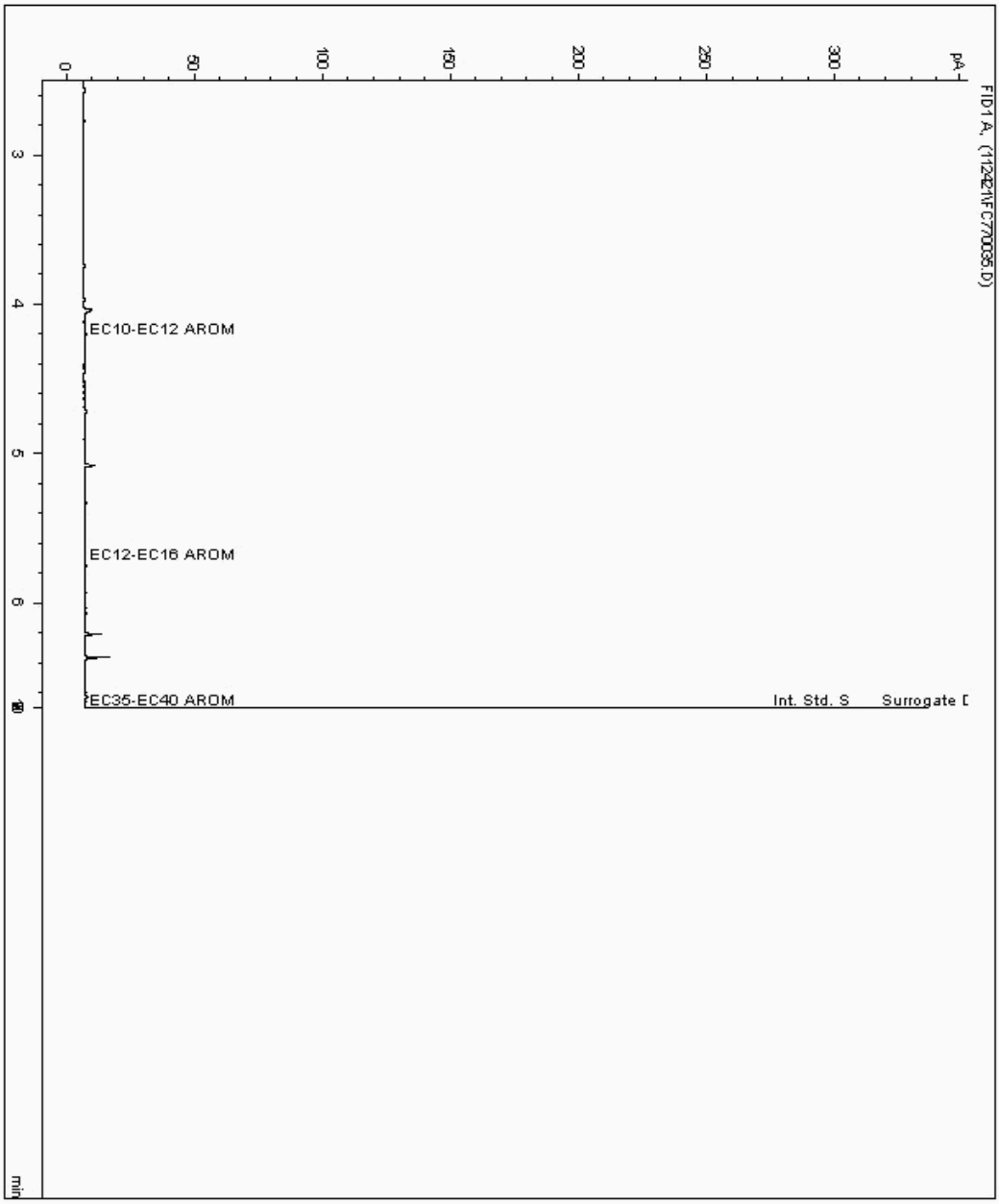
SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25388998 **Depth :** 0.00 - 0.00
Sample ID : BH17

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23709616-
Date Acquired : 11/25/2021 9:11:38 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

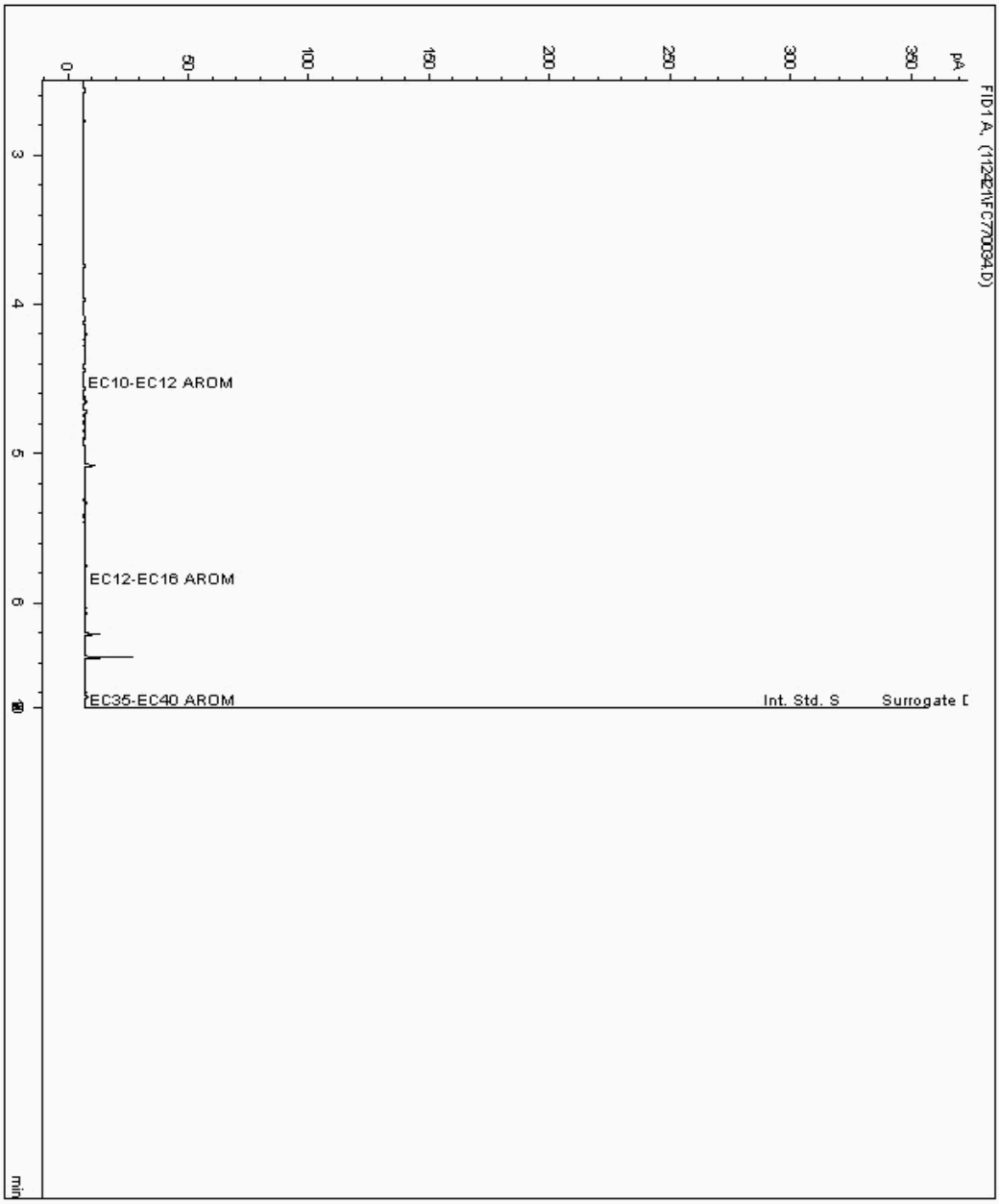
SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25389002 **Depth :** 0.00 - 0.00
Sample ID : BH18

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23709597-
Date Acquired : 11/25/2021 8:47:18 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

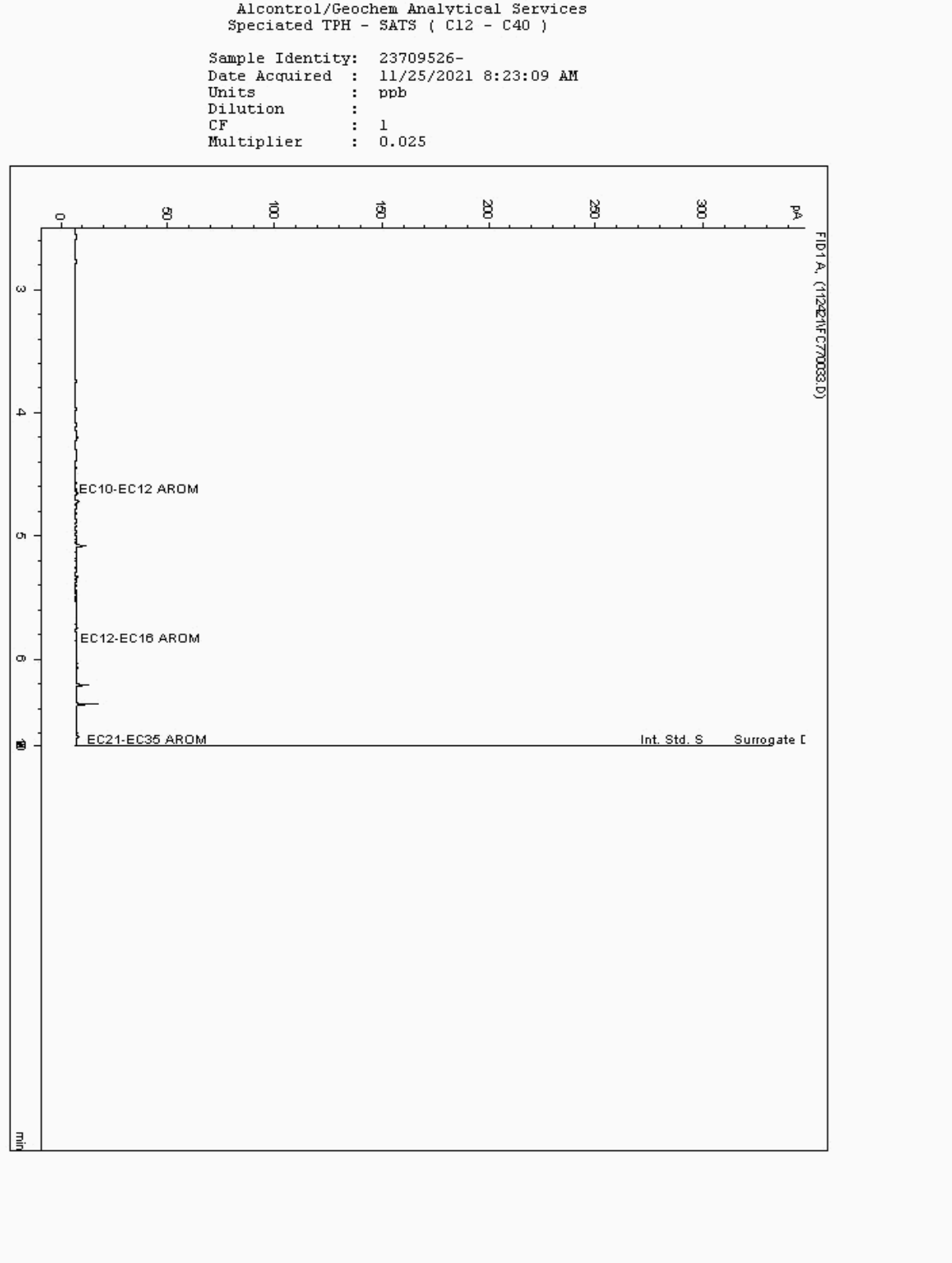


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25389030 **Depth :** 0.00 - 0.00
Sample ID : BH10



CERTIFICATE OF ANALYSIS

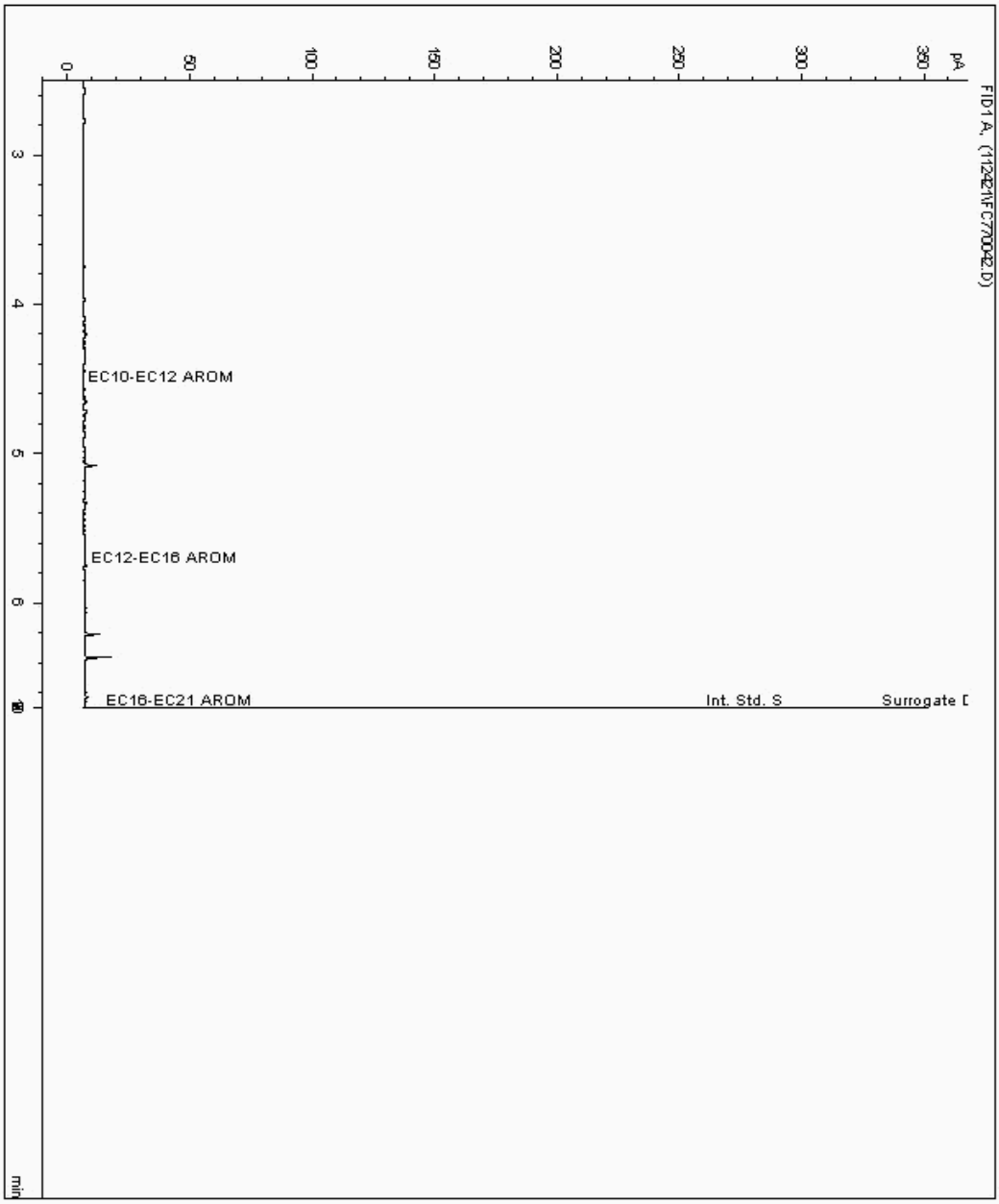
SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25389032 **Depth :** 0.00 - 0.00
Sample ID : BH09

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23709505-
Date Acquired : 11/25/2021 11:58:32 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

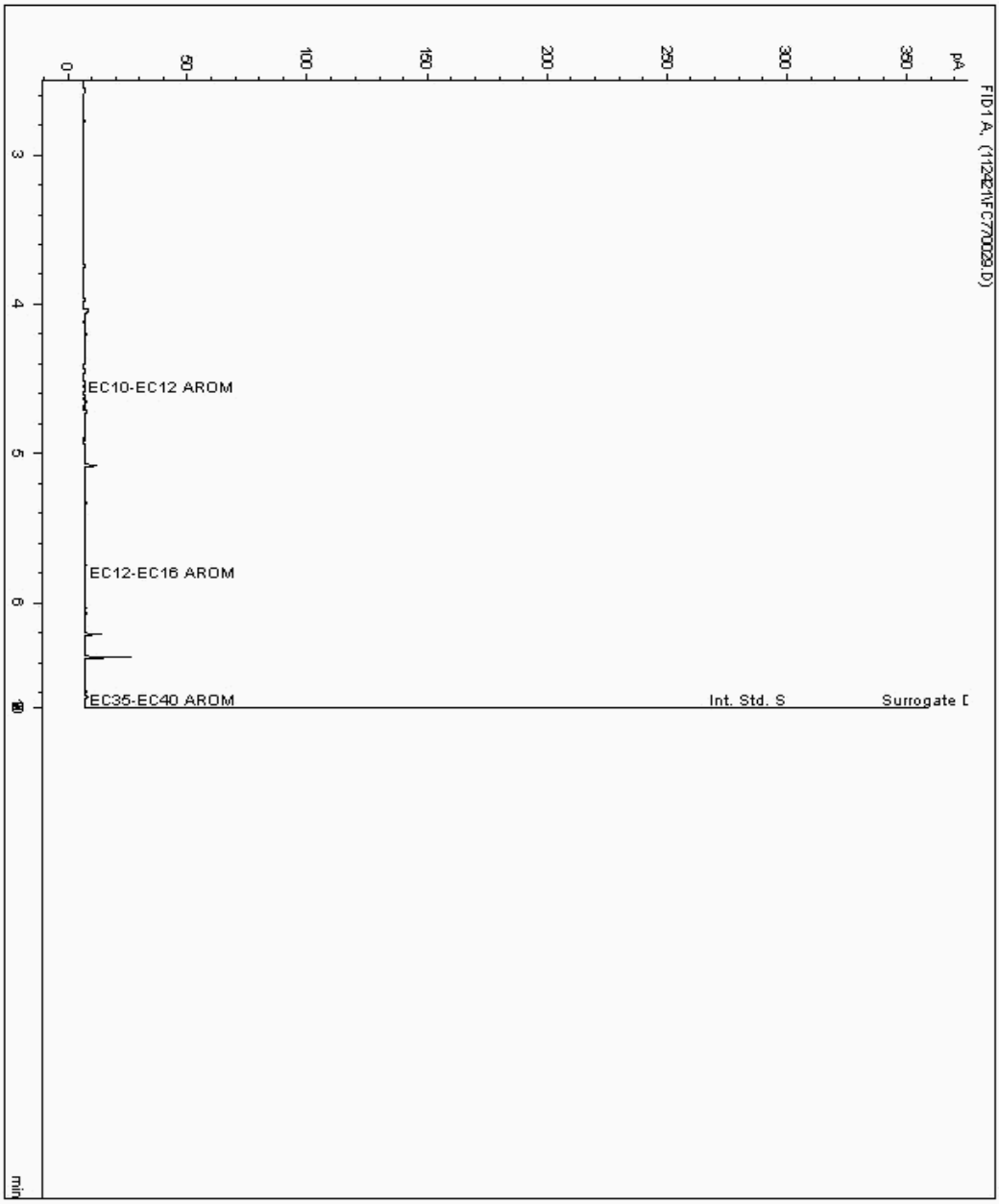
SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25389040 **Depth :** 0.00 - 0.00
Sample ID : BH01

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23709194-
Date Acquired : 11/25/2021 6:46:36 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

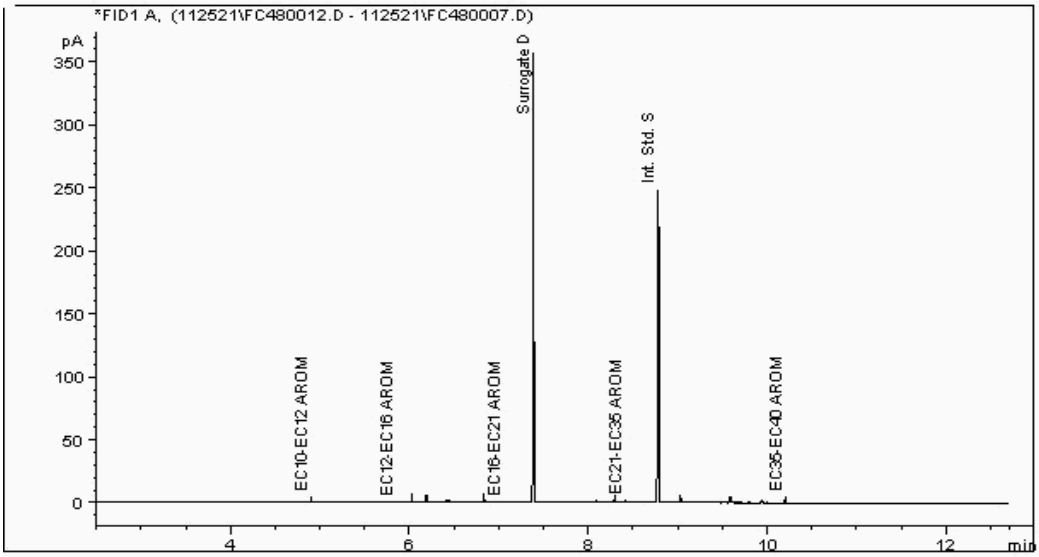
SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25389477 **Depth :** 0.00 - 0.00
Sample ID : WS12

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 23709745-
Date Acquired : 25/11/2021 20:00:33 PM
Units : ppb
Dilution : SE WS12[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

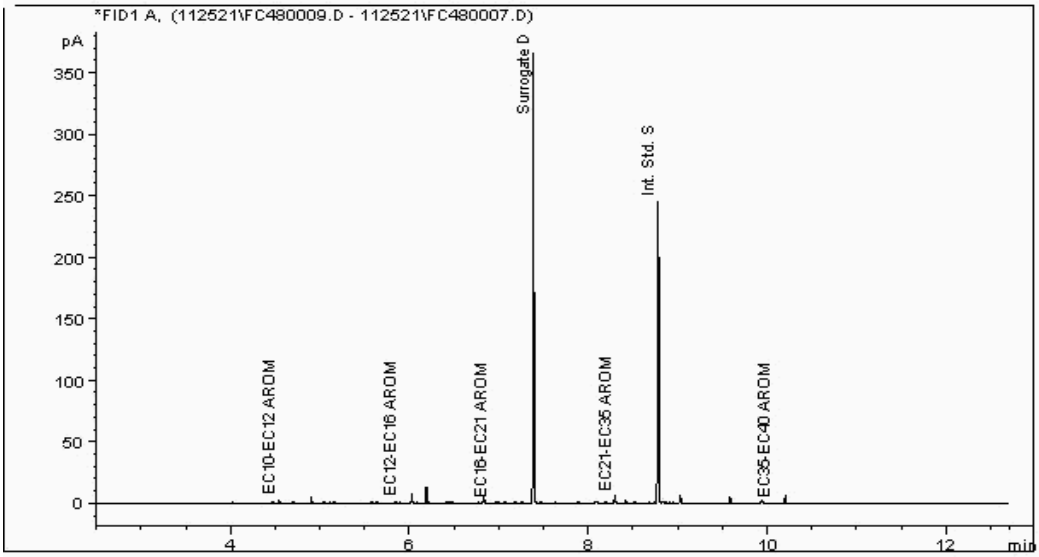
SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25389479 **Depth :** 0.00 - 0.00
Sample ID : WS26

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 23709413-
Date Acquired : 25/11/2021 18:50:00 PM
Units : ppb
Dilution : SE WS26[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

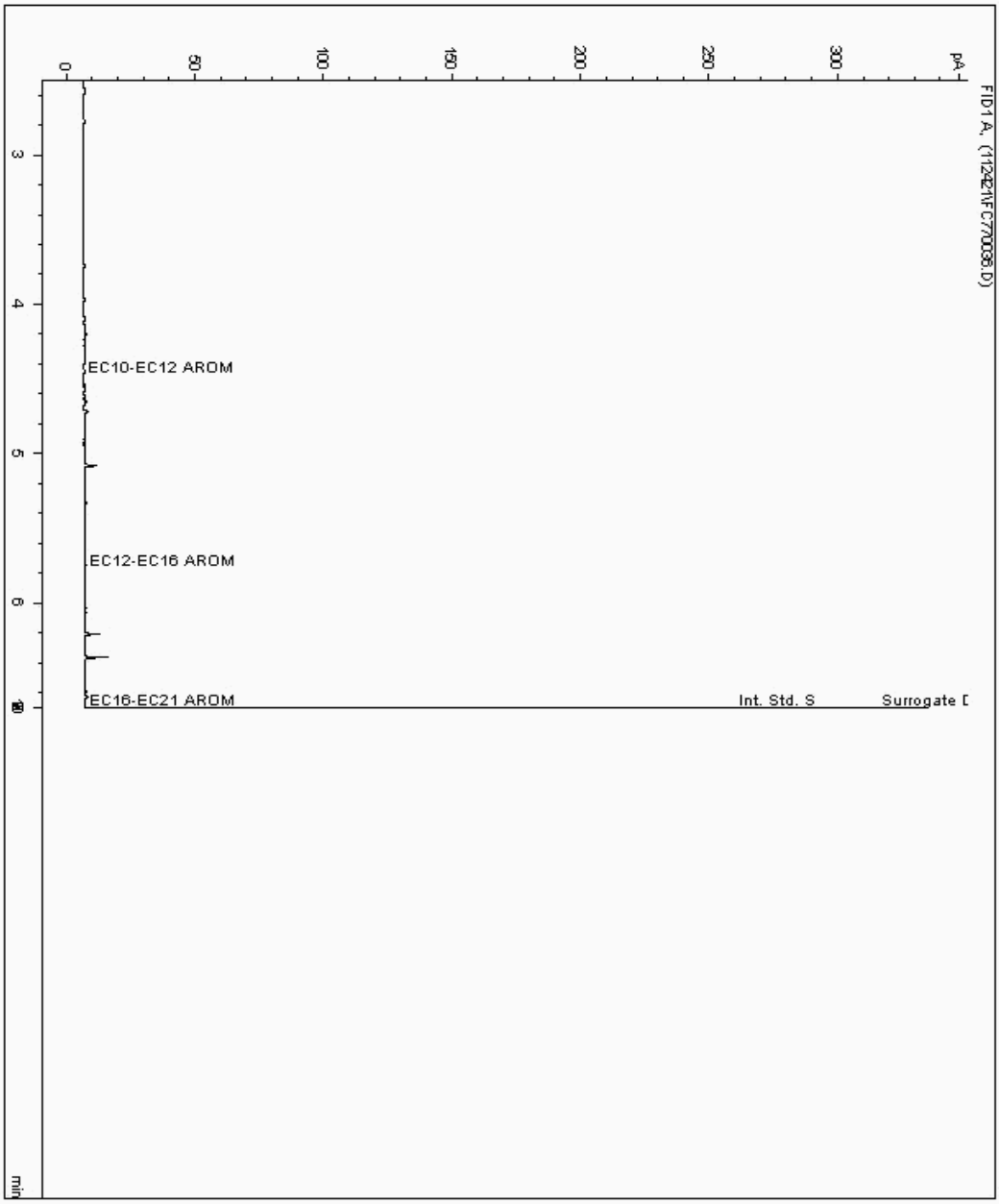
SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25389488 **Depth :** 0.00 - 0.00
Sample ID : WS31

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23709465-
Date Acquired : 11/25/2021 9:35:44 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

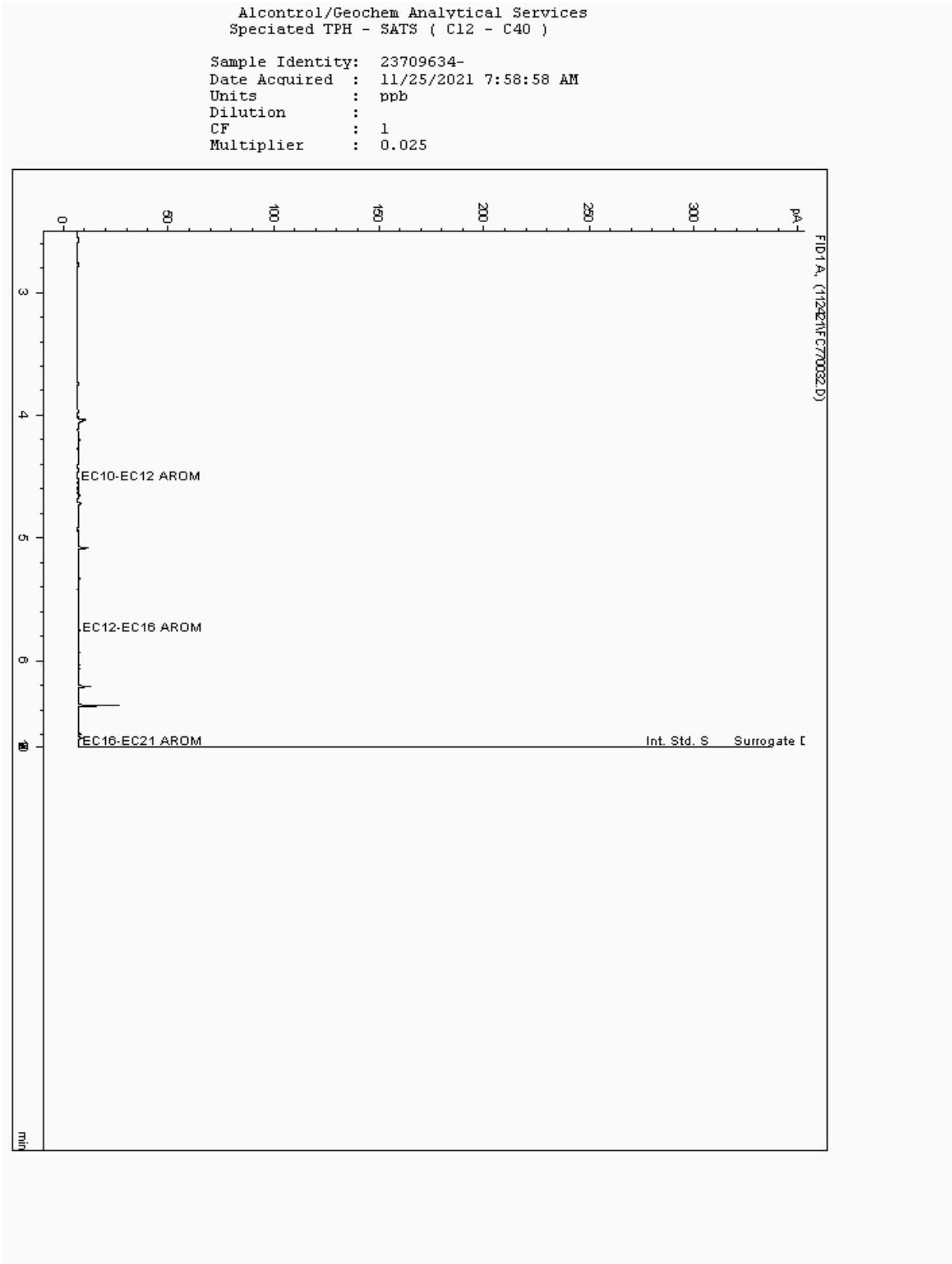


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25389494 **Depth :** 0.00 - 0.00
Sample ID : BH06



CERTIFICATE OF ANALYSIS

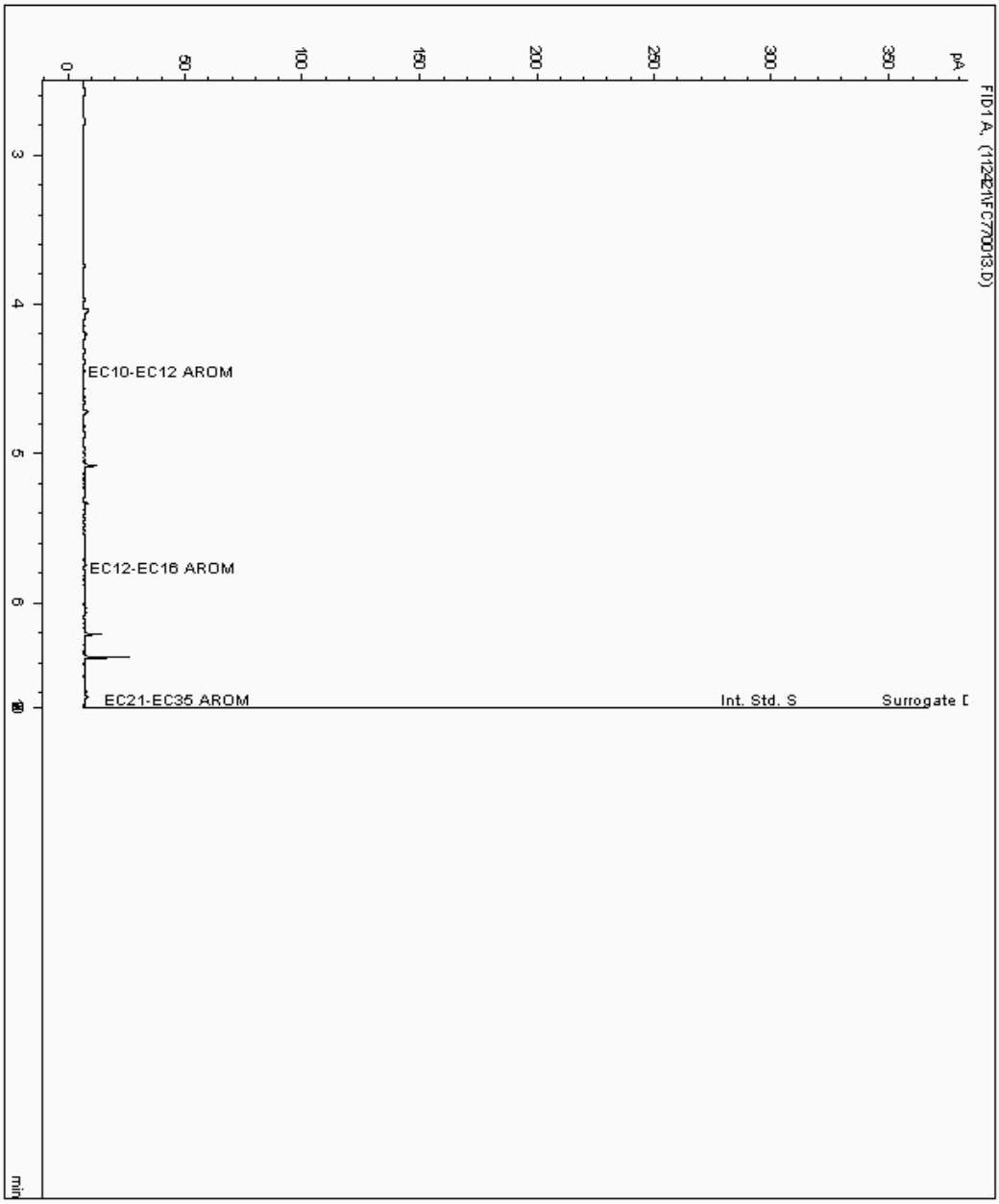
SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25391102 **Depth :** 0.00 - 0.00
Sample ID : WS54

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23709147-
Date Acquired : 11/25/2021 12:25:13 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.027



CERTIFICATE OF ANALYSIS

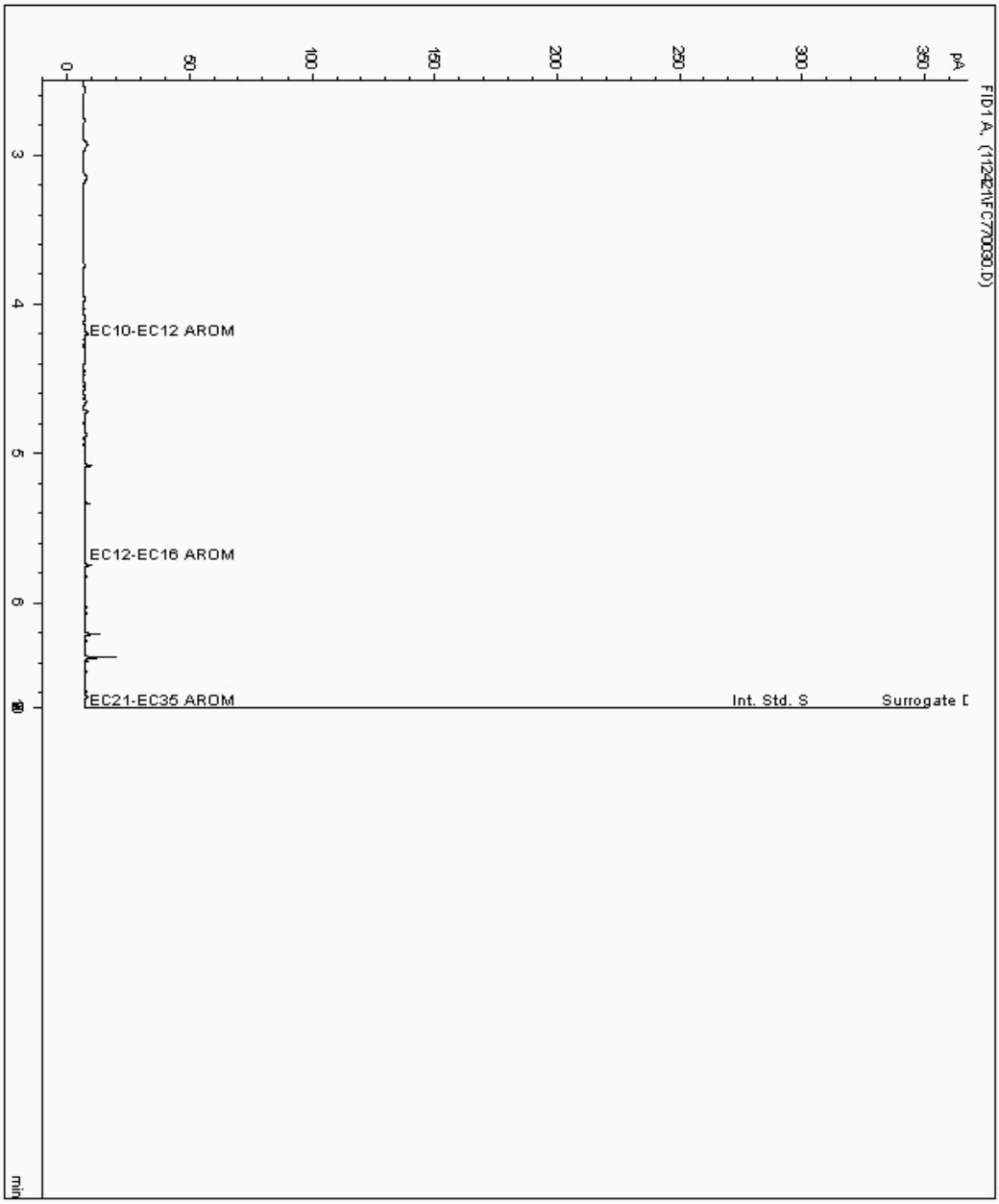
SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25391105 **Depth :** 0.00 - 0.00
Sample ID : BH05

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23709329-
Date Acquired : 11/25/2021 7:10:39 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

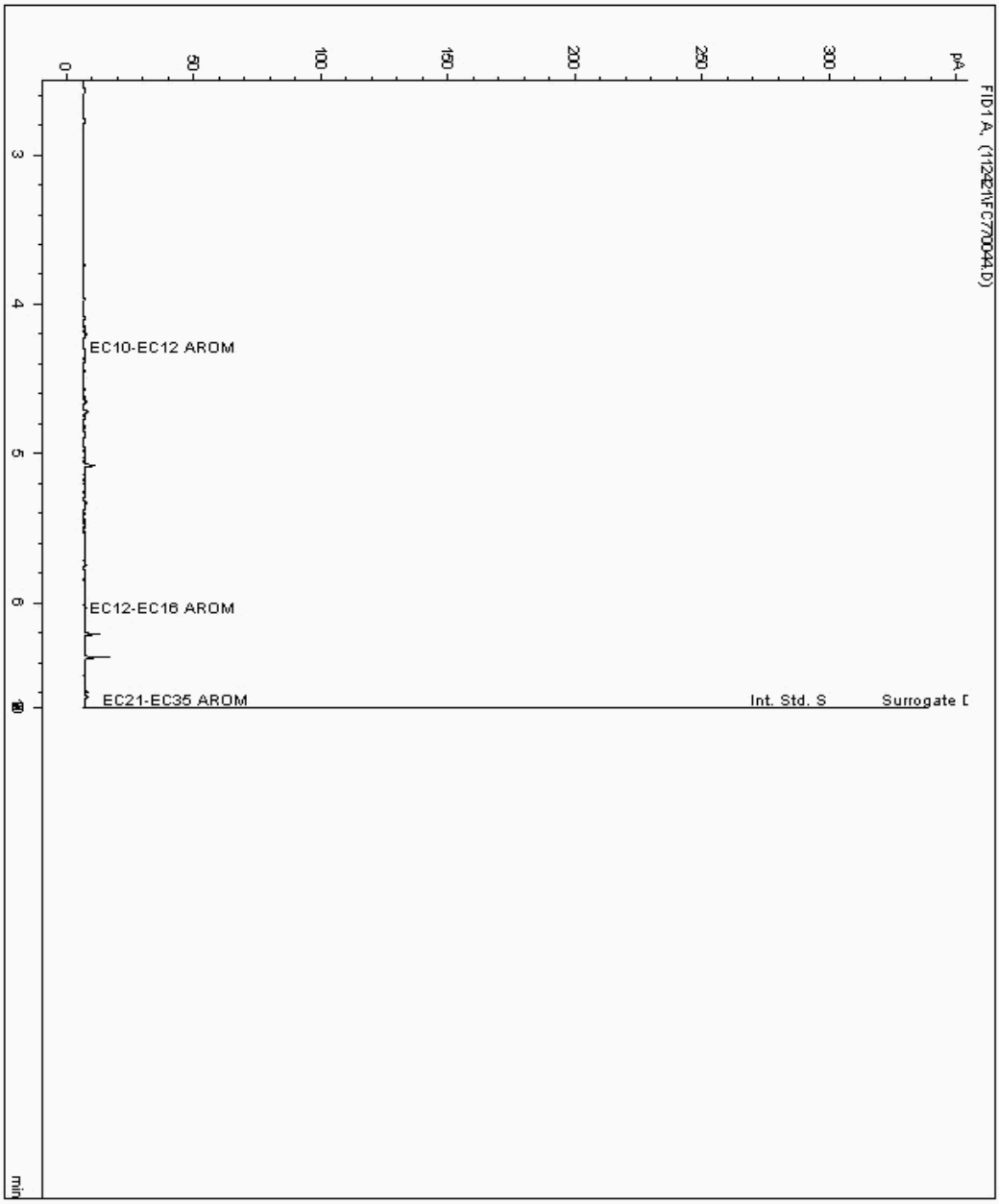
SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25391107 **Depth :** 0.00 - 0.00
Sample ID : WS15

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23709287-
Date Acquired : 11/25/2021 2:44:14 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

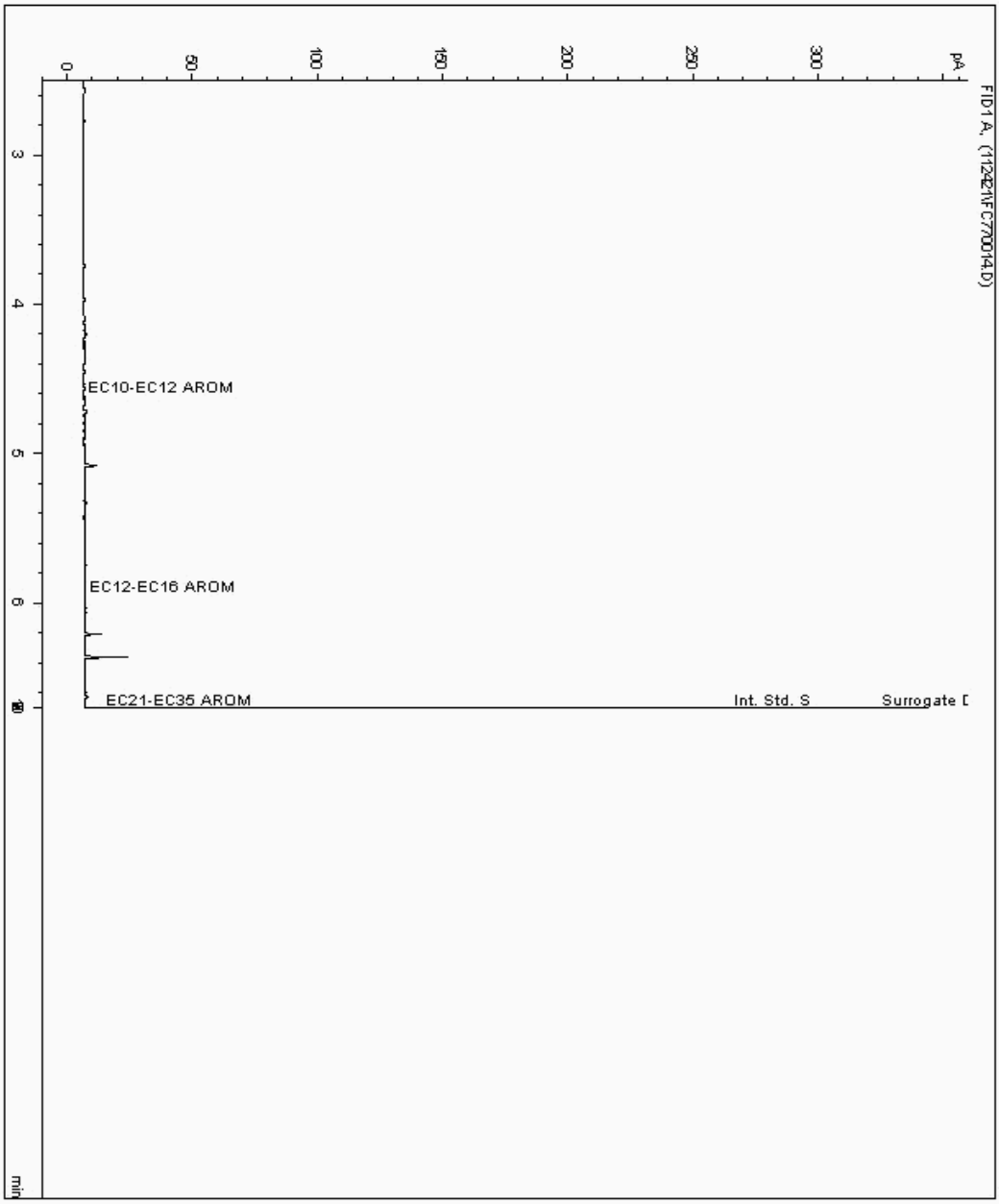
SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25391110 **Depth :** 0.00 - 0.00
Sample ID : BH56

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23709361-
Date Acquired : 11/25/2021 12:49:12 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

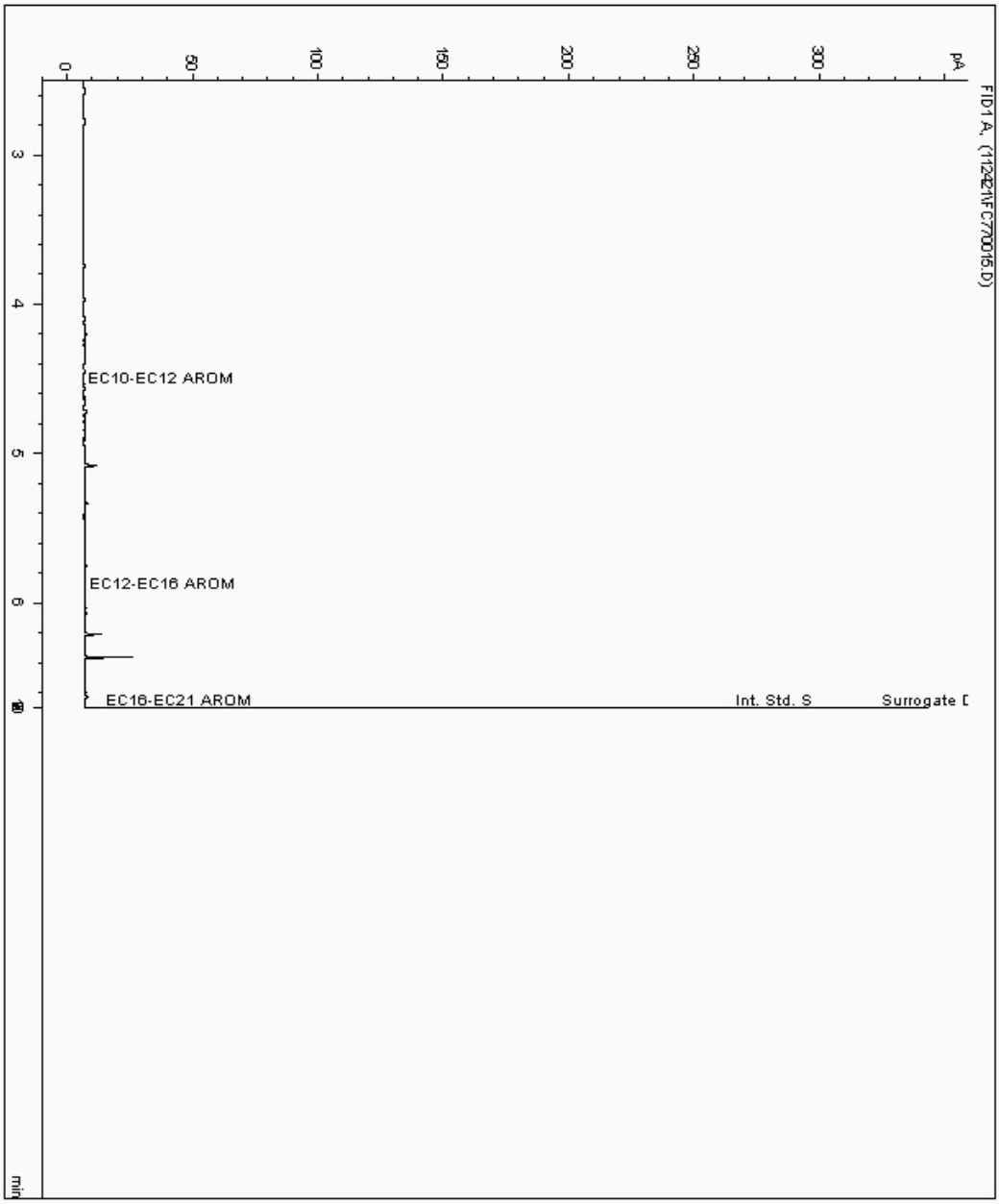
SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25391129 **Depth :** 0.00 - 0.00
Sample ID : BH15

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23709576-
Date Acquired : 11/25/2021 1:13:06 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

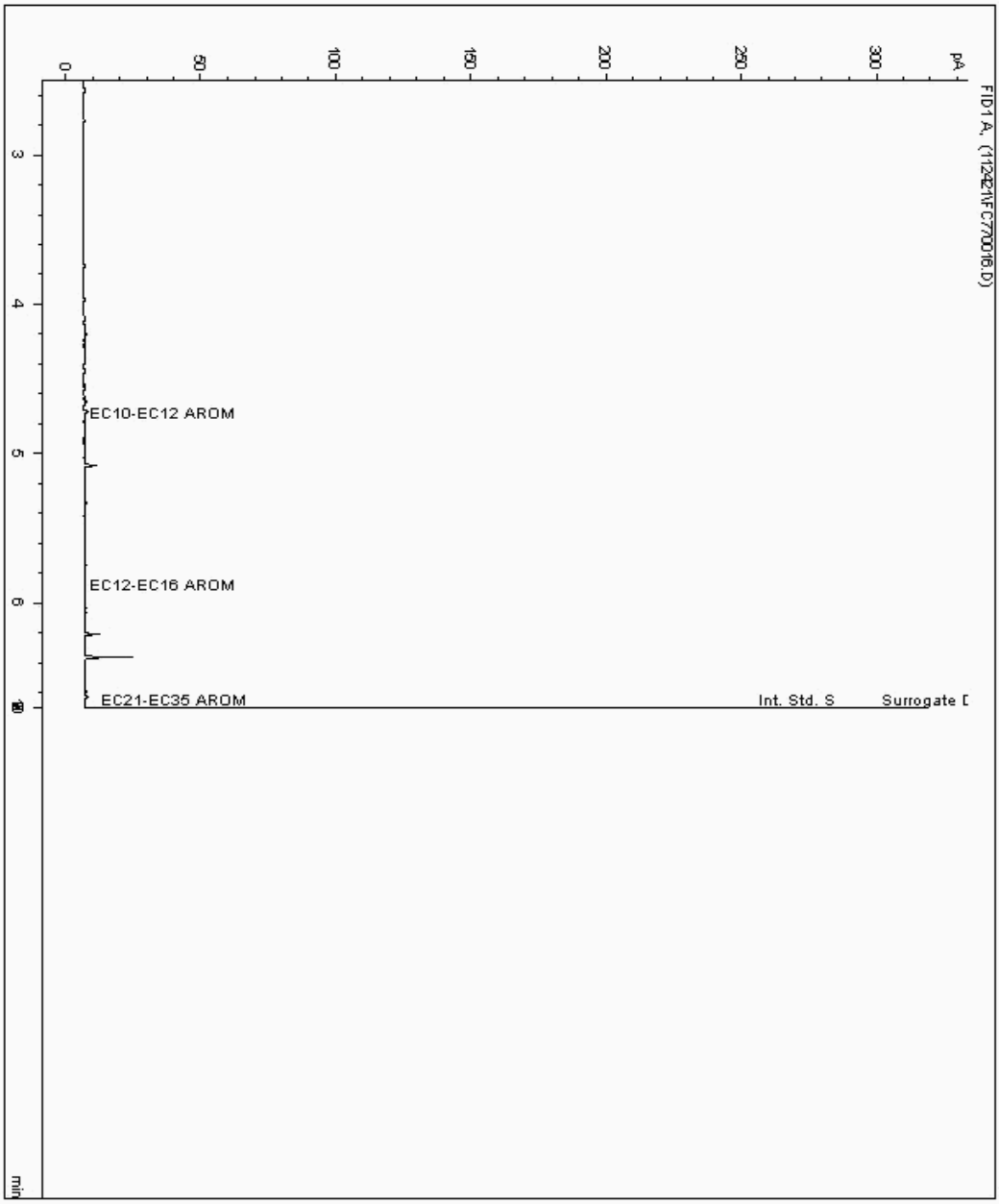
SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25391159 **Depth :** 0.00 - 0.00
Sample ID : BH16

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23709443-
Date Acquired : 11/25/2021 1:36:58 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

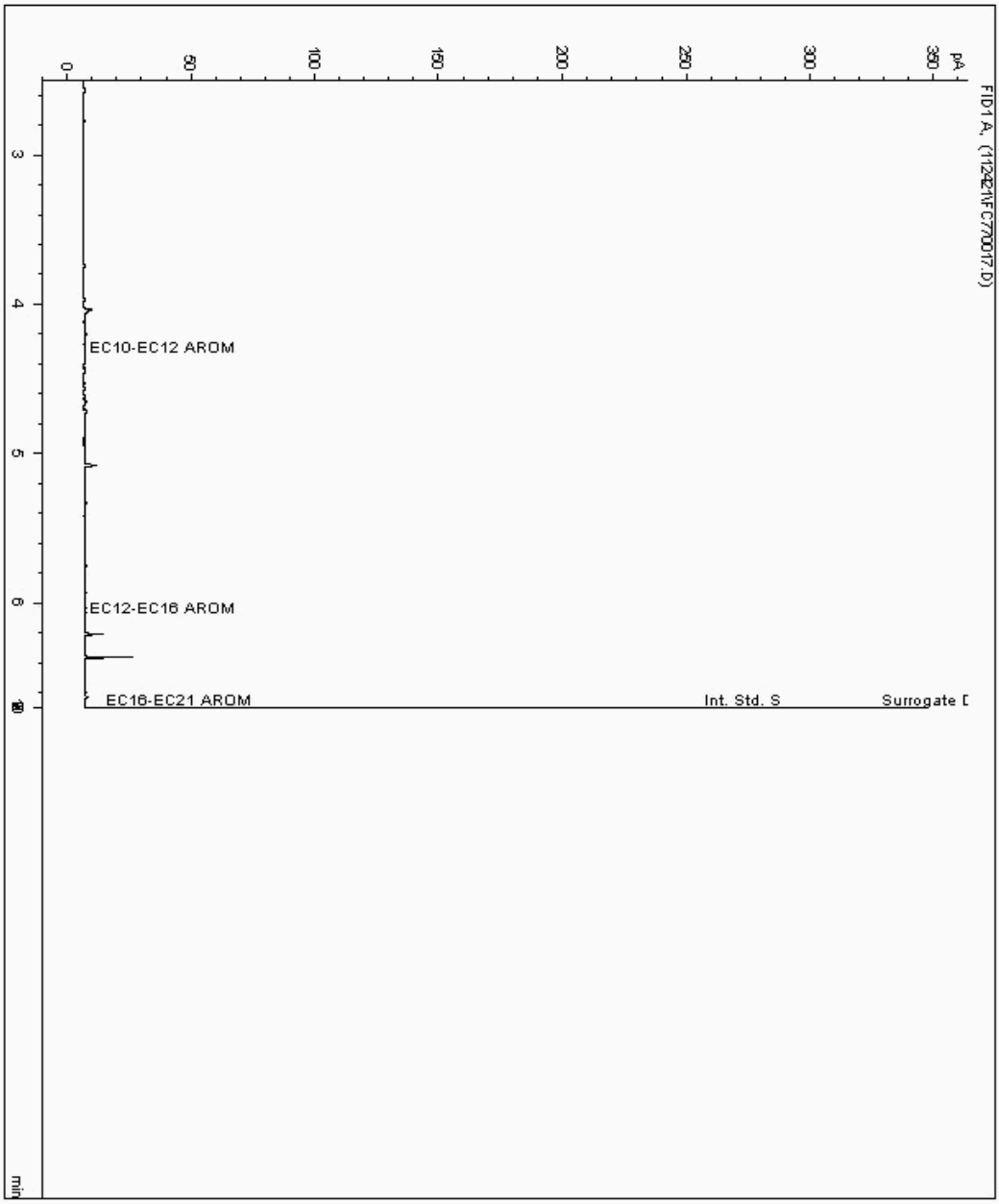
SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25391215 **Depth :** 0.00 - 0.00
Sample ID : BH21

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 23709074-
Date Acquired : 11/25/2021 2:00:51 AM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

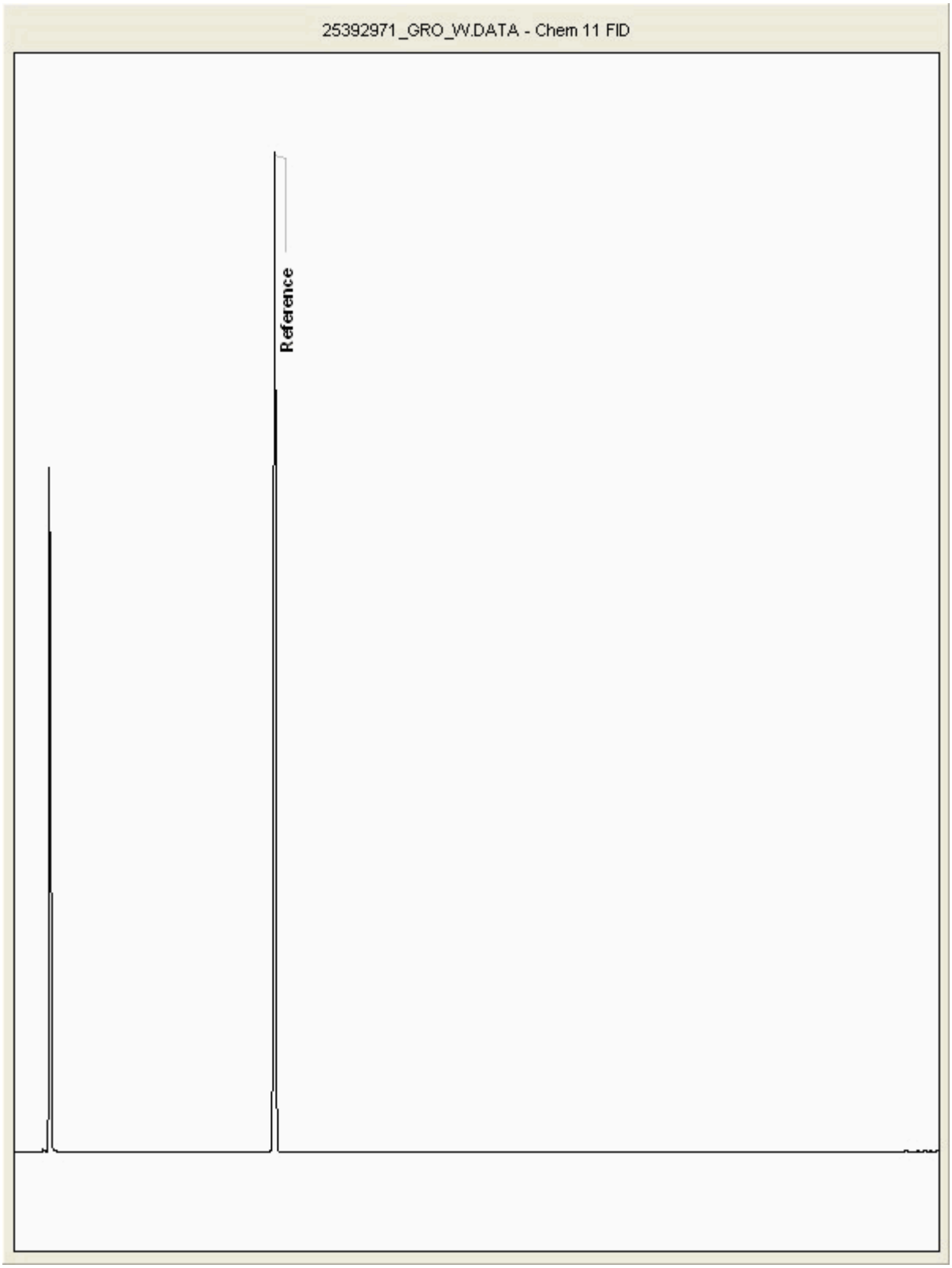


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25392971 **Depth :** 0.00 - 0.00
Sample ID : WS15

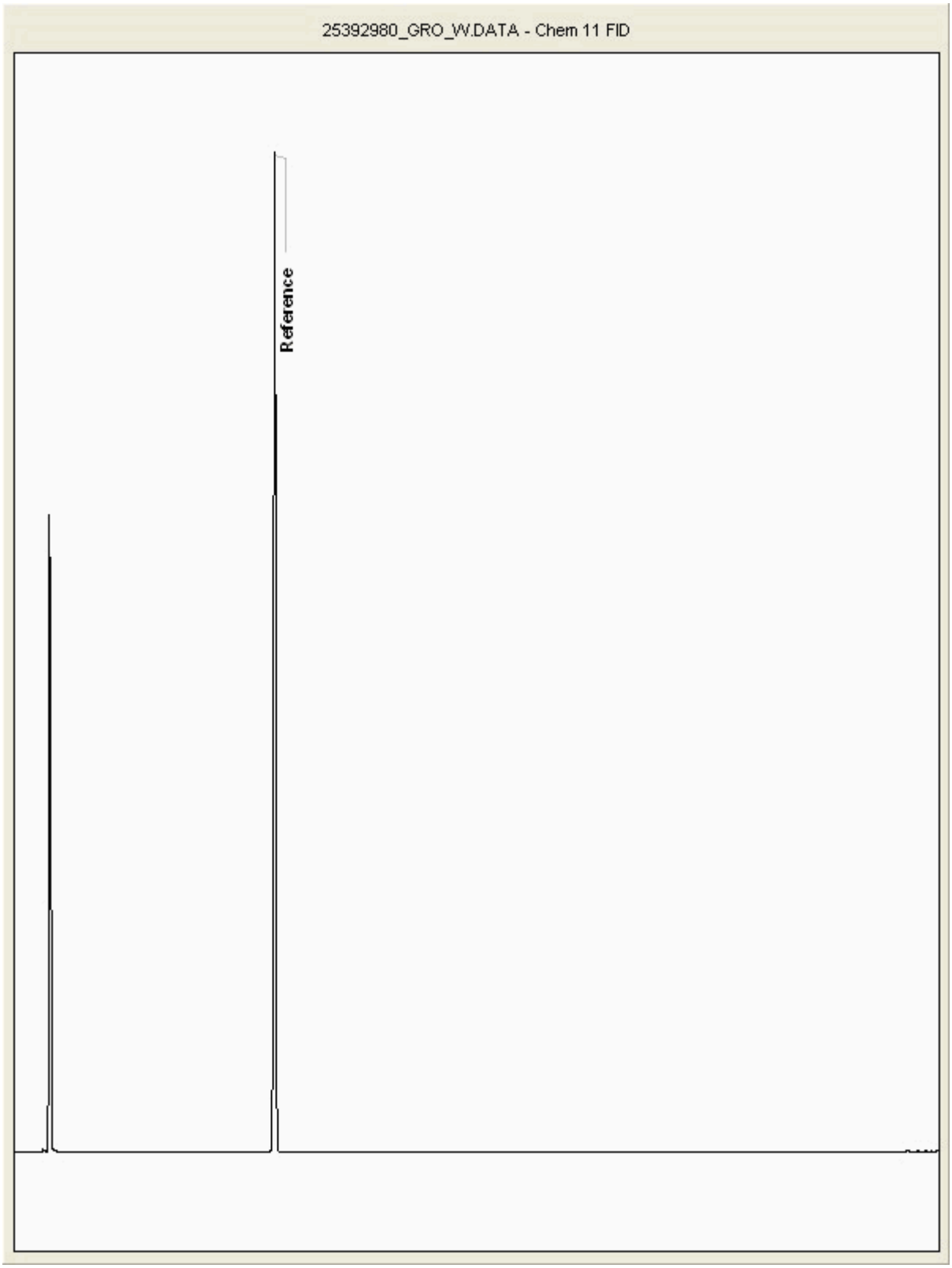


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25392980 **Depth :** 0.00 - 0.00
Sample ID : BH56

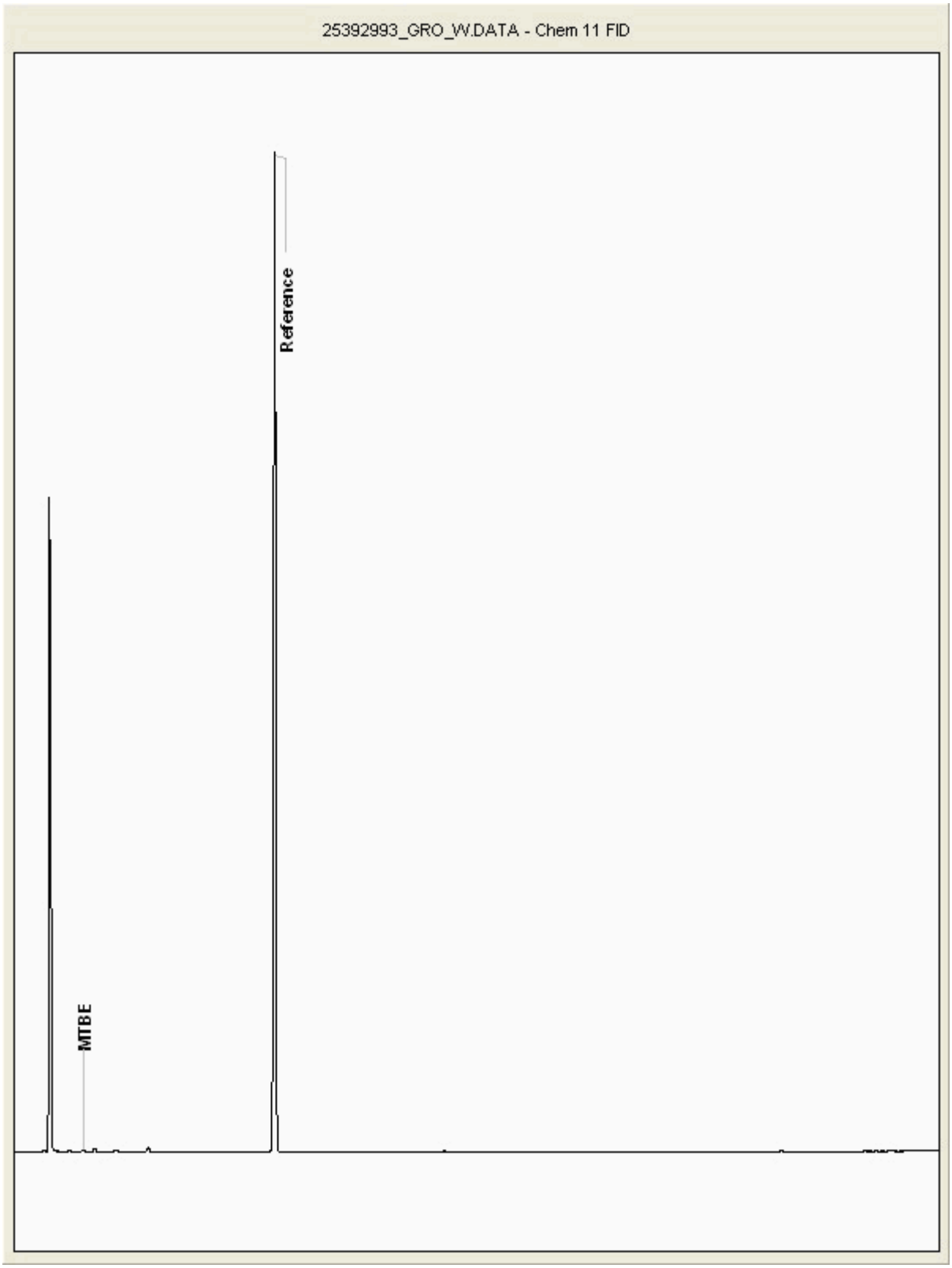


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25392993 **Depth :** 0.00 - 0.00
Sample ID : BH16

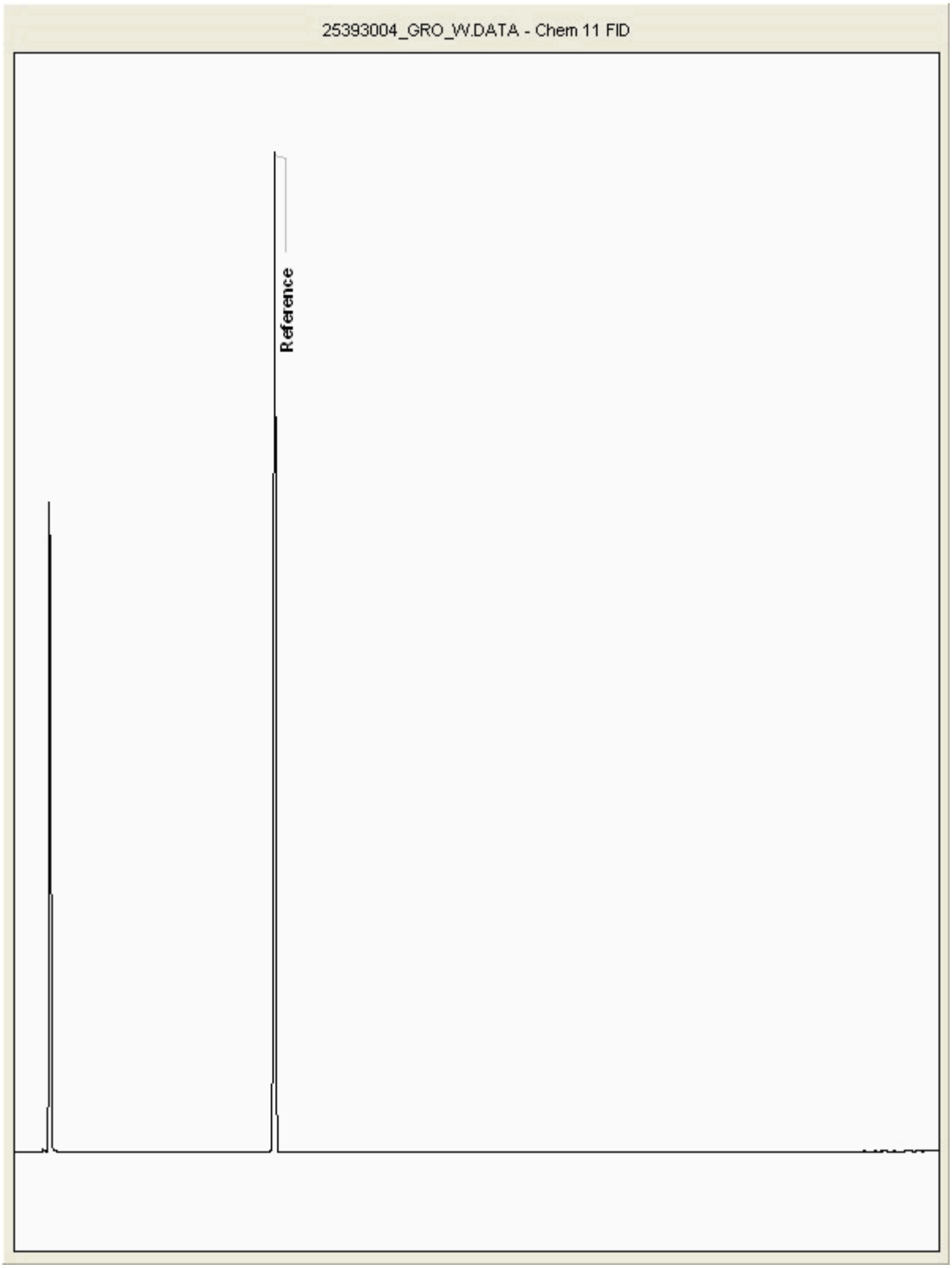


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25393004 **Depth :** 0.00 - 0.00
Sample ID : BH09

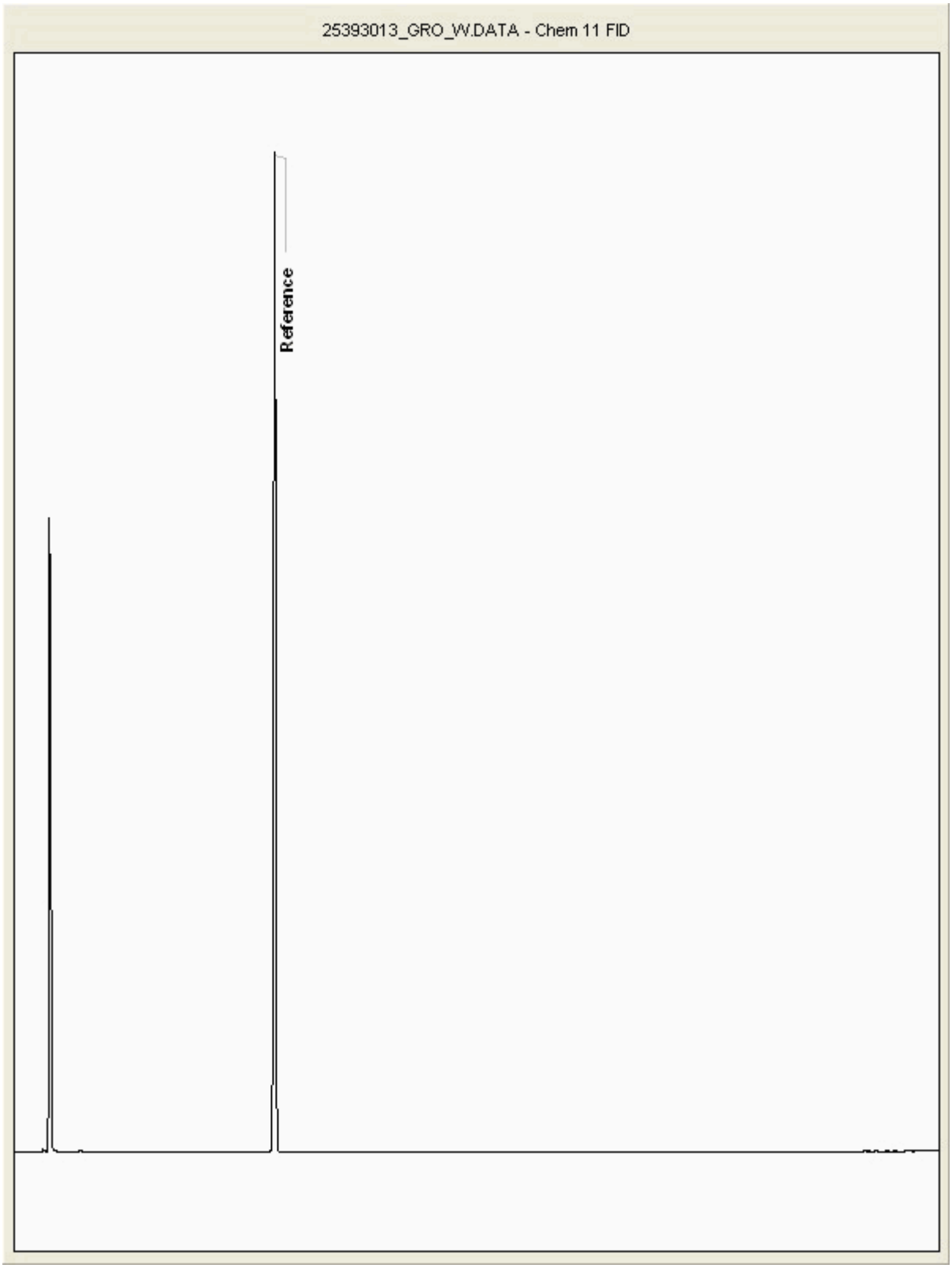


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25393013 **Depth :** 0.00 - 0.00
Sample ID : WS31

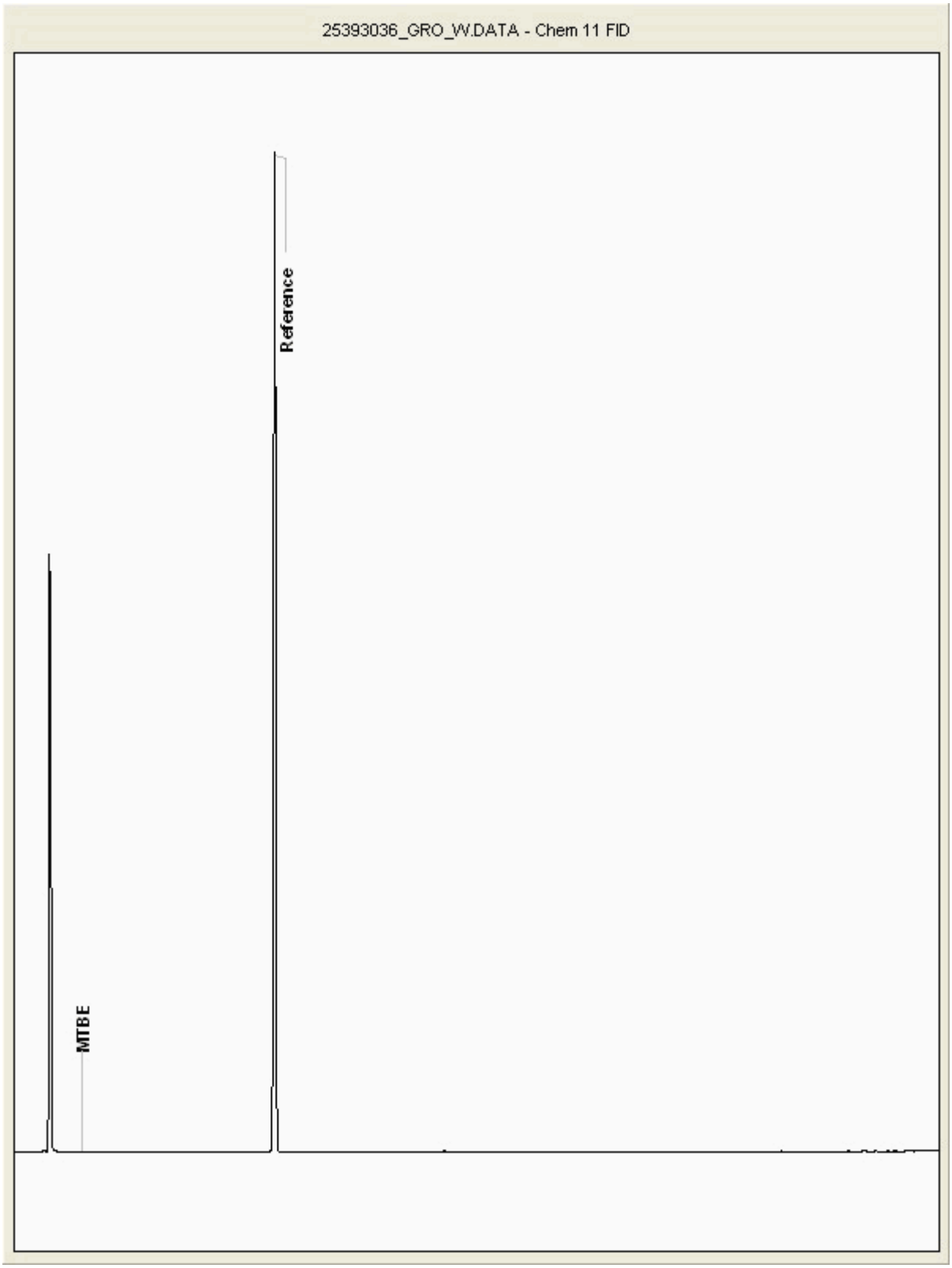


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25393036 **Depth :** 0.00 - 0.00
Sample ID : WS12

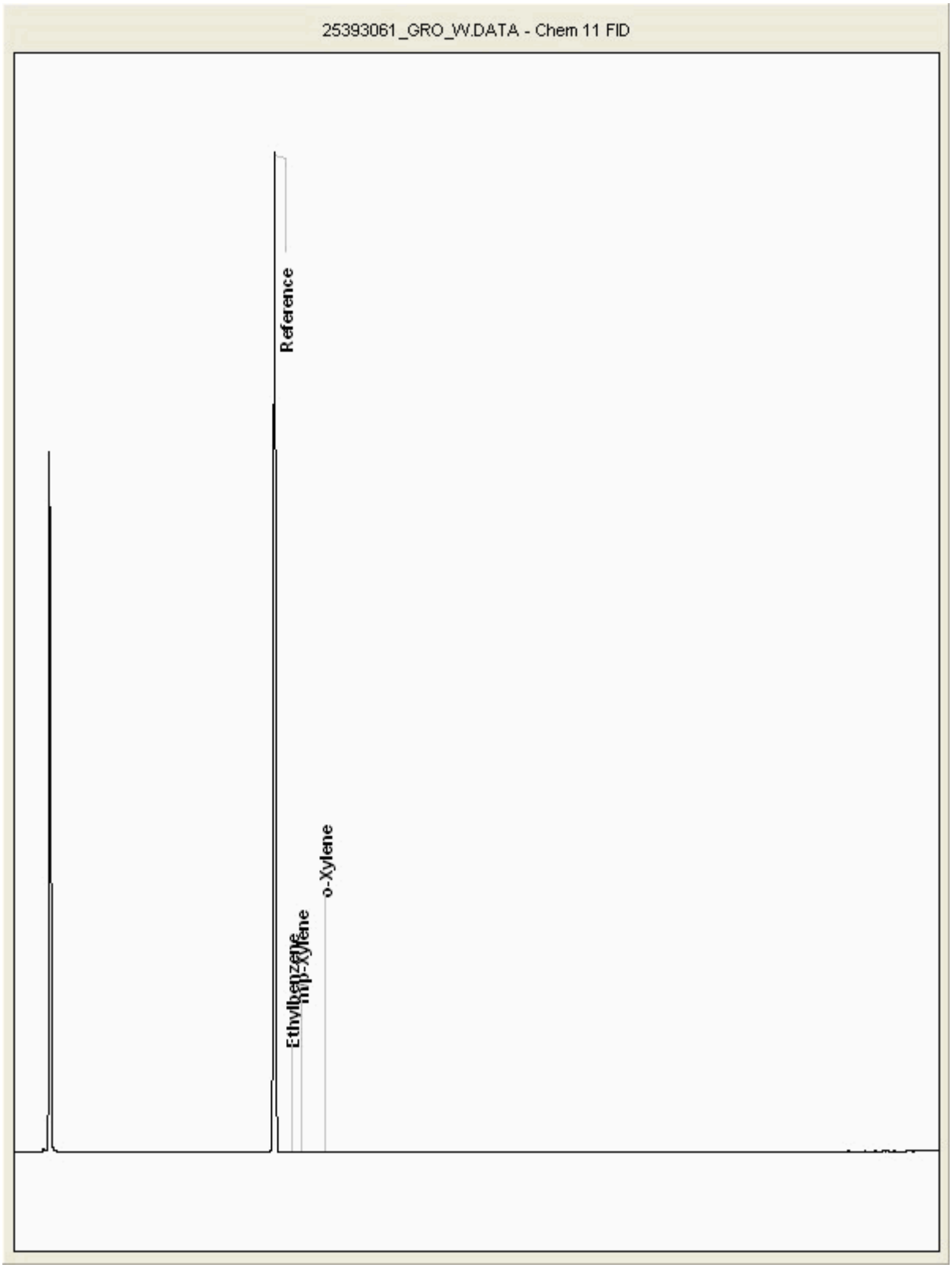


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25393061 **Depth :** 0.00 - 0.00
Sample ID : BH06

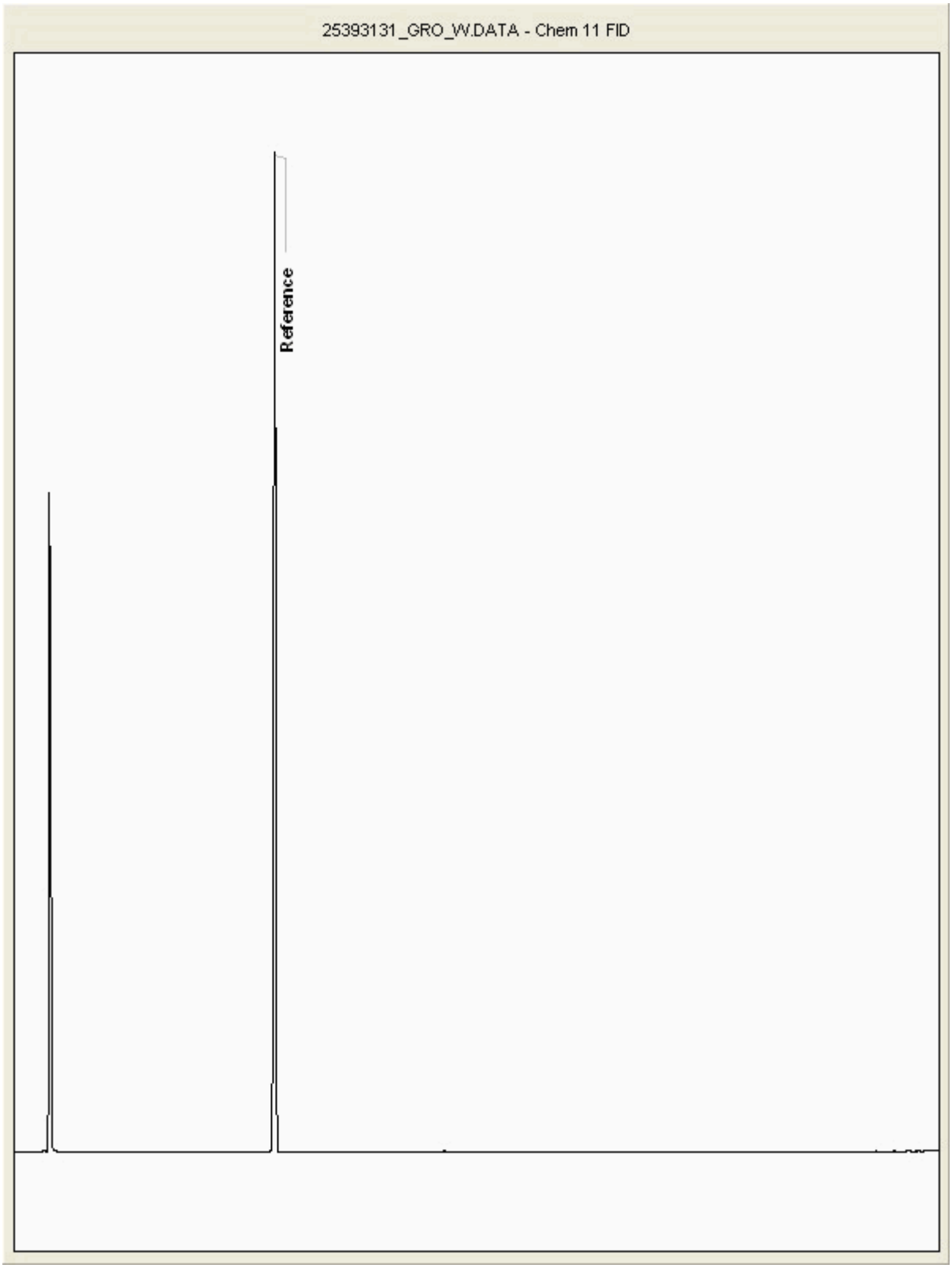


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25393131 **Depth :** 0.00 - 0.00
Sample ID : BH61

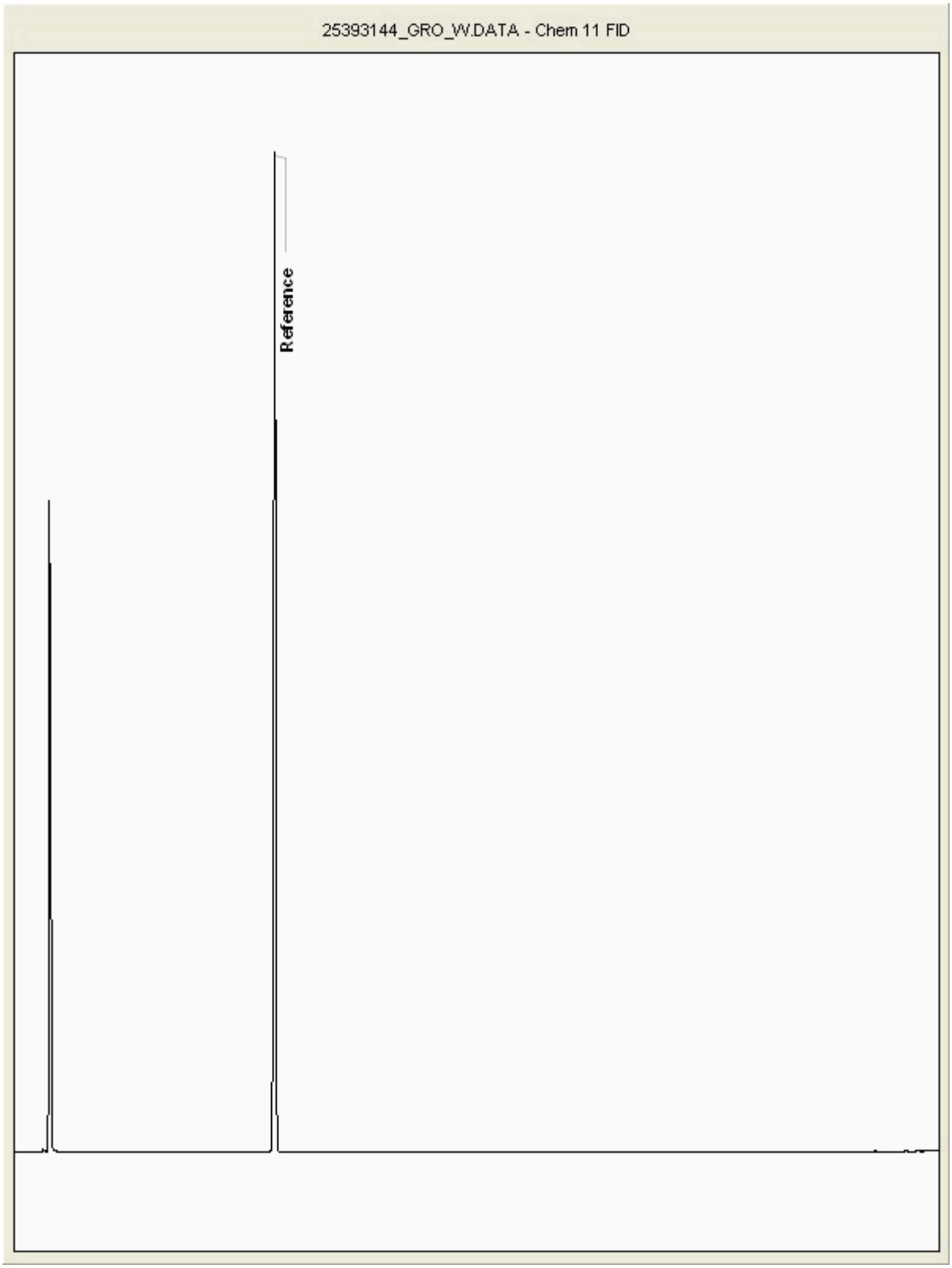


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25393144 **Depth :** 0.00 - 0.00
Sample ID : WS25

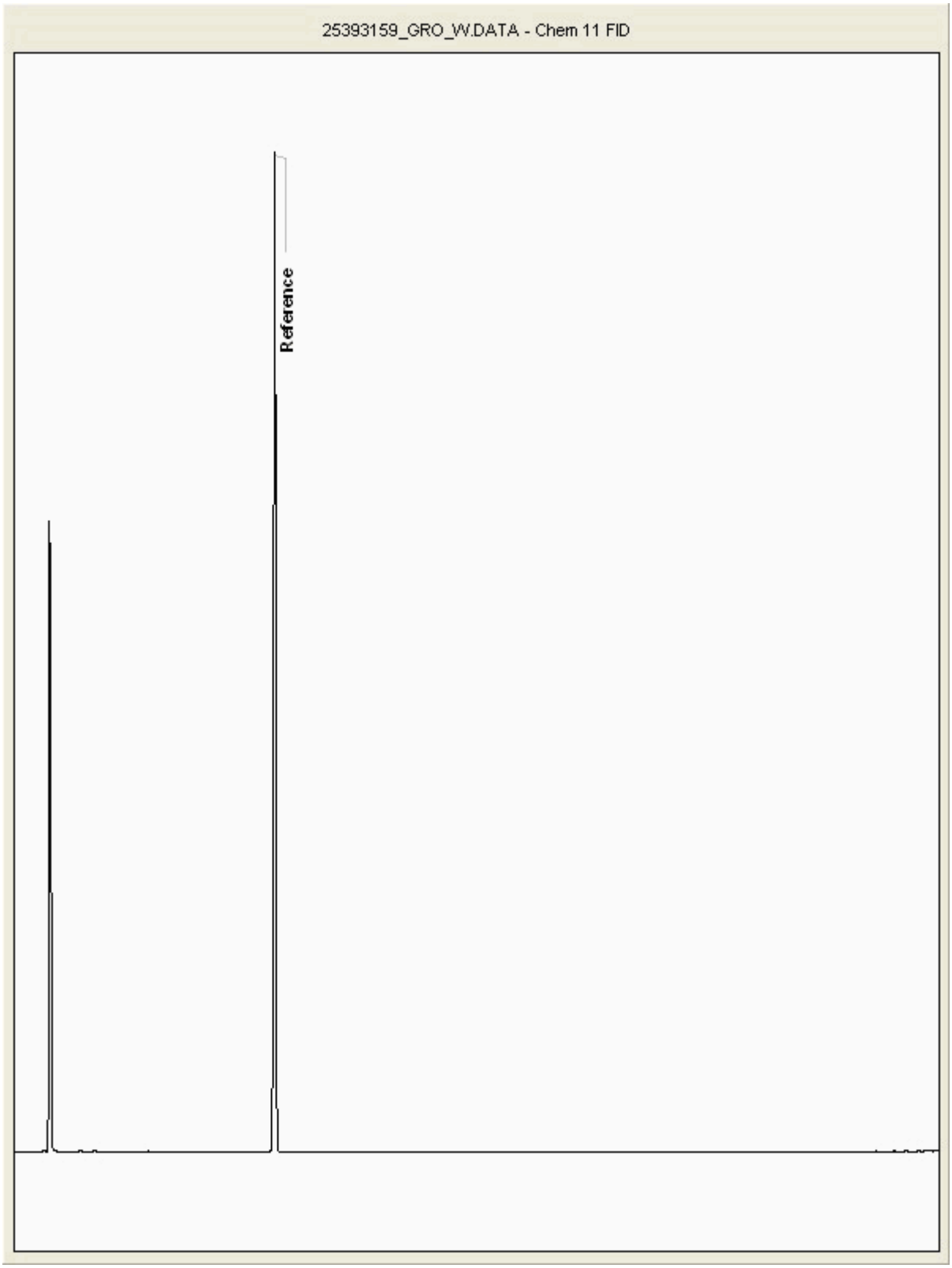


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25393159 **Depth :** 0.00 - 0.00
Sample ID : BH17

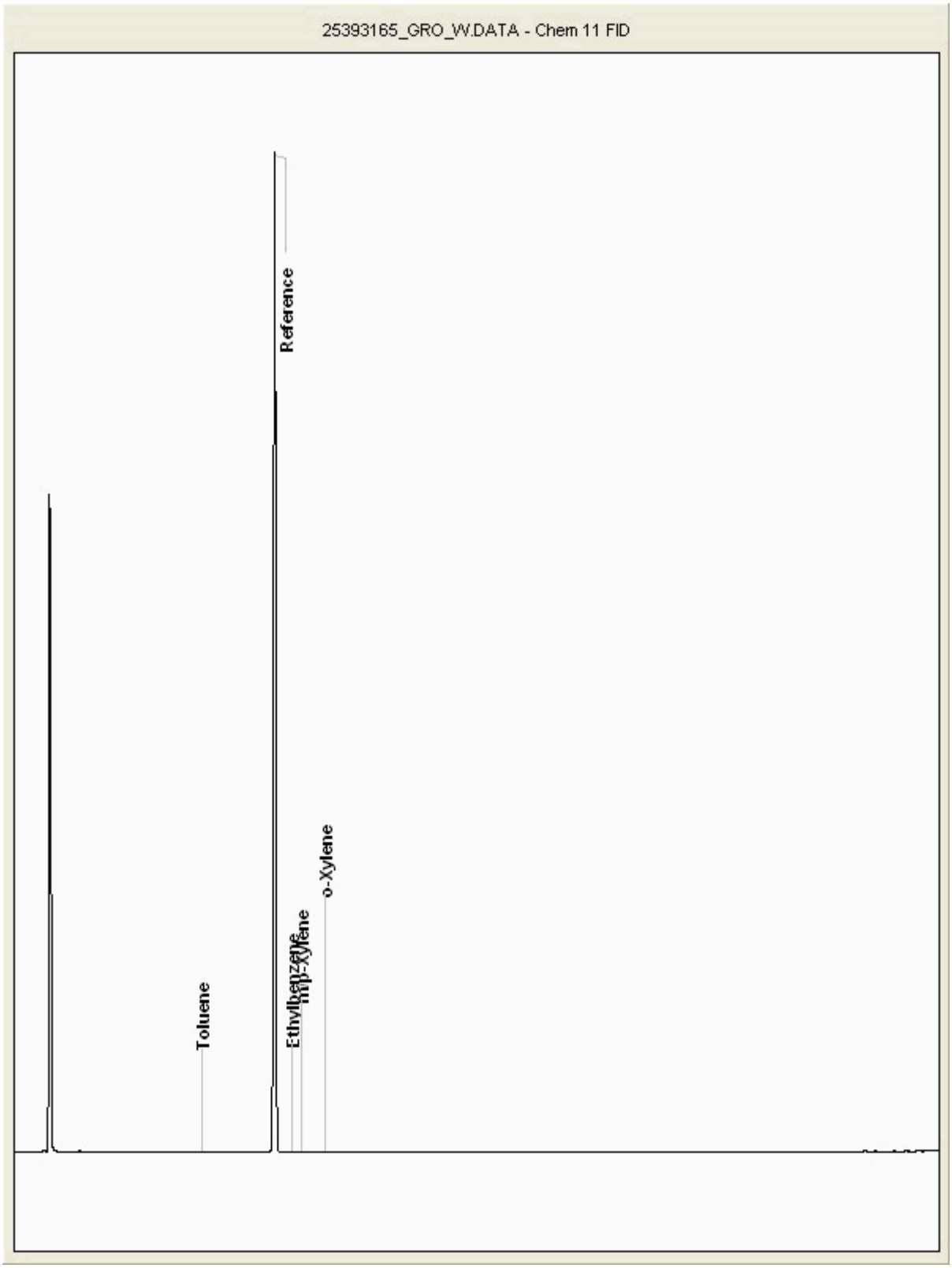


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25393165 **Depth :** 0.00 - 0.00
Sample ID : BH60

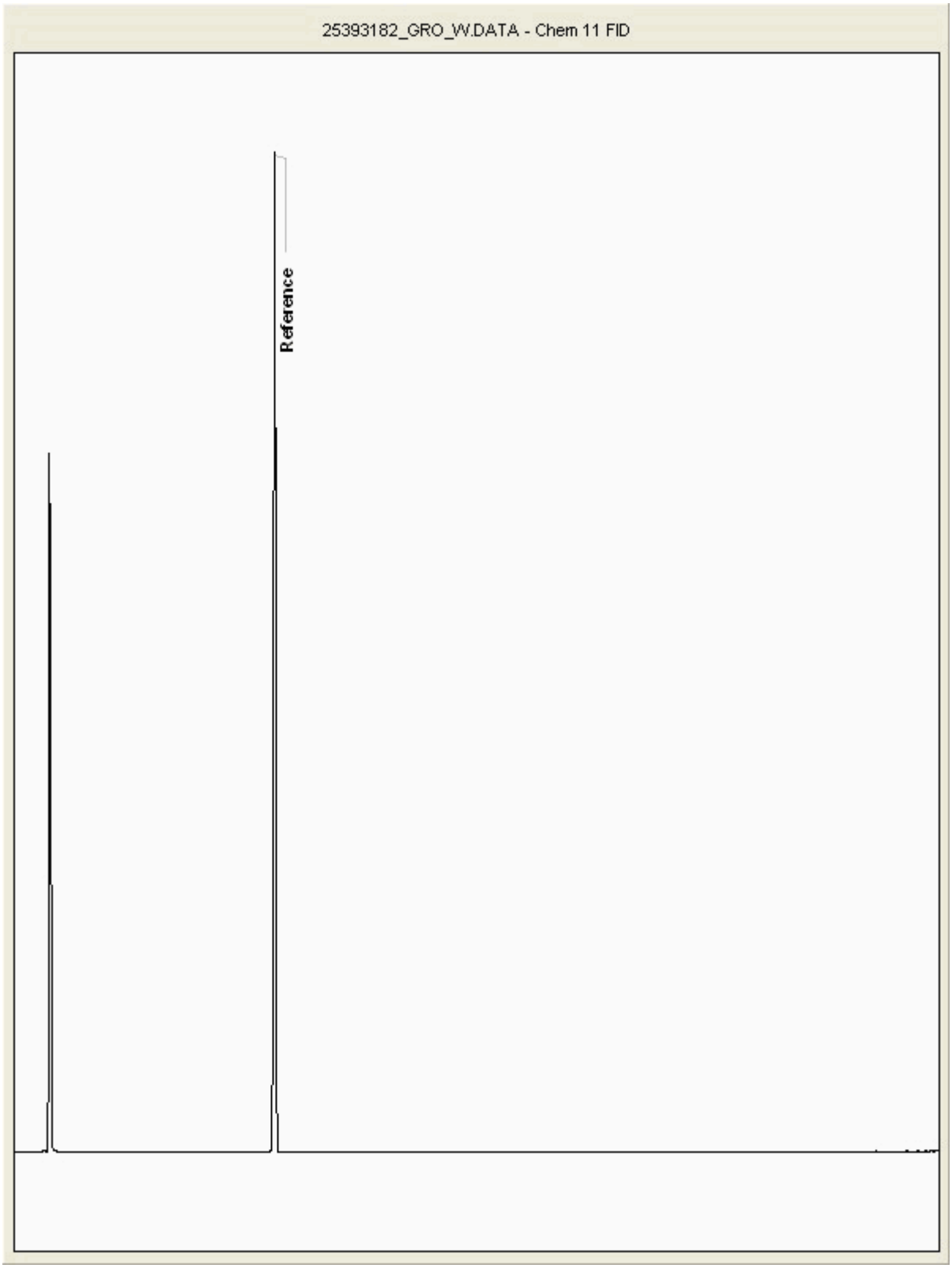


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25393182 **Depth :** 0.00 - 0.00
Sample ID : BH21

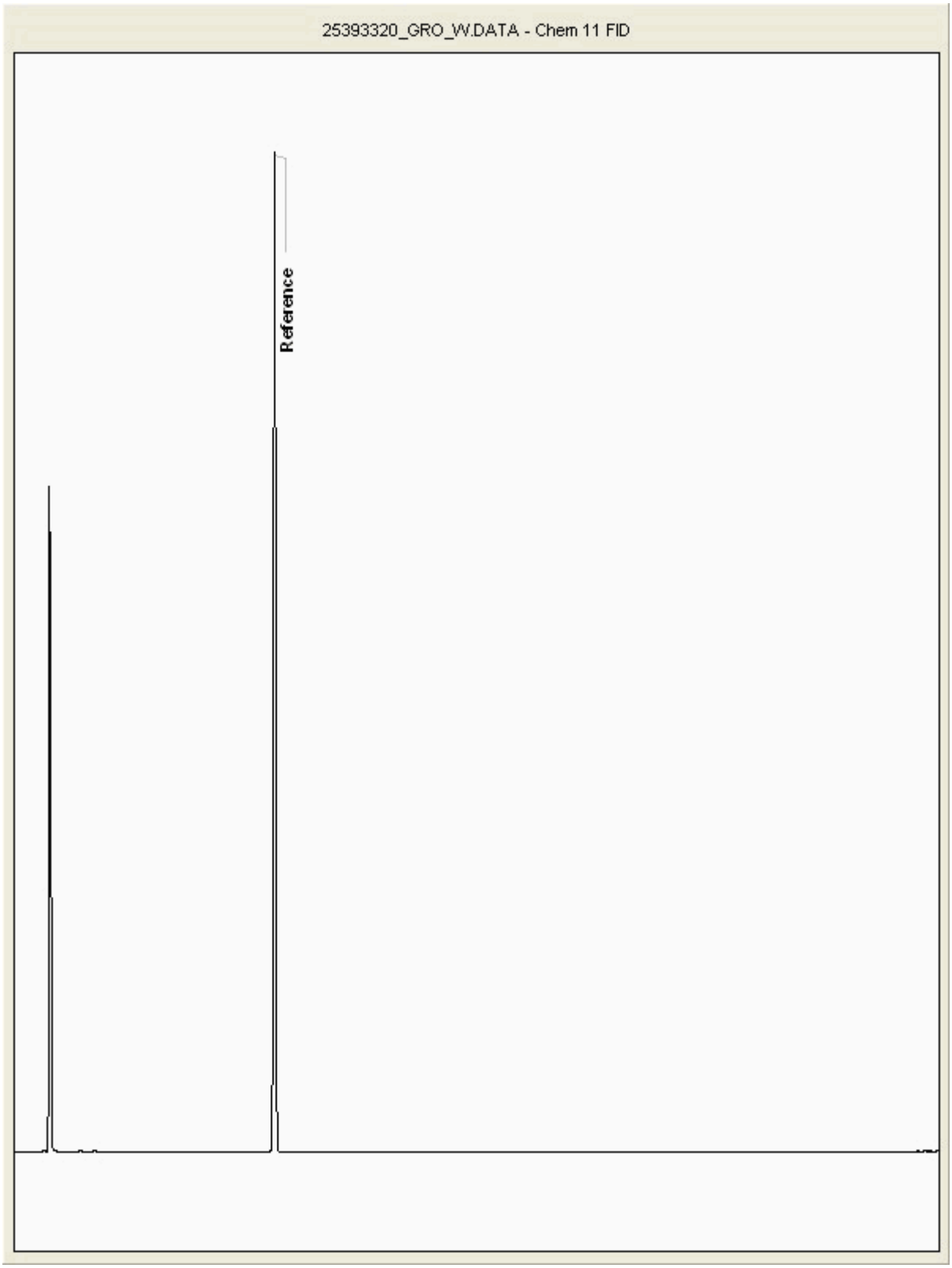


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25393320 **Depth :** 0.00 - 0.00
Sample ID : BH14

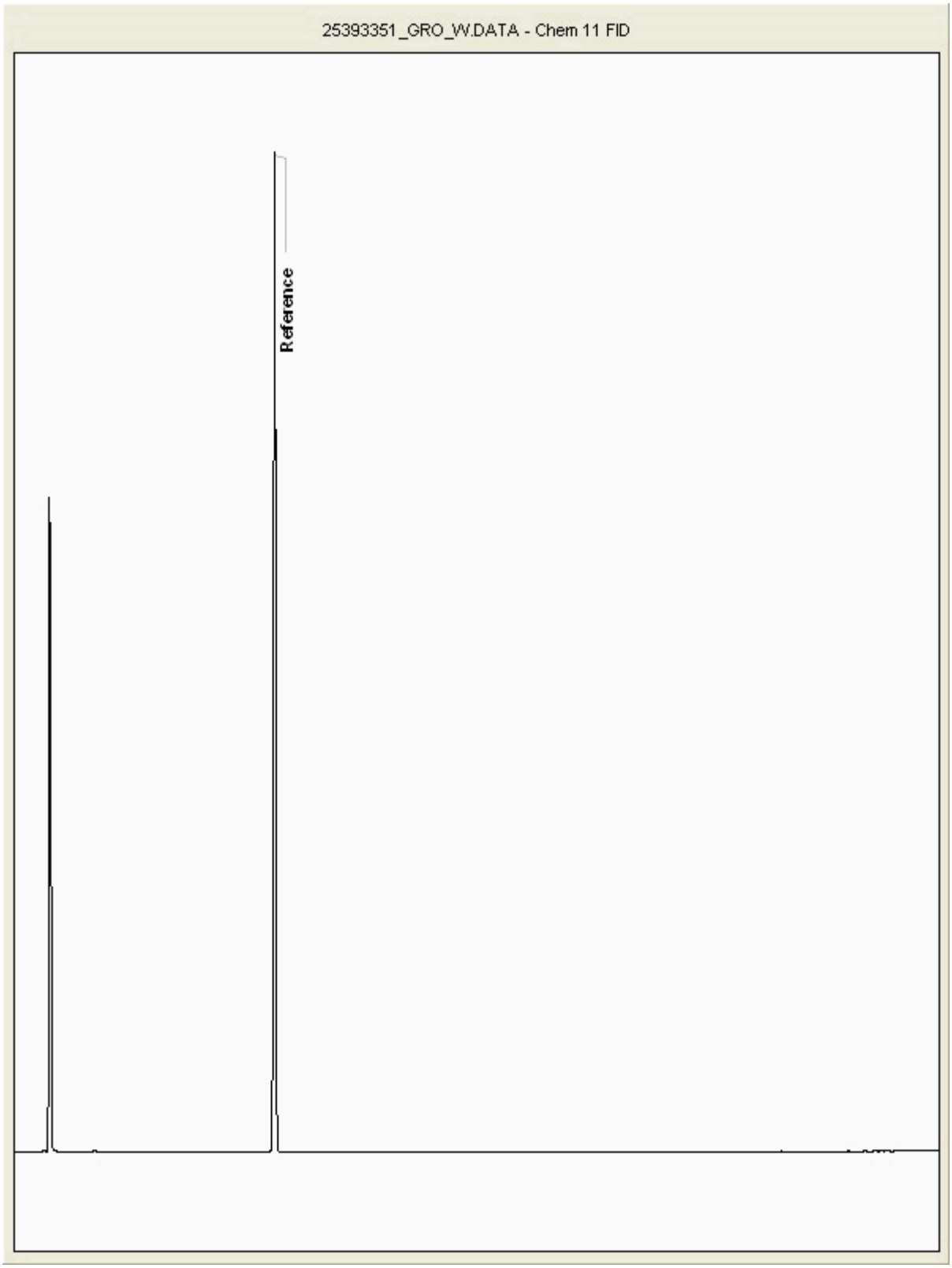


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25393351 **Depth :** 0.00 - 0.00
Sample ID : BH02

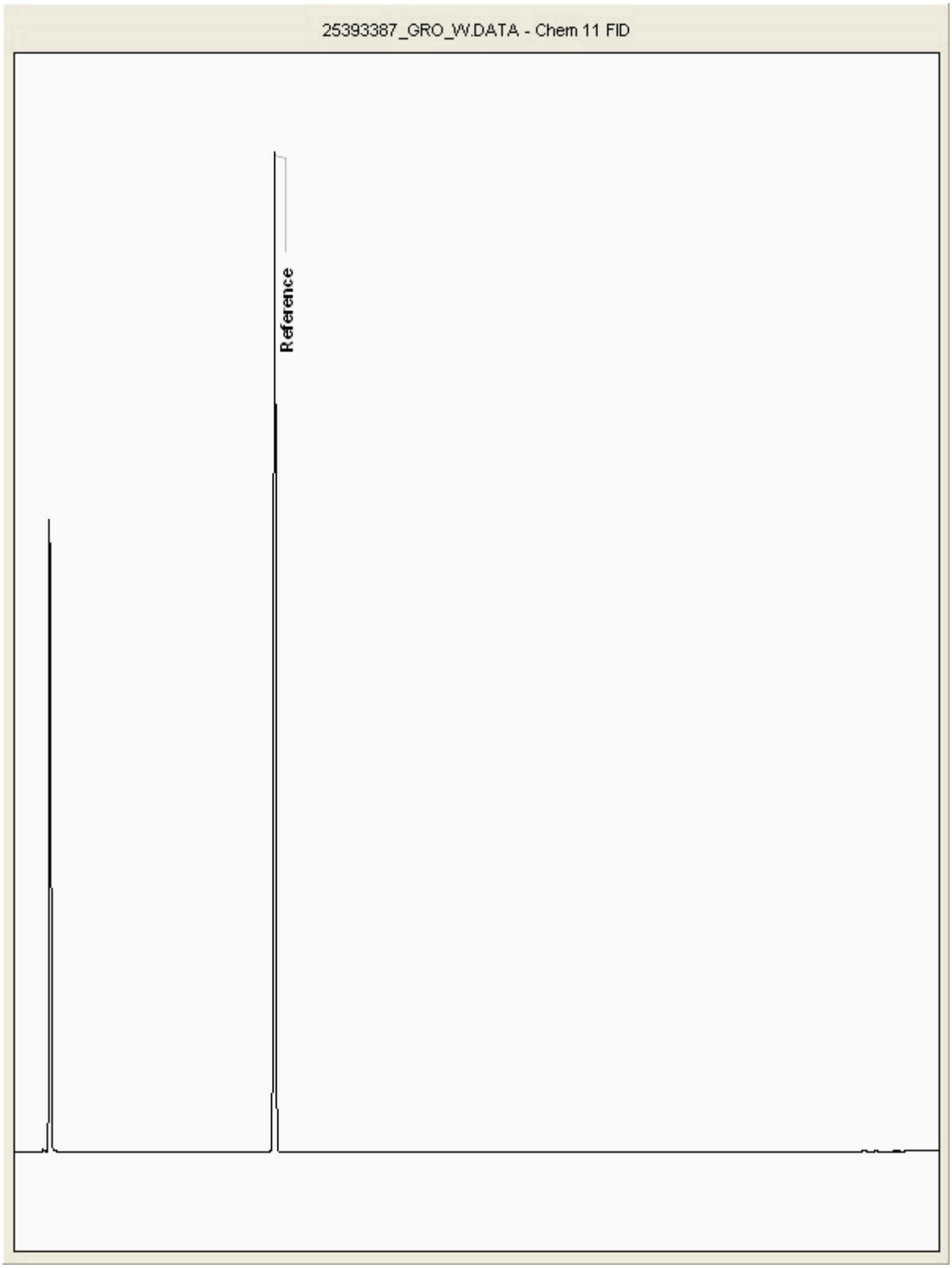


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25393387 **Depth :** 0.00 - 0.00
Sample ID : WS26

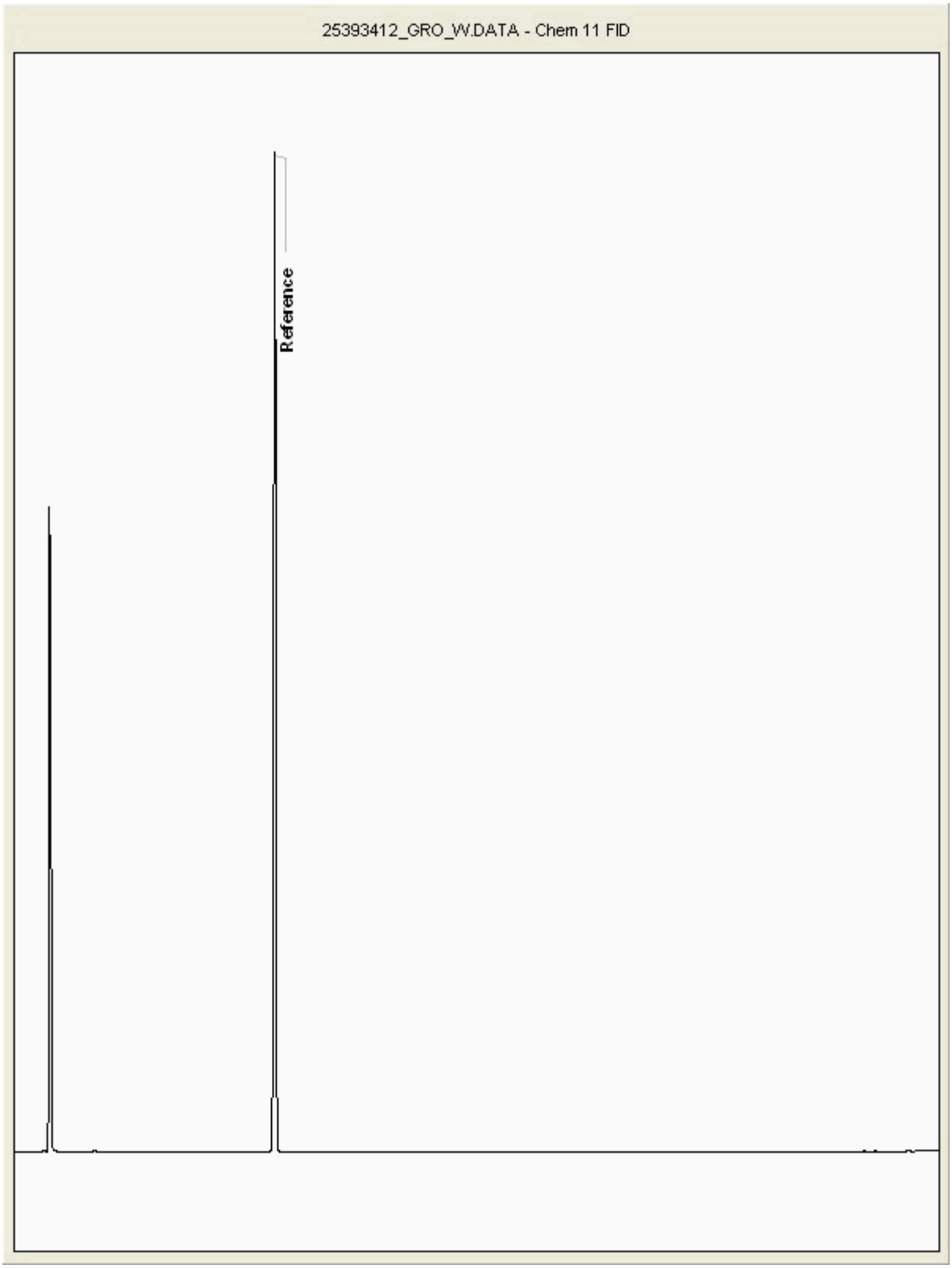


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25393412 **Depth :** 0.00 - 0.00
Sample ID : BH01

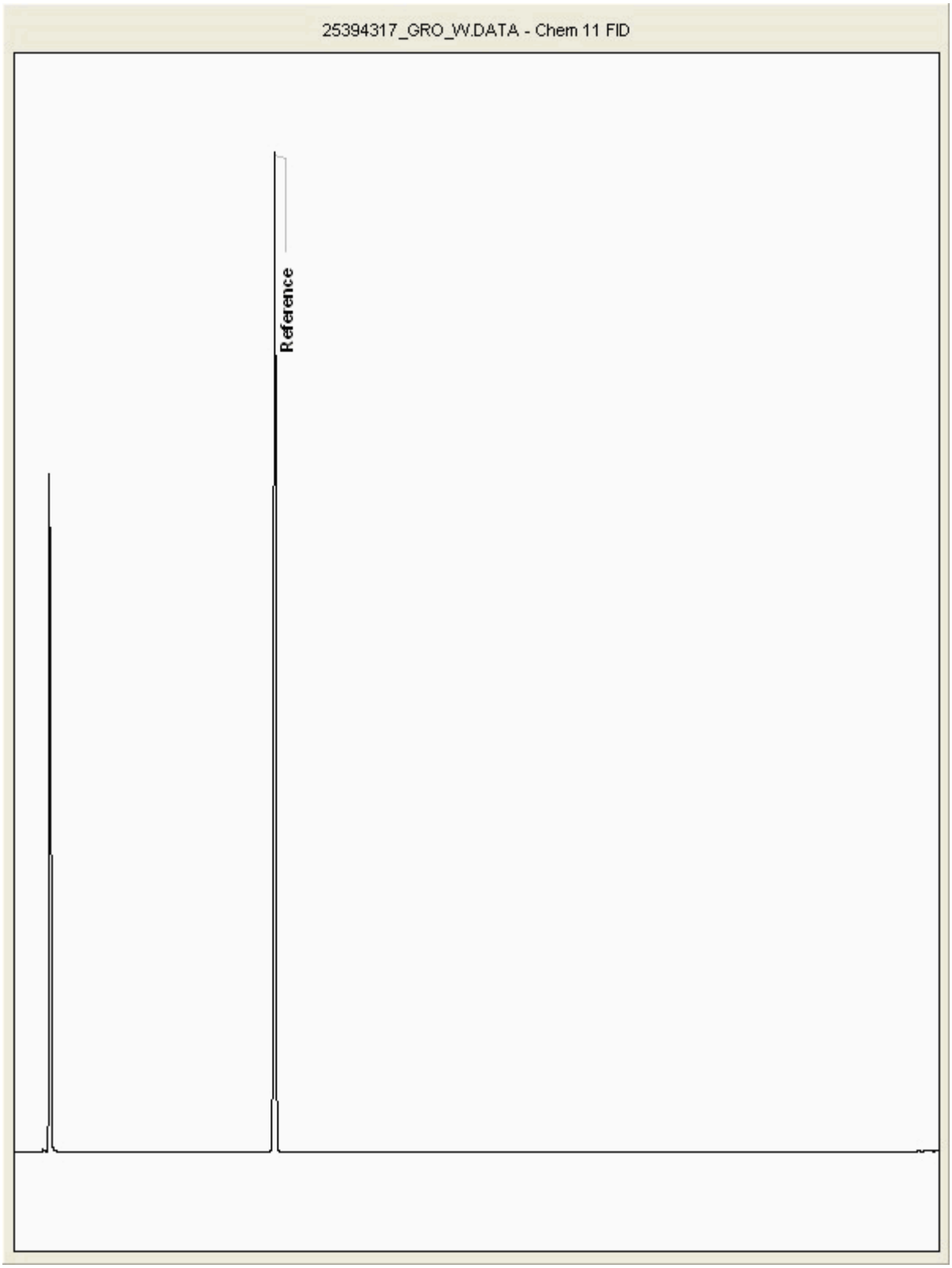


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25394317 **Depth :** 0.00 - 0.00
Sample ID : BH15

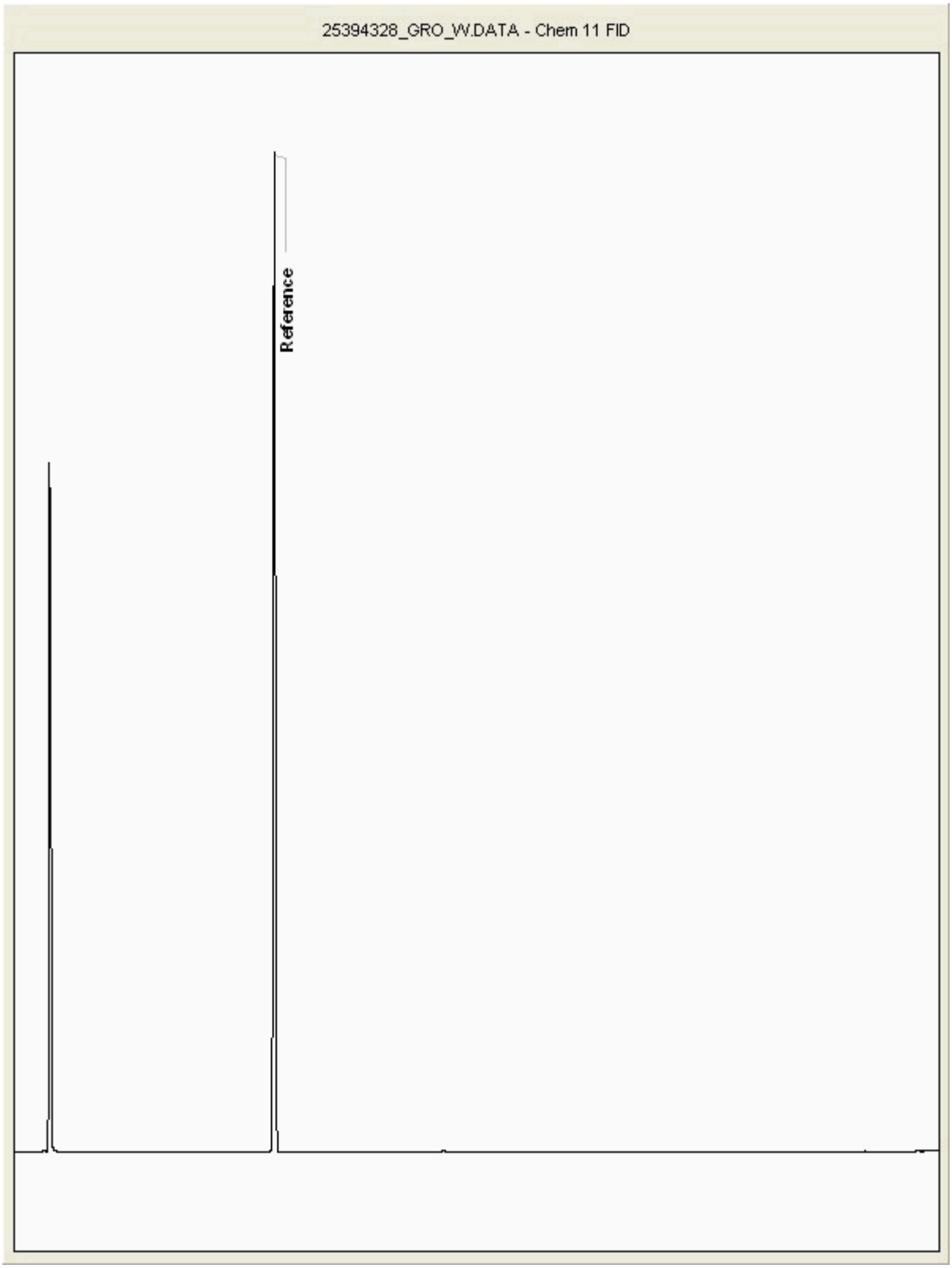


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25394328 **Depth :** 0.00 - 0.00
Sample ID : BH05

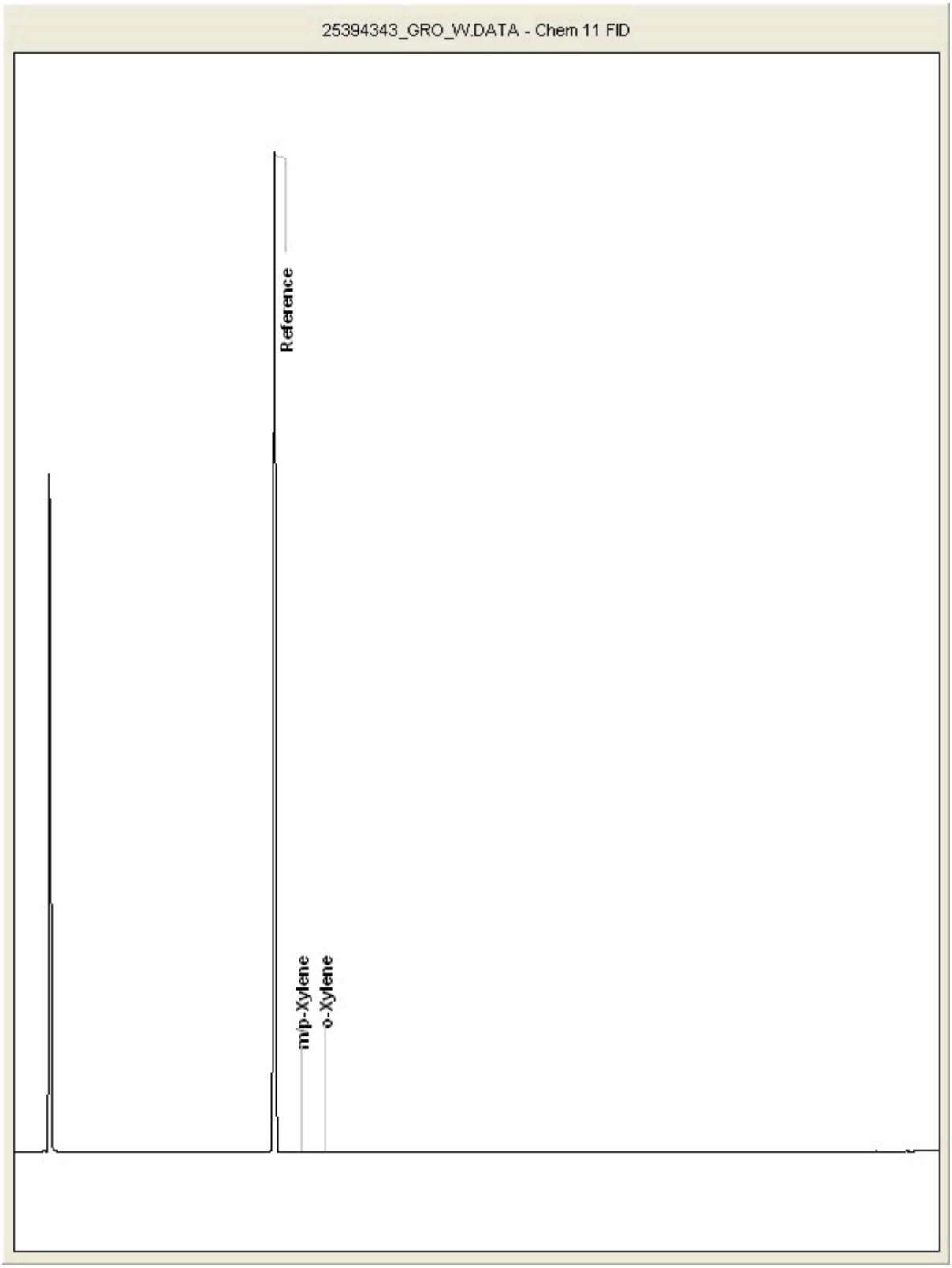


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25394343 **Depth :** 0.00 - 0.00
Sample ID : WS08

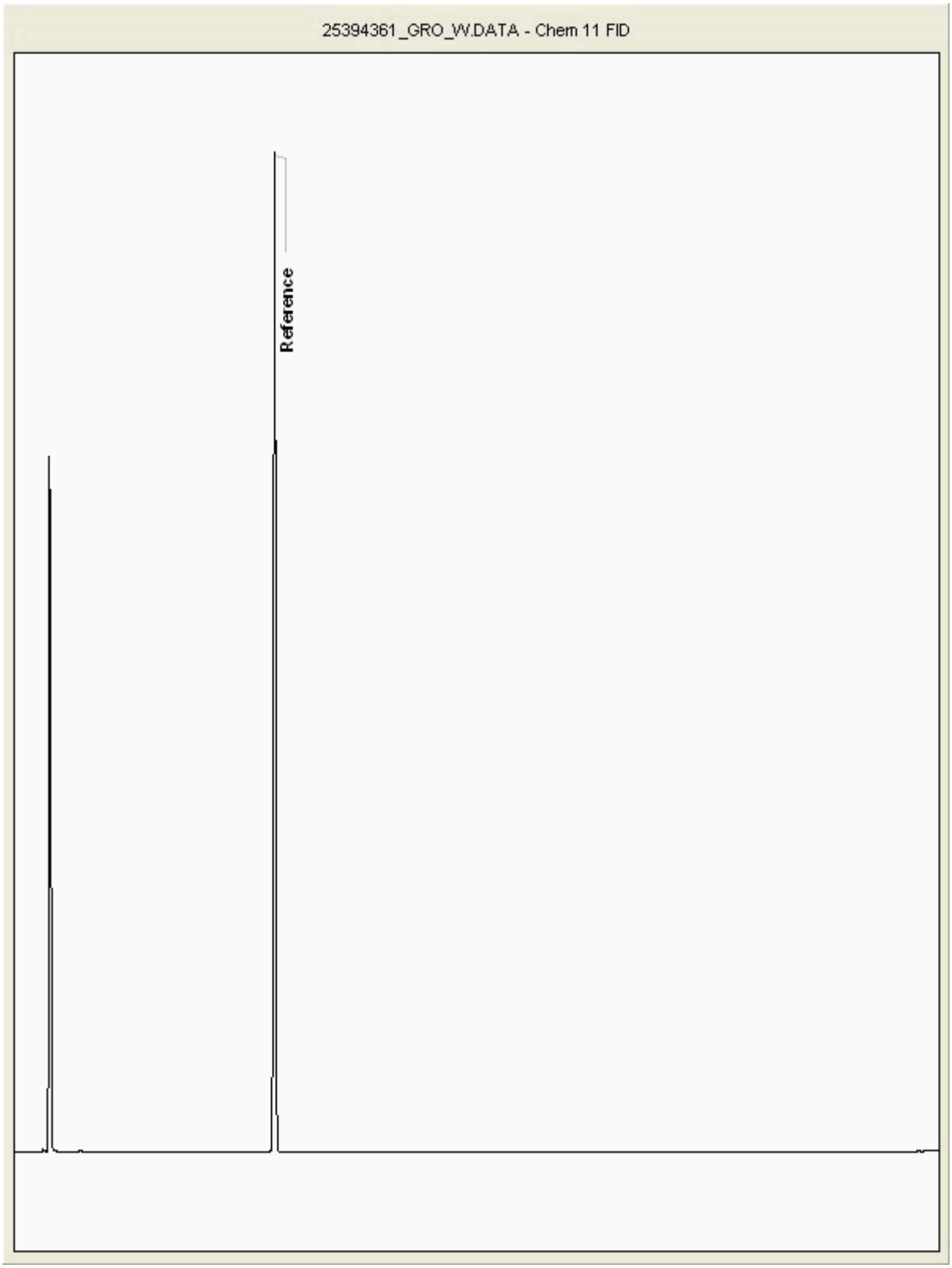


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25394361 **Depth :** 0.00 - 0.00
Sample ID : BH11

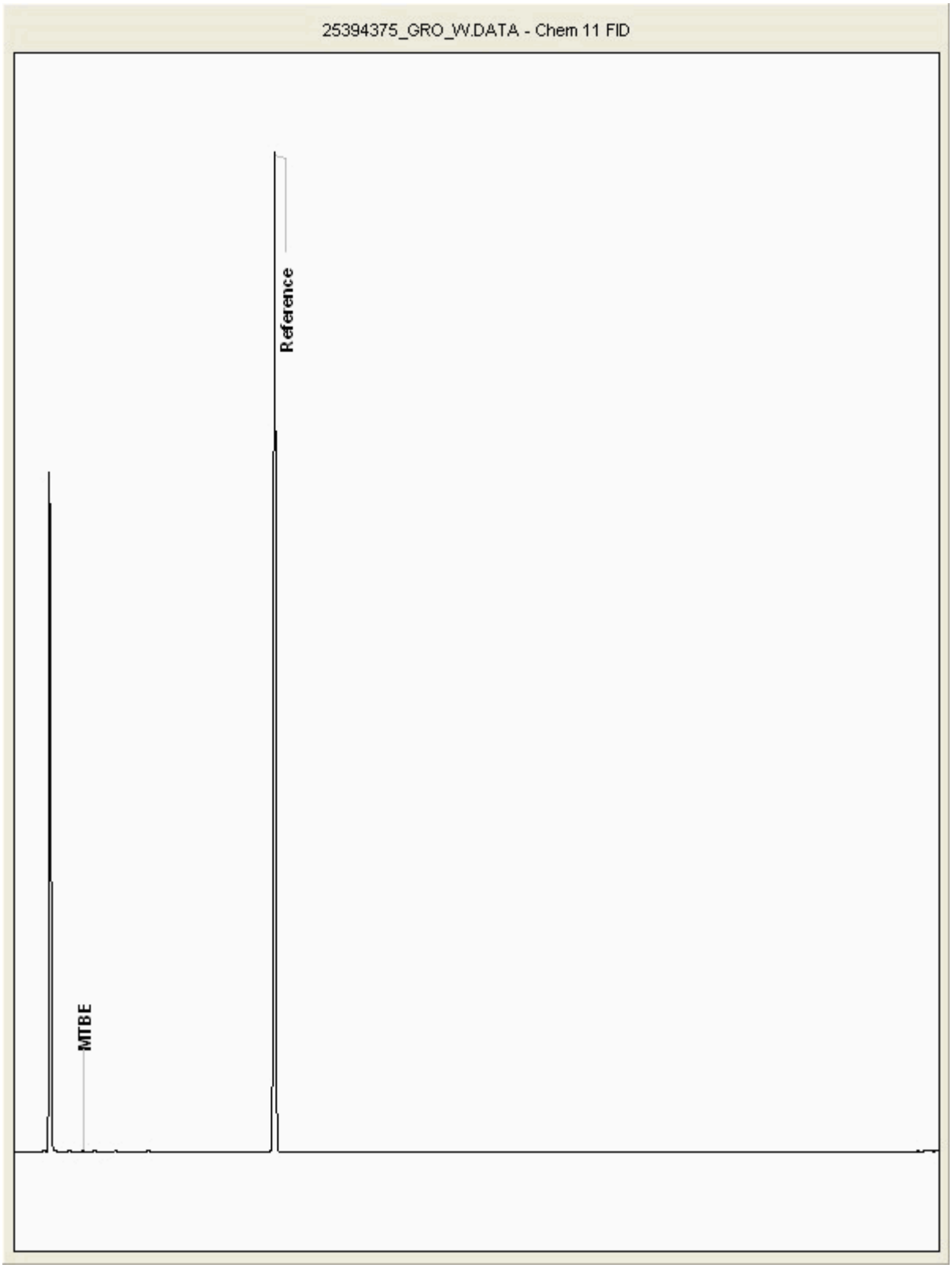


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25394375 **Depth :** 0.00 - 0.00
Sample ID : BH18

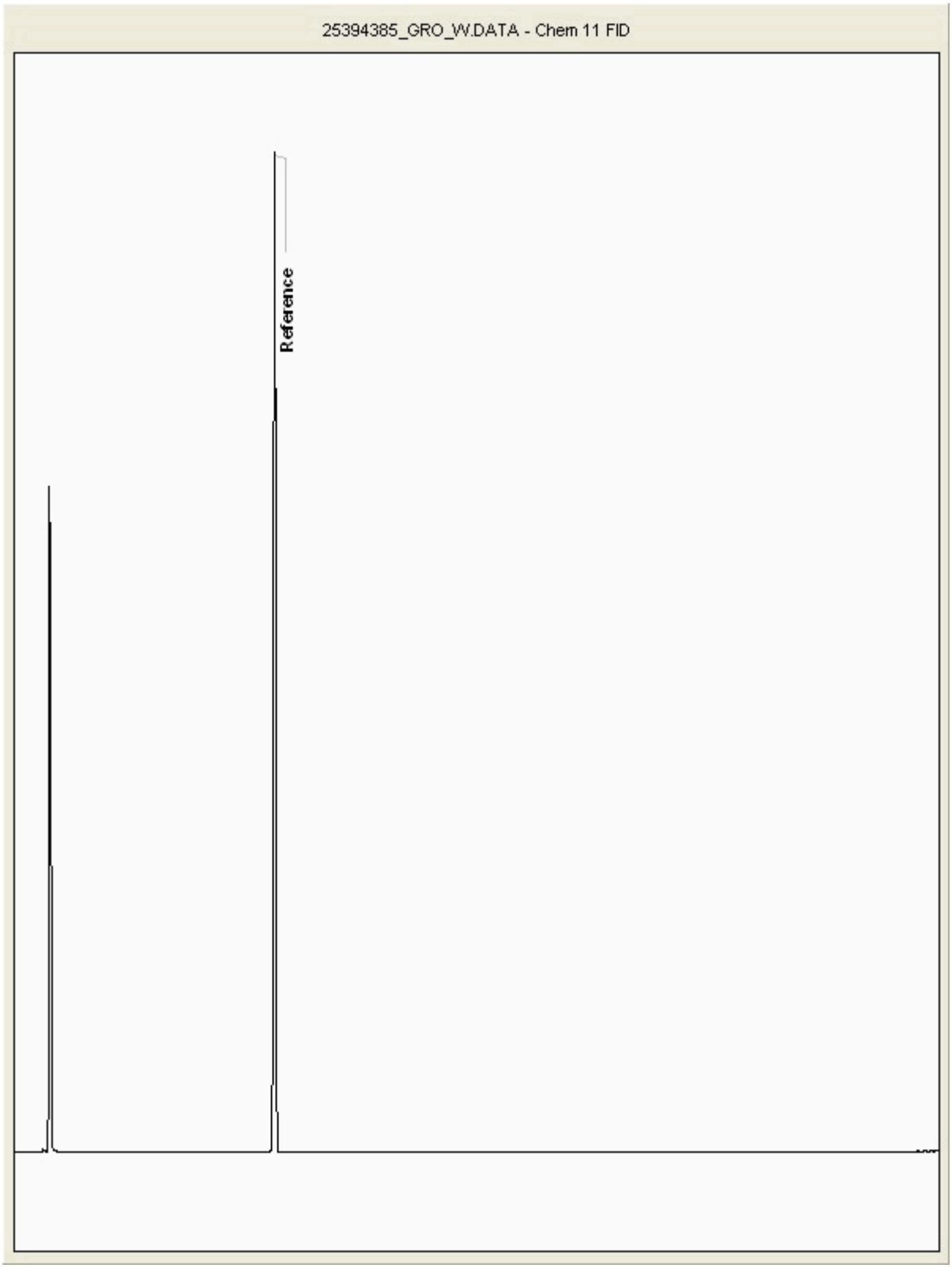


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25394385 **Depth :** 0.00 - 0.00
Sample ID : BH07

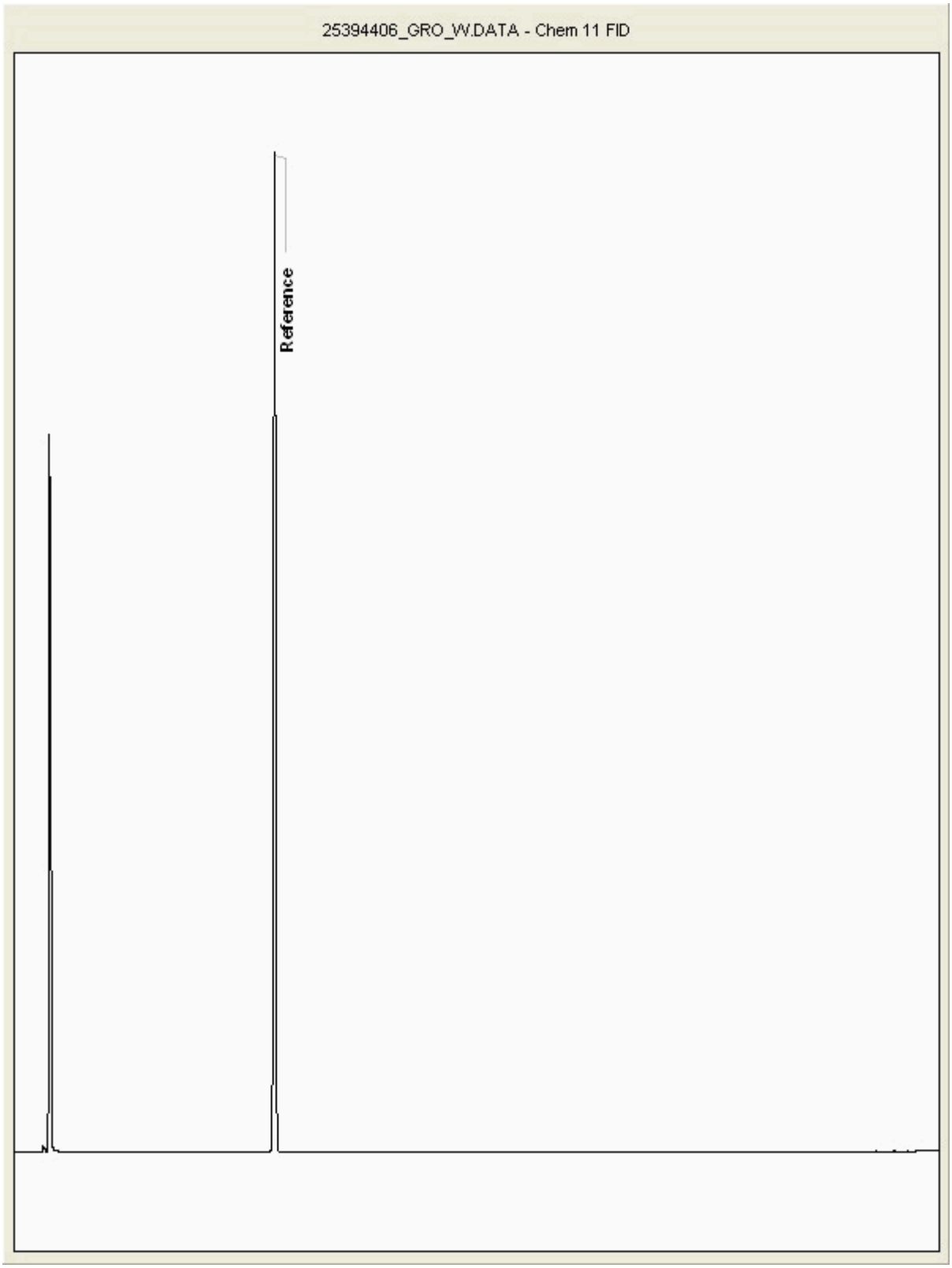


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25394406 **Depth :** 0.00 - 0.00
Sample ID : WS54

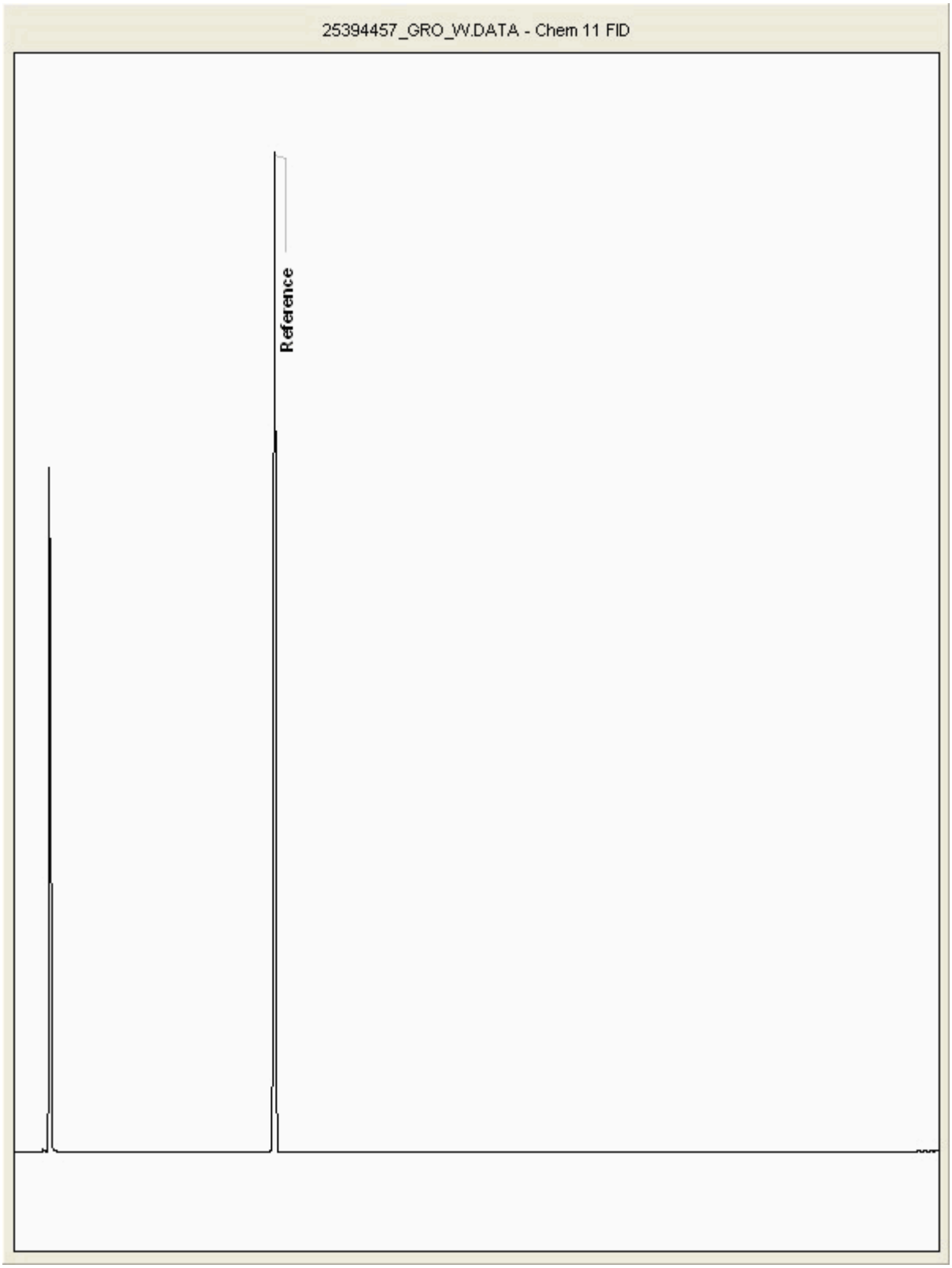


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25394457 **Depth :** 0.00 - 0.00
Sample ID : BH10

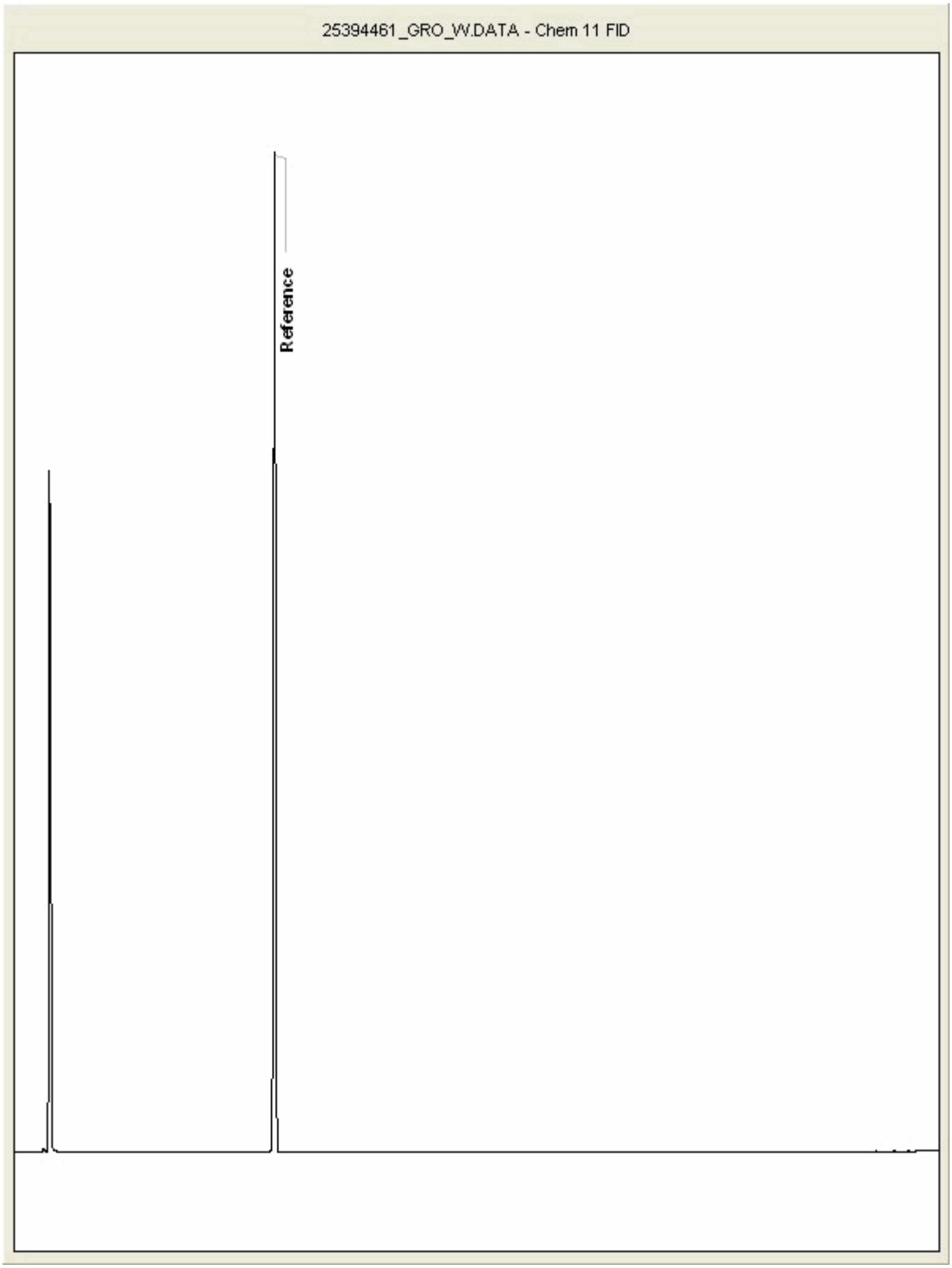


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25394461 **Depth :** 0.00 - 0.00
Sample ID : BH03A

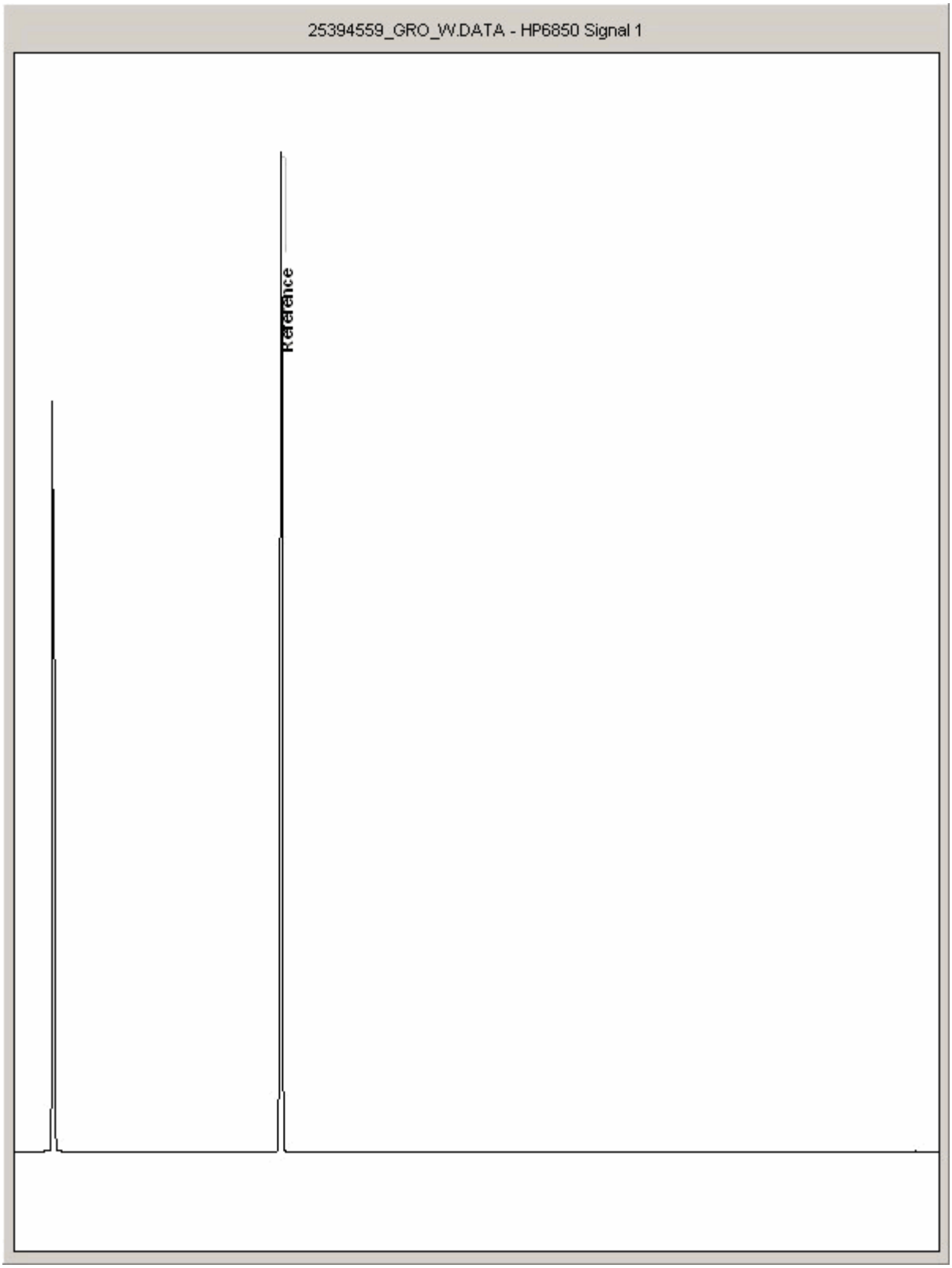


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25394559 **Depth :** 0.00 - 0.00
Sample ID : BH12

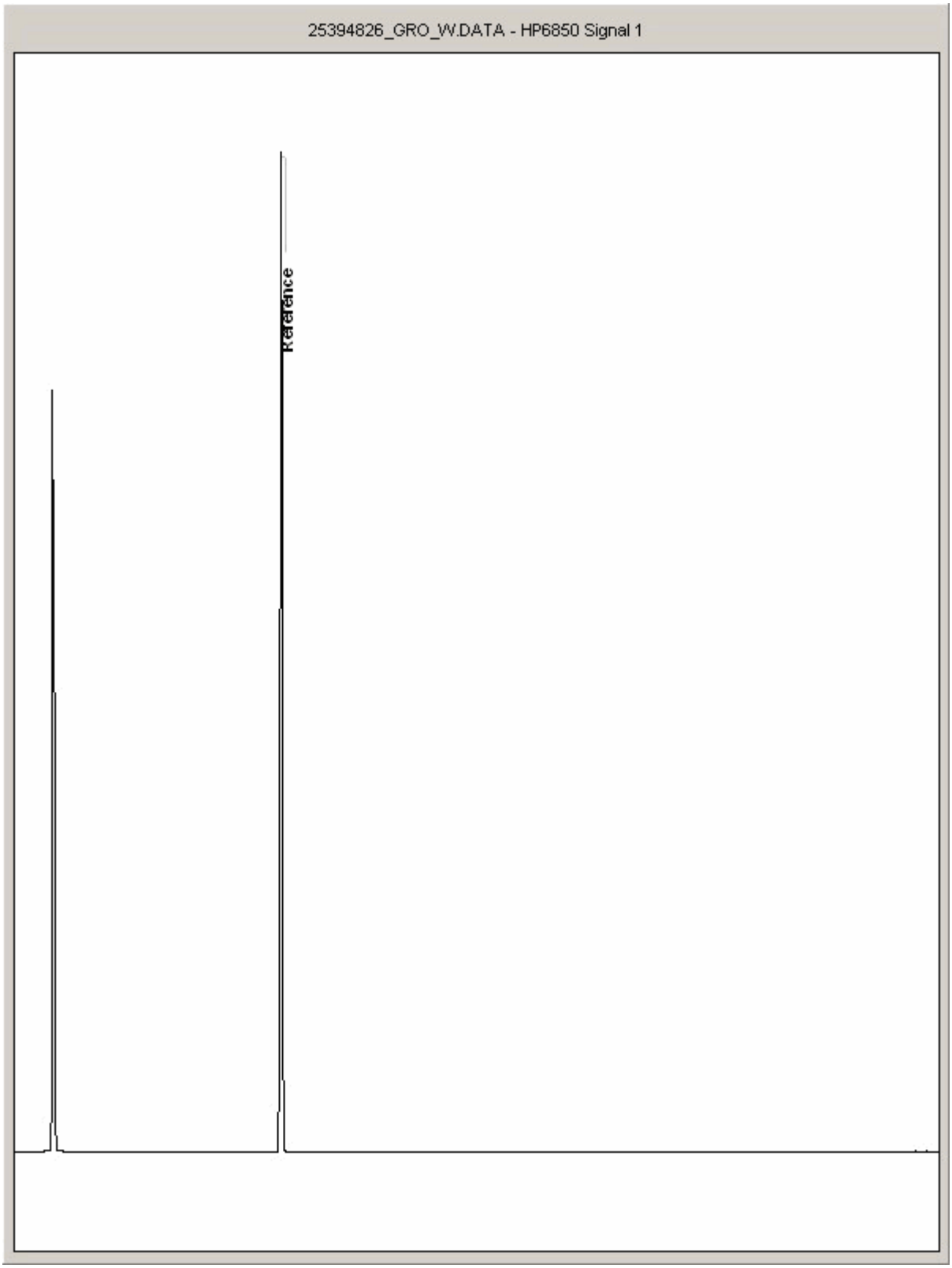


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25394826 **Depth :** 0.00 - 0.00
Sample ID : BH22

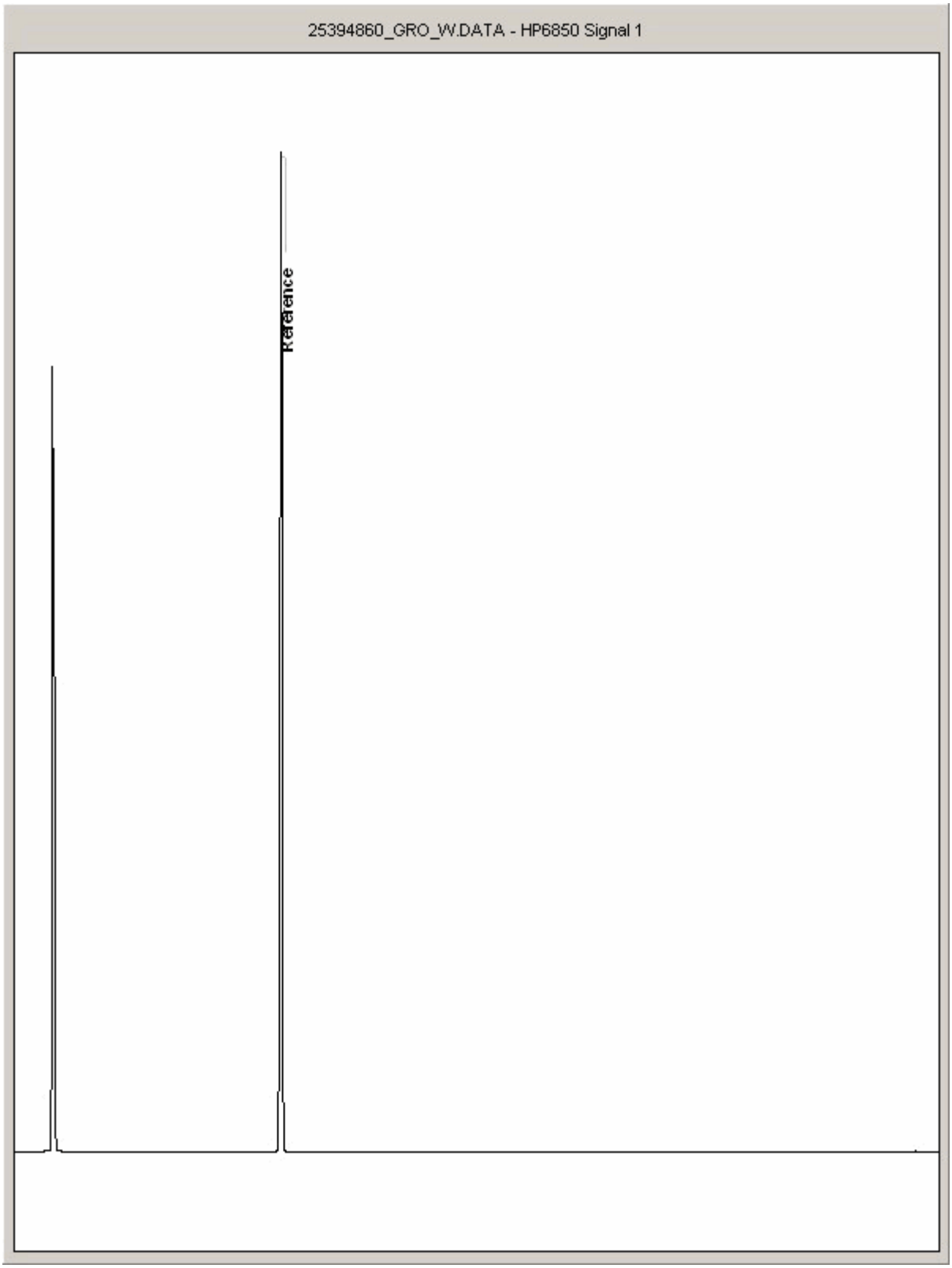


CERTIFICATE OF ANALYSIS

SDG: 211119-164 **Report Number:** 625368 **Superseded Report:** 623920
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25394860 **Depth :** 0.00 - 0.00
Sample ID : BH19



ALS Environmental Ltd
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www.alsenvironmental.co.uk

Subcon Results
ALS Life Sciences Limited
Torrington Avenue
Tile Hill CV4 9GU

27 November 2021

Test Report: COV/2235632/2021

Dear Subcon Results

Analysis of your sample(s) received on 24 November 2021 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using ALS Environmental Ltd and we look forward to receiving your next samples.

Yours Sincerely,

Signed: Subathra Tharmaseelan.

Name: S. Tharmaseelan

Title: Legionella Team Leader

UKAS TESTING 1314

bsi ISO 14001 Environmental Management CERTIFIED ISO 45001 Occupational Health and Safety Management CERTIFIED
EMS 675527 OHS 542058

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

Report Summary

ANALYSED BY

Hawarden Subcon Results
ALS Life Sciences Limited
Torrington Avenue
Tile Hill
CV4 9GU

Date of Issue: **27 November 2021**

Report Number: **COV/2235632/2021** Issue **1**

This issue replaces all previous issues

Job Description: 2021 Analysis

Job Location: Bacti Samples

Number of Samples included in this report **1**

Job Received: **24 November 2021**

Number of Test Results included in this report **8**

Analysis Commenced: **24 November 2021**

Signed: Subathra Tharmaseelan

Name: **S. Tharmaseelan** Date: **27 November 2021**

Title: **Legionella Team Leader**

ALS Environmental Ltd was not responsible for sampling unless otherwise stated.

Information on the methods of analysis and performance characteristics are available on request.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. The results relate only to the items tested and where relevant sampled.
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.
This test report is not a statement of conformity to any specification or standard.

Certificate of Analysis

ANALYSED BY

Report Number: **COV/2235632/2021** Issue **1**

Laboratory Number: **21091222** Sample **1** of **1**

Sample Source: **ALS Life Sciences Limited**
Sample Point Description:
Sample Description: **BH12 BAC 1**
Sample Matrix: **Not Specified**
Sample Date/Time: **19 November 2021**
Sample Received: **24 November 2021**
Analysis Complete: **27 November 2021**

Test Description	Result	Units	Analysis Date	Accreditation		Method
Clostridium Perfringens, Pres	4	cfu/100ml	25/11/2021	N	Cov	W8
Total Coliform presump	0	cfu/100ml	25/11/2021	N	Cov	W10
Total Coliforms confirmed	0	cfu/100ml	25/11/2021	N	Cov	W10
Enterococci presumptive	1	cfu/100ml	26/11/2021	N	Cov	W7
Enterococci confirmed	1	cfu/100ml	27/11/2021	N	Cov	W7
Clostridium Perfringens, Conf	0	cfu/100ml	26/11/2021	N	Cov	W8
Faecal coliforms presumptive	0	cfu/100ml	26/11/2021	N	Cov	W57
Faecal coliforms confirmed	0	cfu/100ml	26/11/2021	N	Cov	W57

Analyst Comments for 21091222: This sample has been analysed for Total Coliforms confirmed, Total Coliform presump, Enterococci confirmed, Enterococci presumptive, Clostridium Perfringens, Conf, Faecal coliforms presumptive, Faecal coliforms confirmed, Clostridium Perfringens, Pres outside recommended stability times. It is therefore possible that the results provided may be compromised. Enterococci identified as Enterococcus casseliflavus

This issue replaces all previous issues
Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: Subaltiran Tharmaseelan

Name: **S. Tharmaseelan** Date: **27 November 2021**

Title: **Legionella Team Leader**

ALS Environmental Ltd
Torrington Avenue, Coventry, CV4 9GU
Tel:+44 (0)24 7642 1213 Fax:+44 (0)24 7685 6575

ANALYST COMMENTS FOR REPORT COV/2235632/2021 Issue 1

This issue replaces all previous issues

Date of Issue: **27 November 2021**

Sample No	Analysis Comments
21091222	This sample has been analysed for Total Coliforms confirmed, Total Coliform presump, Enterococci confirmed, Enterococci presumptive, Clostridium Perfringens, Conf, Faecal coliforms presumptive, Faecal coliforms confirmed, Clostridium Perfringens, Pres outside recommended stability times. It is therefore possible that the results provided may be compromised. Enterococci identified as Enterococcus casseliflavus

Signed: Sabaltharm Tharmaseelan.

Name: **S. Tharmaseelan** Date: **27 November 2021**

Title: **Legionella Team Leader**

DETERMINAND COMMENTS FOR REPORT COV/2235632/2021

ISSUE 1

This issue replaces all previous issues

Date of Issue: 27 November 2021

Sample No	Description	Determinand	Comments
21091222	BH12 BAC 1	Enterococci confirmed	Enterococci identified as Enterococcus casseliflavus

Signed: Subathra Tharmaseelan.

Name: **S. Tharmaseelan** Date: **27 November 2021**

Title: **Legionella Team Leader**

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ALS Environmental Ltd
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www.alsenvironmental.co.uk

Subcon Results
ALS Life Sciences Limited
Torrington Avenue
Tile Hill CV4 9GU

30 November 2021

Test Report: COV/2234399/2021

Dear Subcon Results

Analysis of your sample(s) received on 22 November 2021 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using ALS Environmental Ltd and we look forward to receiving your next samples.

Yours Sincerely,

Signed: Subathra Tharmaseelan.

Name: S. Tharmaseelan

Title: Legionella Team Leader

UKAS TESTING 1314

bsi ISO 14001 Environmental Management CERTIFIED ISO 45001 Occupational Health and Safety Management CERTIFIED
EMS 675527 OHS 542058

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

Report Summary

ANALYSED BY

Hawarden Subcon Results
ALS Life Sciences Limited
Torrington Avenue
Tile Hill
CV4 9GU

Date of Issue: **30 November 2021**

Report Number: **COV/2234399/2021** Issue **1**

This issue replaces all previous issues

Job Description: 2021 Analysis

Job Location: Bacti Samples

Number of Samples included in this report **2**

Job Received: **22 November 2021**

Number of Test Results included in this report **16**

Analysis Commenced: **23 November 2021**

Signed: Subathra Tharmaseelan

Name: **S. Tharmaseelan** Date: **30 November 2021**

Title: **Legionella Team Leader**

ALS Environmental Ltd was not responsible for sampling unless otherwise stated.

Information on the methods of analysis and performance characteristics are available on request.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. The results relate only to the items tested and where relevant sampled.
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.
This test report is not a statement of conformity to any specification or standard.

Certificate of Analysis

ANALYSED BY

Report Number: **COV/2234399/2021** Issue **1**

Laboratory Number: **21083546** Sample **1** of **2**

Sample Source: **ALS Life Sciences Limited**
Sample Point Description:
Sample Description: **BH14 BAC 1**
Sample Matrix: **Not Specified**
Sample Date/Time: **18 November 2021** **09:30**
Sample Received: **22 November 2021**
Analysis Complete: **30 November 2021**

SDG: **211119-164**

Test Description	Result	Units	Analysis Date	Accreditation		Method
Clostridium Perfringens, Pres	1	cfu/100ml	23/11/2021	N	Cov	W8
Total Coliform presump	0	cfu/100ml	23/11/2021	N	Cov	W10
Total Coliforms confirmed	0	cfu/100ml	23/11/2021	N	Cov	W10
Clostridium Perfringens, Conf	1	cfu/100ml	24/11/2021	N	Cov	W8
Faecal coliforms presumptive	1	cfu/100ml	24/11/2021	N	Cov	W57
Faecal coliforms confirmed	1	cfu/100ml	30/11/2021	N	Cov	W57
Enterococci presumptive	1	cfu/100ml	25/11/2021	N	Cov	W58
Enterococci confirmed	1	cfu/100ml	25/11/2021	N	Cov	W58

Analyst Comments for 21083546: This sample has been analysed for Total Coliforms confirmed, Total Coliform presump, Clostridium Perfringens, Conf, Faecal coliforms presumptive, Faecal coliforms confirmed, Enterococci presumptive, Enterococci confirmed, Clostridium Perfringens, Pres outside recommended stability times. It is therefore possible that the results provided may be compromised.

This issue replaces all previous issues
Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: Subathira Tharmaseelan

Name: **S. Tharmaseelan** Date: **30 November 2021**

Title: **Legionella Team Leader**

ALS Environmental Ltd
Torrington Avenue, Coventry, CV4 9GU
Tel:+44 (0)24 7642 1213 Fax:+44 (0)24 7685 6575

Certificate of Analysis

ANALYSED BY

Report Number: **COV/2234399/2021** Issue **1**

Laboratory Number: **21083547** Sample **2** of **2**

Sample Source: **ALS Life Sciences Limited**
Sample Point Description:
Sample Description: **WS54 BAC 1**
Sample Matrix: **Not Specified**
Sample Date/Time: **18 November 2021** **10:30**
Sample Received: **22 November 2021**
Analysis Complete: **30 November 2021**

SDG: **211119-164**

Test Description	Result	Units	Analysis Date	Accreditation		Method
Clostridium Perfringens, Pres	0	cfu/100ml	23/11/2021	N	Cov	W8
Total Coliform presump	2	cfu/100ml	23/11/2021	N	Cov	W10
Total Coliforms confirmed	0	cfu/100ml	24/11/2021	N	Cov	W10
Clostridium Perfringens, Conf	0	cfu/100ml	23/11/2021	N	Cov	W8
Faecal coliforms presumptive	0	cfu/100ml	24/11/2021	N	Cov	W57
Faecal coliforms confirmed	0	cfu/100ml	24/11/2021	N	Cov	W57
Enterococci presumptive	0	cfu/100ml	25/11/2021	N	Cov	W58
Enterococci confirmed	0	cfu/100ml	24/11/2021	N	Cov	W58

Analyst Comments for 21083547: This sample has been analysed for Total Coliforms confirmed, Total Coliform presump, Clostridium Perfringens, Conf, Faecal coliforms presumptive, Faecal coliforms confirmed, Enterococci presumptive, Enterococci confirmed, Clostridium Perfringens, Pres outside recommended stability times. It is therefore possible that the results provided may be compromised.

This issue replaces all previous issues
Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: Subathira Tharmaseelan

Name: **S. Tharmaseelan** Date: **30 November 2021**

Title: **Legionella Team Leader**

ALS Environmental Ltd
Torrington Avenue, Coventry, CV4 9GU
Tel:+44 (0)24 7642 1213 Fax:+44 (0)24 7685 6575

ANALYST COMMENTS FOR REPORT COV/2234399/2021 Issue 1

This issue replaces all previous issues

Date of Issue: **30 November 2021**

Sample No	Analysis Comments
21083546	This sample has been analysed for Total Coliforms confirmed, Total Coliform presump, Clostridium Perfringens, Conf, Faecal coliforms presumptive, Faecal coliforms confirmed, Enterococci presumptive, Enterococci confirmed, Clostridium Perfringens, Pres outside recommended stability times. It is therefore possible that the results provided may be compromised.
21083547	This sample has been analysed for Total Coliforms confirmed, Total Coliform presump, Clostridium Perfringens, Conf, Faecal coliforms presumptive, Faecal coliforms confirmed, Enterococci presumptive, Enterococci confirmed, Clostridium Perfringens, Pres outside recommended stability times. It is therefore possible that the results provided may be compromised.

Signed: Sabaltharm Tharmaseelan

Name: **S. Tharmaseelan** Date: **30 November 2021**

Title: **Legionella Team Leader**

DETERMINAND COMMENTS FOR REPORT COV/2234399/2021

ISSUE 1

This issue replaces all previous issues

Date of Issue: 30 November 2021

Sample No	Description	Determinand	Comments

Signed: Subathra Tharmaseelan.

Name: **S. Tharmaseelan** Date: **30 November 2021**

Title: **Legionella Team Leader**

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Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	31 December 2021
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	211201-105
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	627893
Order Number:	7001649

We received 7 samples on Wednesday December 01, 2021 and 6 of these samples were scheduled for analysis which was completed on Friday December 31, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.

Approved By:

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG: 211201-105 **Report Number:** 627893 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25439110	NO ID	EW		
25439042	SW1	EW1	0.00 - 0.00	29/11/2021
25439054	SW2	EW1	0.00 - 0.00	29/11/2021
25439067	SW3	EW1	0.00 - 0.00	29/11/2021
25439076	SW4	EW1	0.00 - 0.00	29/11/2021
25439088	SW5	EW1	0.00 - 0.00	29/11/2021
25439097	SW6	EW1	0.00 - 0.00	29/11/2021

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG: 211201-105 **Report Number:** 627893 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			25439042						25439054						25439067						25439076			
Customer Sample Reference			SW1						SW2						SW3						SW4			
AGS Reference			EW1						EW1						EW1						EW1			
Depth (m)			0.00 - 0.00						0.00 - 0.00						0.00 - 0.00						0.00 - 0.00			
Container			250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)
Sample Type			SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
Ammonium Low	All	NDPs: 0 Tests: 6			X						X						X							X
Anions by Kone (w)	All	NDPs: 0 Tests: 6		X						X						X							X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 6					X						X						X					
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 6				X						X						X						
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 6	X						X						X						X			
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 6	X						X						X						X			
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 6	X						X						X						X			
GRO by GC-FID (W)	All	NDPs: 0 Tests: 6						X						X						X				
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 6		X						X						X						X		
Mercury Dissolved	All	NDPs: 0 Tests: 6				X						X						X						
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 6	X						X						X						X			
pH Value	All	NDPs: 0 Tests: 6		X						X						X						X		
Phenols by HPLC (W)	All	NDPs: 0 Tests: 6			X						X						X							X
Sulphide	All	NDPs: 0 Tests: 6		X						X						X						X		
Total Metals by ICP-MS	All	NDPs: 0 Tests: 6		X						X						X						X		

25439097	SW6	EW1	0.00 - 0.00	Vial (ALE297)	SW								X									
				NaOH (ALE245)	SW			X														
				HNO3 Filtered (ALE204)	SW				X						X							
				H2SO4 (ALE244)	SW	X														X		
				250ml Amber Gl. PTFE/PE	SW		X			X	X	X		X		X	X			X		X
25439088	SW5	EW1	0.00 - 0.00	Vial (ALE297)	SW								X									
				NaOH (ALE245)	SW			X														
				HNO3 Filtered (ALE204)	SW				X						X							
				H2SO4 (ALE244)	SW	X														X		
				500ml Plastic (ALE208)	SW		X								X			X			X	X
				250ml Amber Gl. PTFE/PE	SW					X	X	X				X						
25439076	SW4	EW1	0.00 - 0.00	Vial (ALE297)	SW								X									
				NaOH (ALE245)	SW			X														
				HNO3 Filtered (ALE204)	SW				X						X							

CERTIFICATE OF ANALYSIS

SDG: 211201-105 **Report Number:** 627893 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

X **Test**

N **No Determination Possible**

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
TPH CWG (W)	All	NDPs: 0 Tests: 6	25439042	SW1	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	SW
							500ml Plastic (ALE208)	SW
							H2SO4 (ALE244)	SW
							HNO3 Filtered (ALE204)	SW
							NaOH (ALE245)	SW
							Vial (ALE297)	SW
			25439054	SW2	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	SW
							500ml Plastic (ALE208)	SW
							H2SO4 (ALE244)	SW
							HNO3 Filtered (ALE204)	SW
							NaOH (ALE245)	SW
							Vial (ALE297)	SW
			25439067	SW3	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	SW
							500ml Plastic (ALE208)	SW
							H2SO4 (ALE244)	SW
							HNO3 Filtered (ALE204)	SW
							NaOH (ALE245)	SW
							Vial (ALE297)	SW
			25439076	SW4	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	SW
							500ml Plastic (ALE208)	SW
							H2SO4 (ALE244)	SW
TPH CWG (W)	All	NDPs: 0 Tests: 6	X					
			X					
			X					
			X					

		SW	Vial (ALE297)	0.00 - 0.00	EW1	SW6			25439097
		SW	NaOH (ALE245)						
		SW	HNO3 Filtered (ALE204)						
		SW	H2SO4 (ALE244)						
X		SW	250ml Amber Gl. PTFE/PE						
		SW	Vial (ALE297)	0.00 - 0.00	EW1	SW5			25439088
		SW	NaOH (ALE245)						
		SW	HNO3 Filtered (ALE204)						
		SW	H2SO4 (ALE244)						
		SW	500ml Plastic (ALE208)						
X		SW	250ml Amber Gl. PTFE/PE						
		SW	Vial (ALE297)	0.00 - 0.00	EW1	SW4			25439076
		SW	NaOH (ALE245)						
		SW	HNO3 Filtered (ALE204)						

CERTIFICATE OF ANALYSIS

SDG: 211201-105 **Report Number:** 627893 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	SW1	SW2	SW3	SW4	SW5	SW6
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	29/11/2021	29/11/2021	29/11/2021	29/11/2021	29/11/2021	29/11/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	01/12/2021	01/12/2021	01/12/2021	01/12/2021	01/12/2021	01/12/2021
			SDG Ref	211201-105	211201-105	211201-105	211201-105	211201-105	211201-105
			Lab Sample No.(s)	25439042	25439054	25439067	25439076	25439088	25439097
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
Carbon, Organic (diss.filt)	<3 mg/l	TM090		8.49	9.16	9.27	9.48	9.36	9.44
Ammoniacal Nitrogen as N (low level)	<0.01 mg/l	TM099		0.473 #	0.443 #	0.404 #	0.405 #	0.41 #	0.446 #
Ammoniacal Nitrogen Low as NH4	<0.01 mg/l	TM099		0.608 #	0.57 #	0.519 #	0.521 #	0.527 #	0.573 #
Sulphide	<0.01 mg/l	TM101		0.0152 2	<0.01 2	<0.01 2	<0.01 2	<0.01 2	<0.01 2
Arsenic (diss.filt)	<0.5 µg/l	TM152		1.44 #	1.38 #	1.76 #	1.79 #	1.92 #	1.97 #
Boron (diss.filt)	<10 µg/l	TM152		107 #	108 #	111 #	110 #	107 #	111 #
Cadmium (diss.filt)	<0.08 µg/l	TM152		0.124 #	<0.08 #	0.241 #	0.218 #	0.388 #	0.37 #
Chromium (diss.filt)	<1 µg/l	TM152		1.05 #	<1 #	1.21 #	1.28 #	2.13 #	1.94 #
Copper (diss.filt)	<0.3 µg/l	TM152		5.23 #	3.66 #	6.7 #	6.79 #	10.1 #	8.73 #
Lead (diss.filt)	<0.2 µg/l	TM152		2.13 #	0.257 #	5.24 #	5 #	12.7 #	11.2 #
Manganese (diss.filt)	<3 µg/l	TM152		45.5 #	12.5 #	92.6 #	89.3 #	196 #	223 #
Nickel (diss.filt)	<0.4 µg/l	TM152		5.7 #	5.22 #	6.01 #	6.3 #	7.49 #	7.09 #
Selenium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Vanadium (diss.filt)	<1 µg/l	TM152		1.51 #	<1 #	2.03 #	1.61 #	3 #	2.23 #
Zinc (diss.filt)	<1 µg/l	TM152		23.9 #	17.2 #	33.4 #	33.2 #	54.7 #	54.4 #
Calcium (Dis.Filt)	<0.2 mg/l	TM152		75.9 #	76 #	82.5 #	82.2 #	81.9 #	84 #
Iron (Dis.Filt)	<0.019 mg/l	TM152		0.278 #	0.0507 #	0.594 #	0.606 #	1.14 #	1.02 #
Hardness, Total as CaCO3 unfiltered	<0.35 mg/l	TM152		269 2	268 2	282 2	282 2	278 2	284 2
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01	<0.01	<0.01	<0.01	0.0164	0.014
Sulphate	<2 mg/l	TM184		104 #	105 #	116 #	116 #	116 #	116 #
Nitrate as NO3	<0.3 mg/l	TM184		34.5	33.9	35.4	34.9	34.8	35.1
Cyanide, Total	<0.05 mg/l	TM227		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cyanide, Free	<0.05 mg/l	TM227		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
pH	<1 pH Units	TM256		7.94 #	7.88 #	7.98 #	7.97 #	7.98 #	7.95 #
Phenol	<0.002 mg/l	TM259		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cresols	<0.006 mg/l	TM259		<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
Xylenols	<0.008 mg/l	TM259		<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
Phenols, Total Detected monohydric	<0.016 mg/l	TM259		<0.016	<0.016	<0.016	<0.016	<0.016	<0.016

CERTIFICATE OF ANALYSIS

SDG: 211201-105 **Report Number:** 627893 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

PAH Spec MS - Aqueous (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	SW1	SW2	SW3	SW4	SW5	SW6
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	29/11/2021	29/11/2021	29/11/2021	29/11/2021	29/11/2021	29/11/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	01/12/2021	01/12/2021	01/12/2021	01/12/2021	01/12/2021	01/12/2021
			SDG Ref	211201-105	211201-105	211201-105	211201-105	211201-105	211201-105
			Lab Sample No.(s)	25439042	25439054	25439067	25439076	25439088	25439097
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
Naphthalene (aq)	<0.01 µg/l	TM178		<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #
Acenaphthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	0.0066 #
Acenaphthylene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Fluoranthene (aq)	<0.005 µg/l	TM178		0.0271 #	0.0303 #	0.0249 #	0.0287 #	0.0373 #	0.107 #
Anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	0.0064 #
Phenanthrene (aq)	<0.005 µg/l	TM178		0.009 #	0.0108 #	0.0095 #	0.0105 #	0.0127 #	0.0343 #
Fluorene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Chrysene (aq)	<0.005 µg/l	TM178		0.0214 #	0.0193 #	0.0183 #	0.0192 #	0.0271 #	0.073 #
Pyrene (aq)	<0.005 µg/l	TM178		0.027 #	0.0302 #	0.0251 #	0.0296 #	0.0375 #	0.106 #
Benzo(a)anthracene (aq)	<0.005 µg/l	TM178		0.0141 #	0.0142 #	0.011 #	0.0137 #	0.018 #	0.0482 #
Benzo(b)fluoranthene (aq)	<0.005 µg/l	TM178		0.03 #	0.0282 #	0.0243 #	0.0264 #	0.0344 #	0.0861 #
Benzo(k)fluoranthene (aq)	<0.005 µg/l	TM178		0.013 #	0.0103 #	0.0107 #	0.0087 #	0.0133 #	0.0341 #
Benzo(a)pyrene (aq)	<0.002 µg/l	TM178		0.0208 #	0.0181 #	0.0159 #	0.0163 #	0.0217 #	0.0601 #
Dibenzo(a,h)anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Benzo(g,h,i)perylene (aq)	<0.005 µg/l	TM178		0.0139 #	0.0095 #	0.0058 #	<0.005 #	0.0179 #	0.0464 #
Indeno(1,2,3-cd)pyrene (aq)	<0.005 µg/l	TM178		0.0147 #	0.0141 #	0.0119 #	0.0125 #	0.0161 #	0.0418 #
PAH, Total Detected USEPA 16 (aq)	<0.082 µg/l	TM178		0.191 #	0.185 #	0.157 #	0.166 #	0.236 #	0.65 #

CERTIFICATE OF ANALYSIS

SDG: 211201-105 **Report Number:** 627893 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

TPH CWG (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	SW1	SW2	SW3	SW4	SW5	SW6
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
			Date Sampled	29/11/2021	29/11/2021	29/11/2021	29/11/2021	29/11/2021	29/11/2021
			Sampled Time	.	.	.	.	.	.
			Date Received	01/12/2021	01/12/2021	01/12/2021	01/12/2021	01/12/2021	01/12/2021
			SDG Ref	211201-105	211201-105	211201-105	211201-105	211201-105	211201-105
			Lab Sample No.(s)	25439042	25439054	25439067	25439076	25439088	25439097
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
GRO Surrogate % recovery**	%	TM245		100	105	101	104	104	105
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #	<50 #	<50 #	<50 #	<50 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Benzene	<7 µg/l	TM245		<7 #	<7 #	<7 #	<7 #	<7 #	<7 #
Toluene	<4 µg/l	TM245		<4 #	<4 #	<4 #	<4 #	<4 #	<4 #
Ethylbenzene	<5 µg/l	TM245		<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
m,p-Xylene	<8 µg/l	TM245		<8 #	<8 #	<8 #	<8 #	<8 #	<8 #
o-Xylene	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Sum of detected Xylenes	<11 µg/l	TM245		<11	<11	<11	<11	<11	<11
Sum of detected BTEX	<28 µg/l	TM245		<28	<28	<28	<28	<28	<28
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C16-C35 Aqueous	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10

Table of Results - Appendix

Method No	Reference	Description
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM152	ISO 17294-2:2016 Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS)	Analysis of Aqueous Samples by ICP-MS
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4, Standard Methods for the examination of waters and wastewaters 20th Edition, PHA, Washington DC, USA. ISBN 0-87553-235-7 and The Determination of Alkalinity and Acidity in water HMSO, 1981, ISBN 0 11 751601 5.	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

CERTIFICATE OF ANALYSIS

SDG: 211201-105 **Report Number:** 627893 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Test Completion Dates

Lab Sample No(s)	25439042	25439054	25439067	25439076	25439088	25439097
Customer Sample Ref.	SW1	SW2	SW3	SW4	SW5	SW6
AGS Ref.	EW1	EW1	EW1	EW1	EW1	EW1
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Ammonium Low	07-Dec-2021	07-Dec-2021	07-Dec-2021	07-Dec-2021	07-Dec-2021	07-Dec-2021
Anions by Kone (w)	06-Dec-2021	06-Dec-2021	06-Dec-2021	06-Dec-2021	06-Dec-2021	06-Dec-2021
Cyanide Comp/Free/Total/Thiocyanate	06-Dec-2021	06-Dec-2021	03-Dec-2021	06-Dec-2021	03-Dec-2021	03-Dec-2021
Dissolved Metals by ICP-MS	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021
Dissolved Organic/Inorganic Carbon	31-Dec-2021	31-Dec-2021	31-Dec-2021	31-Dec-2021	31-Dec-2021	31-Dec-2021
EPH CWG (Aliphatic) Aqueous GC (W)	07-Dec-2021	07-Dec-2021	07-Dec-2021	07-Dec-2021	07-Dec-2021	07-Dec-2021
EPH CWG (Aromatic) Aqueous GC (W)	07-Dec-2021	07-Dec-2021	07-Dec-2021	07-Dec-2021	07-Dec-2021	07-Dec-2021
GRO by GC-FID (W)	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021
Hexavalent Chromium (w)	02-Dec-2021	02-Dec-2021	02-Dec-2021	02-Dec-2021	02-Dec-2021	06-Dec-2021
Mercury Dissolved	06-Dec-2021	06-Dec-2021	06-Dec-2021	06-Dec-2021	06-Dec-2021	06-Dec-2021
Nitrite by Kone (w)	02-Dec-2021	02-Dec-2021	02-Dec-2021	02-Dec-2021	02-Dec-2021	02-Dec-2021
PAH Spec MS - Aqueous (W)	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021
pH Value	02-Dec-2021	02-Dec-2021	02-Dec-2021	02-Dec-2021	02-Dec-2021	07-Dec-2021
Phenols by HPLC (W)	03-Dec-2021	03-Dec-2021	03-Dec-2021	03-Dec-2021	03-Dec-2021	03-Dec-2021
Sulphide	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021
Total Metals by ICP-MS	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021
TPH CWG (W)	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021

ASSOCIATED AQC DATA

Ammonium Low

Component	Method Code	QC 2577
Ammoniacal Nitrogen as N	TM099	**102.4** 94.00 : 106.00

Anions by Kone (w)

Component	Method Code	QC 2577
Sulphate (soluble)	TM184	**99.6** 91.99 : 109.30
TON as NO3	TM184	**97.0** 90.35 : 108.35

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2576	QC 2577
Free Cyanide (W)	TM227	**80.25** 90.67 : 122.67	**78.75** 90.67 : 122.67
Thiocyanate (W)	TM227	**107.75** 92.25 : 117.75	**106.5** 92.25 : 117.75
Total Cyanide (W)	TM227	**101.0** 96.25 : 112.75	**100.0** 96.25 : 112.75

Dissolved Metals by ICP-MS

Component	Method Code	QC 2519	QC 2536
Aluminium	TM152	**104.33** 90.98 : 111.82	**102.0** 96.13 : 107.26
Antimony	TM152	**102.83** 90.44 : 113.04	**98.0** 93.51 : 108.15
Arsenic	TM152	**101.67** 88.00 : 112.00	**100.17** 93.27 : 108.08
Barium	TM152	**99.5** 90.20 : 111.19	**100.17** 88.62 : 113.14
Beryllium	TM152	**105.67** 87.77 : 113.97	**101.67** 94.80 : 107.96
Bismuth	TM152	**99.67** 91.90 : 112.20	**99.17** 91.73 : 106.31
Borate	TM152	**106.17** 88.00 : 112.00	
Boron	TM152	**106.0** 92.27 : 112.40	**103.33** 91.19 : 109.95
Cadmium	TM152	**96.0** 96.43 : 110.53	**96.5** 93.74 : 105.67
Calcium	TM152	**110.0** 95.14 : 110.01	**100.0** 93.70 : 110.52
Chromium	TM152	**101.67** 91.84 : 108.67	**101.67** 93.39 : 107.53
Cobalt	TM152	**100.83** 88.00 : 112.00	**99.67** 92.88 : 107.59

Dissolved Metals by ICP-MS

		QC 2519	QC 2536
Copper	TM152	**101.67** 94.47 : 109.05	**102.67** 93.02 : 108.66
Iron	TM152	**101.33** 93.23 : 106.27	**101.33** 94.15 : 107.13
Lead	TM152	**99.67** 88.00 : 112.00	**99.5** 93.46 : 106.37
Lithium	TM152	**104.67** 91.62 : 113.12	**101.33** 93.80 : 107.76
Magnesium	TM152	**111.33** 87.77 : 110.48	**102.0** 94.69 : 109.82
Manganese	TM152	**100.67** 95.03 : 110.58	**101.0** 94.61 : 107.39
Molybdenum	TM152	**100.0** 88.00 : 112.00	**99.67** 90.85 : 103.70
Nickel	TM152	**101.17** 88.00 : 112.00	**103.0** 93.20 : 108.65
Phosphorus	TM152	**98.33** 91.54 : 107.12	**100.17** 89.24 : 114.18
Potassium	TM152	**109.33** 92.16 : 109.93	**99.33** 94.63 : 111.61
Selenium	TM152	**101.67** 91.58 : 115.98	**98.83** 94.43 : 109.16
Silver	TM152	**101.33** 92.75 : 111.05	**102.33** 88.34 : 105.04
Sodium	TM152	**109.33** 89.47 : 109.62	**100.67** 92.42 : 113.24
Strontium	TM152	**102.33** 88.00 : 112.00	**100.0** 94.08 : 110.04
Tellurium	TM152	**101.17** 93.32 : 114.66	**99.83** 89.95 : 104.43
Thallium	TM152	**88.5** 88.00 : 112.00	**80.67** 82.43 : 113.83
Tin	TM152	**101.33** 92.63 : 109.70	**98.33** 94.62 : 107.79
Titanium	TM152	**107.17** 95.58 : 111.68	**100.5** 94.58 : 109.49
Tungsten	TM152	**99.33** 81.32 : 124.72	**98.0** 92.15 : 105.26
Uranium	TM152	**99.33** 88.00 : 112.00	**97.83** 90.83 : 104.09
Vanadium	TM152	**99.33** 88.00 : 112.00	**99.0** 89.61 : 115.48
Zinc	TM152	**101.33** 92.98 : 118.95	**101.33** 95.21 : 107.91

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2551
Dissolved Inorganic Carbon	TM090	**103.17** 93.58 : 112.28
Dissolved Organic Carbon	TM090	**103.83** 97.80 : 107.10

EPH CWG (Aliphatic) Aqueous GC (W)

Component	Method Code	QC 2550
Total Aliphatics >C10-C40	TM174	**88.12** 68.59 : 134.82

EPH CWG (Aromatic) Aqueous GC (W)

Component	Method Code	QC 2555
Total Aromatics >EC10-EC40	TM174	**96.1** 60.75 : 129.09

GRO by GC-FID (W)

Component	Method Code	QC 2578
Benzene by GC	TM245	**104.5** 79.13 : 118.84
Ethylbenzene by GC	TM245	**101.5** 79.54 : 115.99
m & p Xylene by GC	TM245	**100.25** 78.44 : 116.32
MTBE GC-FID	TM245	**100.0** 81.43 : 120.09
o Xylene by GC	TM245	**103.0** 76.85 : 120.29
QC	TM245	**88.05** 71.58 : 131.01
Toluene by GC	TM245	**101.0** 79.00 : 121.96

Hexavalent Chromium (w)

Component	Method Code	QC 2561	QC 2547
Hexavalent Chromium	TM241	**98.8** 94.17 : 106.17	**101.0** 94.17 : 106.17

Mercury Dissolved

Component	Method Code	QC 2520
Mercury Dissolved (CVAF)	TM183	**98.4** 0.00 : 0.00

PAH Spec MS - Aqueous (W)

PAH Spec MS - Aqueous (W)

Component	Method Code	QC 2565
Acenaphthene by GCMS	TM178	**103.6** 90.45 : 118.63
Acenaphthylene by GCMS	TM178	**101.6** 90.13 : 116.27
Anthracene by GCMS	TM178	**102.0** 92.40 : 114.00
Benz(a)anthracene by GCMS	TM178	**99.2** 89.51 : 117.69
Benzo(a)pyrene by GCMS	TM178	**98.4** 89.43 : 118.57
Benzo(b)fluoranthene by GCMS	TM178	**105.6** 87.80 : 121.80
Benzo(ghi)perylene by GCMS	TM178	**105.2** 87.10 : 119.30
Benzo(k)fluoranthene by GCMS	TM178	**100.8** 93.23 : 123.57
Chrysene by GCMS	TM178	**102.4** 88.68 : 116.92
Dibenzo(ah)anthracene by GCMS	TM178	**94.4** 86.24 : 118.56
Fluoranthene by GCMS	TM178	**99.6** 86.04 : 121.96
Fluorene by GCMS	TM178	**101.6** 90.76 : 121.24
Indeno(123cd)pyrene by GCMS	TM178	**94.8** 88.39 : 119.61
Naphthalene by GCMS	TM178	**105.2** 89.40 : 121.80
Phenanthrene by GCMS	TM178	**106.8** 90.41 : 119.19
Pyrene by GCMS	TM178	**101.2** 91.00 : 120.20

pH Value

Component	Method Code	QC 2580	QC 2584	QC 2547
pH	TM256	**100.4** 99.33 : 102.54	**100.67** 99.33 : 102.54	**100.67** 99.33 : 102.54

Phenols by HPLC (W)

Component	Method Code	QC 2530
2.3.5 Trimethyl-Phenol by HPLC (W)	TM259	**101.56** 77.41 : 127.55
2-Isopropyl Phenol by HPLC (W)	TM259	**97.51** 82.77 : 126.51
Cresols by HPLC (W)	TM259	**101.32** 76.60 : 126.28
Napthol by HPLC (W)	TM259	**103.52** 75.40 : 129.40

Phenols by HPLC (W)

		QC 2530
Phenol by HPLC (W)	TM259	**96.41** 85.77 : 125.91
Xylenols by HPLC (W)	TM259	**98.73** 79.09 : 131.82

Sulphide

Component	Method Code	QC 2549	QC 2557	QC 2572
Sulphide	TM101	**98.0** 88.90 : 112.50	**98.67** 88.90 : 112.50	**98.67** 88.90 : 112.50

Total Metals by ICP-MS

Component	Method Code	QC 2512
Aluminium	TM152	**103.0** 87.78 : 113.42
Antimony	TM152	**102.83** 80.12 : 122.32
Arsenic	TM152	**101.67** 83.73 : 114.66
Barium	TM152	**103.67** 90.49 : 110.95
Beryllium	TM152	**102.5** 88.73 : 120.94
Bismuth	TM152	**103.83** 92.53 : 110.53
Boron	TM152	**98.67** 87.74 : 118.72
Cadmium	TM152	**97.5** 91.09 : 114.09
Calcium	TM152	**103.33** 90.50 : 119.25
Chromium	TM152	**101.67** 91.28 : 114.16
Cobalt	TM152	**103.0** 84.39 : 114.26
Copper	TM152	**103.5** 90.45 : 117.64
Iron	TM152	**102.67** 91.83 : 115.96
Lead	TM152	**101.5** 89.83 : 110.95
Lithium	TM152	**102.67** 90.36 : 116.55
Magnesium	TM152	**103.33** 88.50 : 112.03
Manganese	TM152	**103.0** 91.78 : 117.32
Molybdenum	TM152	**100.5** 87.74 : 113.43

Total Metals by ICP-MS

		QC 2512
Nickel	TM152	**103.83** 91.70 : 116.41
Phosphorus	TM152	**104.0** 88.86 : 115.41
Potassium	TM152	**102.0** 88.98 : 120.64
Selenium	TM152	**103.33** 88.44 : 113.86
Silver	TM152	**101.83** 83.55 : 115.15
Sodium	TM152	**100.67** 87.45 : 116.43
Strontium	TM152	**104.0** 90.72 : 114.82
Tellurium	TM152	**102.17** 88.31 : 113.91
Thallium	TM152	**73.17** 80.92 : 114.72
Tin	TM152	**96.83** 89.73 : 116.53
Titanium	TM152	**101.17** 92.44 : 117.88
Uranium	TM152	**99.17** 88.33 : 111.03
Vanadium	TM152	**102.17** 88.43 : 114.30
Zinc	TM152	**103.67** 91.97 : 115.86

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

SDG: 211201-105 **Report Number:** 627893 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

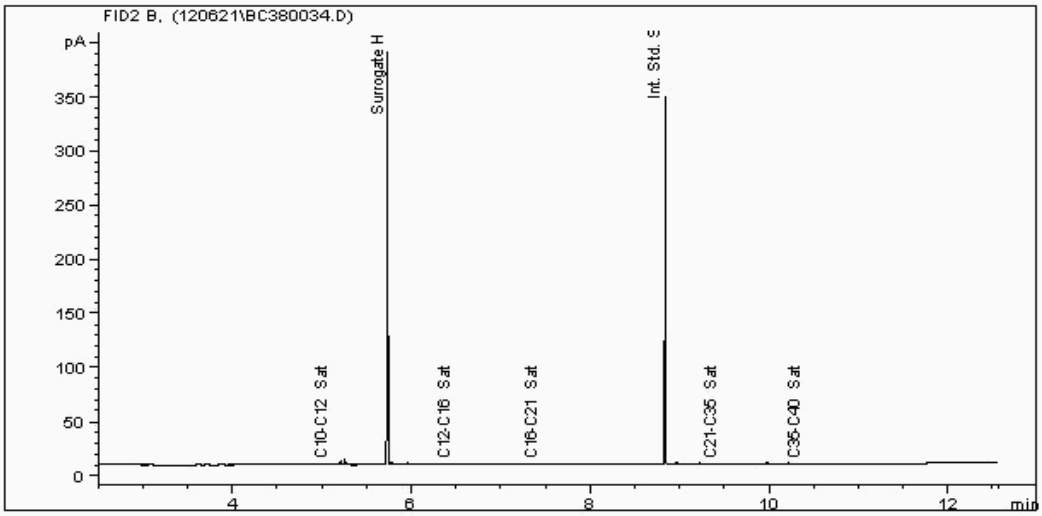
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25440231 **Depth :** 0.00 - 0.00
Sample ID : SW3

Speciated TPH - SATS (C12 - C40)

Sample Identity: 23767349-
Date Acquired : 07/12/21 02:23:01 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.026

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	234.8	0.188
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	Int. Std. S	278.0	0.262
6	C21-C35 Sat	0.0	0.000
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	512.8	



CERTIFICATE OF ANALYSIS

SDG: 211201-105 **Report Number:** 627893 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

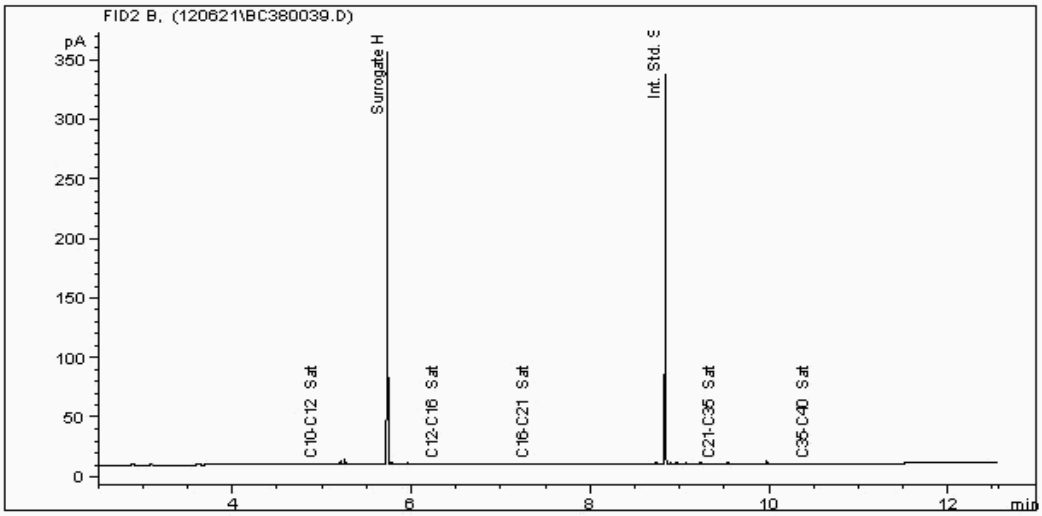
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25440236 **Depth :** 0.00 - 0.00
Sample ID : SW4

Speciated TPH - SATS (C12 - C40)

Sample Identity: 23767381-
Date Acquired : 07/12/21 04:18:53 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.027

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	220.6	0.190
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	Int. Std. S	263.0	0.266
6	C21-C35 Sat	0.0	0.000
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	483.6	



CERTIFICATE OF ANALYSIS

SDG: 211201-105 **Report Number:** 627893 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

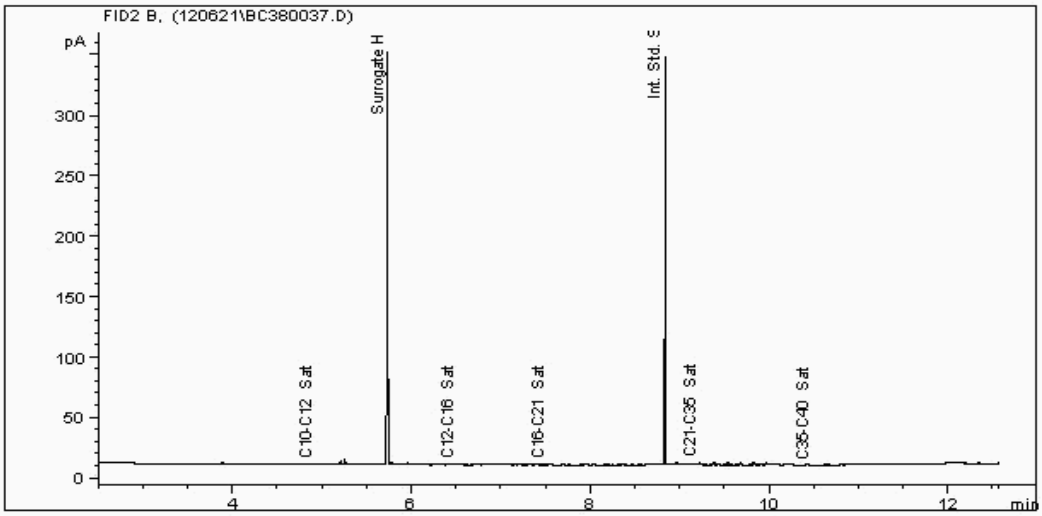
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25440316 **Depth :** 0.00 - 0.00
Sample ID : SW2

Speciated TPH - SATS (C12 - C40)

Sample Identity: 23767317-
Date Acquired : 07/12/21 03:32:43 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	222.3	0.179
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	Int. Std. S	264.1	0.250
6	C21-C35 Sat	0.0	0.000
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	486.4	



CERTIFICATE OF ANALYSIS

SDG: 211201-105 **Report Number:** 627893 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

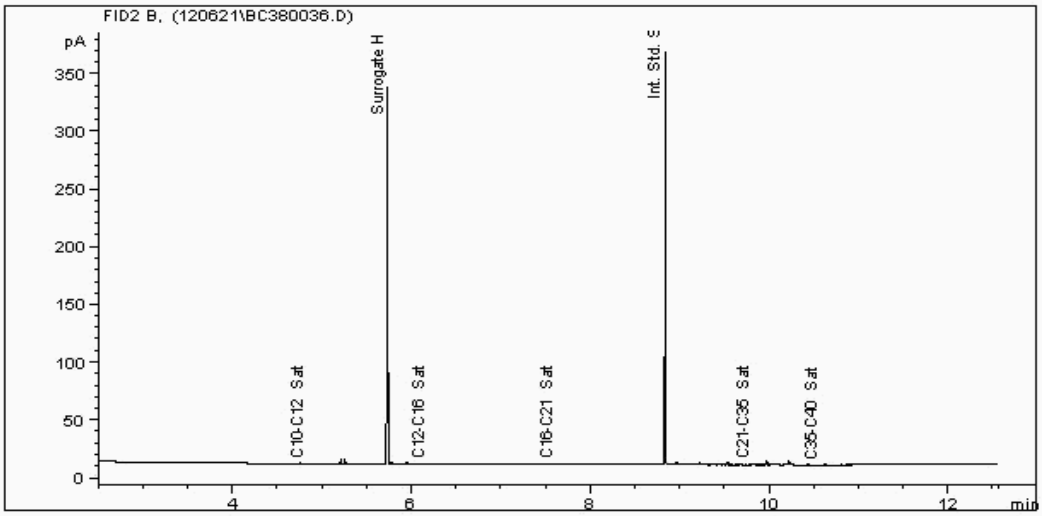
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25440320 **Depth :** 0.00 - 0.00
Sample ID : SW1

Speciated TPH - SATS (C12 - C40)

Sample Identity: 23767287-
Date Acquired : 07/12/21 03:09:09 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.026

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	218.1	0.180
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	Int. Std. S	272.0	0.263
6	C21-C35 Sat	0.0	0.000
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	490.1	



CERTIFICATE OF ANALYSIS

SDG: 211201-105 **Report Number:** 627893 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

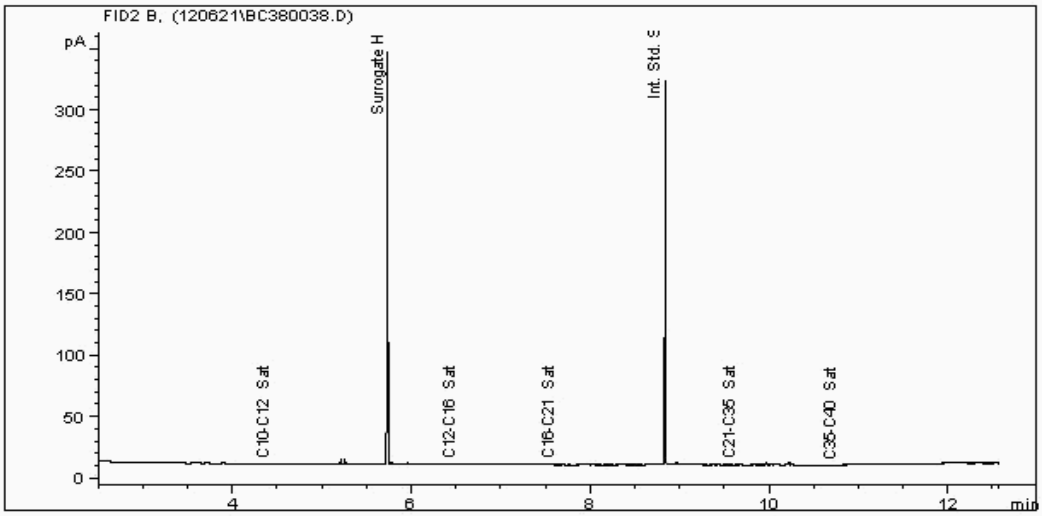
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25440339 **Depth :** 0.00 - 0.00
Sample ID : SW6

Speciated TPH - SATS (C12 - C40)

Sample Identity: 23767431-
Date Acquired : 07/12/21 03:55:32 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	220.4	0.180
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	Int. Std. S	260.4	0.250
6	C21-C35 Sat	0.0	0.000
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	480.8	



CERTIFICATE OF ANALYSIS

SDG: 211201-105 **Report Number:** 627893 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

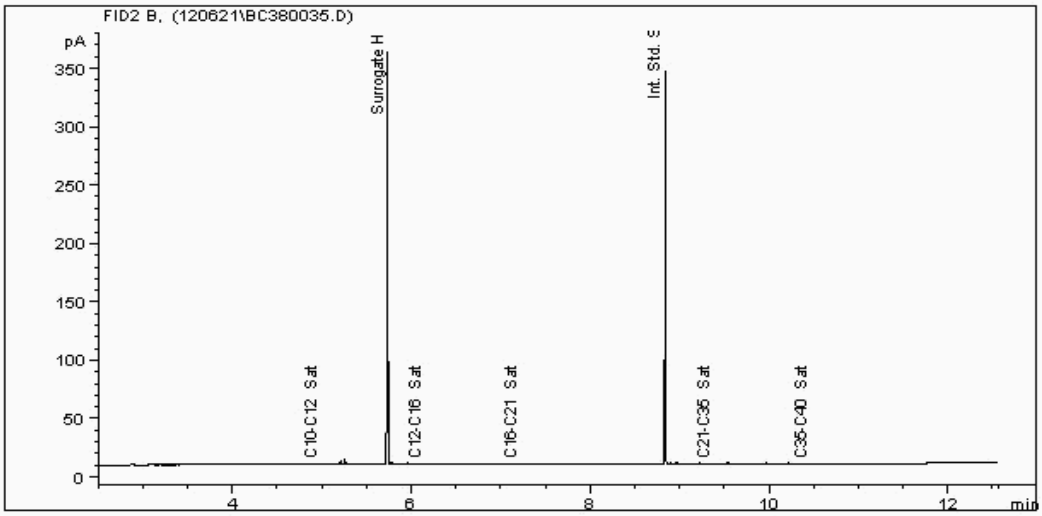
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25440341 **Depth :** 0.00 - 0.00
Sample ID : SW5

Speciated TPH - SATS (C12 - C40)

Sample Identity: 23767413-
Date Acquired : 07/12/21 02:46:21 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.027

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	224.0	0.197
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	Int. Std. S	265.6	0.275
6	C21-C35 Sat	0.0	0.000
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	489.6	



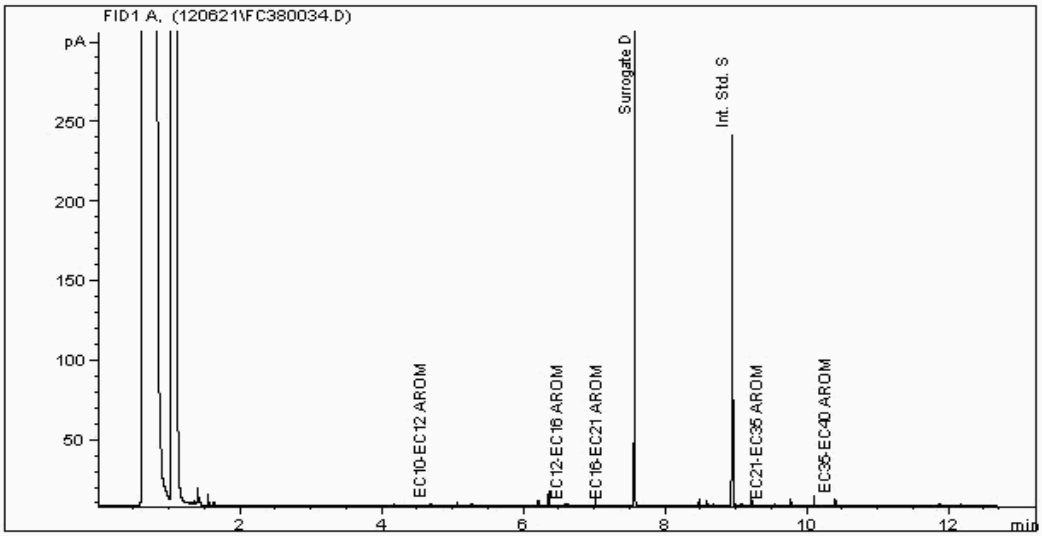
Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25440231 **Depth :** 0.00 - 0.00
Sample ID : SW3

Speciated TPH - AROM (C12 - C40)

Sample Identity: 23767350-
Date Acquired : 07/12/21 02:23:01 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.026

#	Compound Name	Main Peak Area	Amount
1	EC10-EC12 AROM	0.0	0.000
2	EC12-EC16 AROM	0.0	0.000
3	EC16-EC21 AROM	0.0	0.000
4	Surrogate D	189.8	0.237
5	Int. Std. S	193.6	0.262
6	EC21-EC35 AROM	0.0	0.000
7	EC35-EC40 AROM	0.0	0.000
	Total Peak Area	383.4	



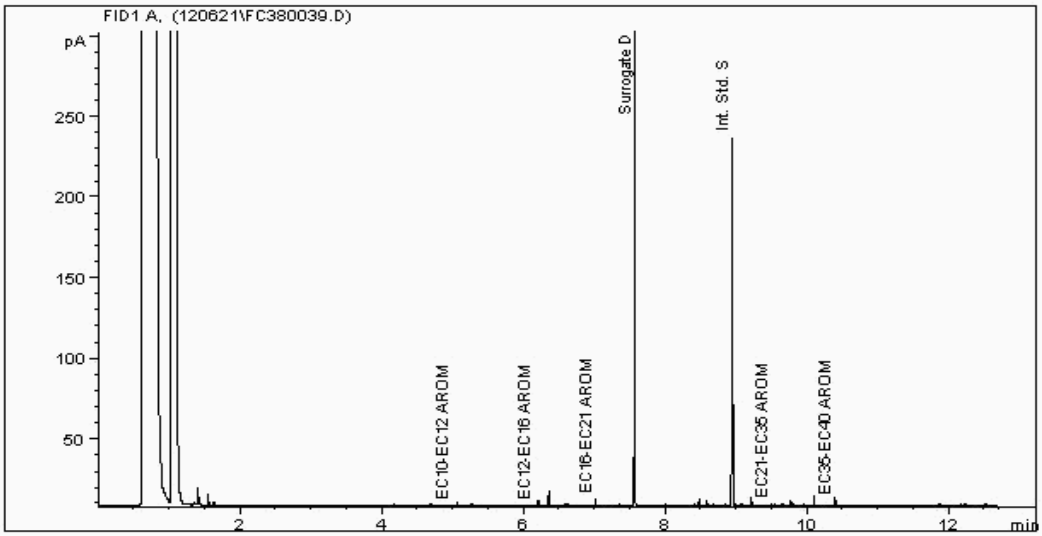
Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25440236 **Depth :** 0.00 - 0.00
Sample ID : SW4

Speciated TPH - AROM (C12 - C40)

Sample Identity: 23767382-
Date Acquired : 07/12/21 04:18:53 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.027

#	Compound Name	Main Peak Area	Amount
1	EC10-EC12 AROM	0.0	0.000
2	EC12-EC16 AROM	0.0	0.000
3	EC16-EC21 AROM	0.0	0.000
4	Surrogate D	177.1	0.235
5	Int. Std. S	184.9	0.266
6	EC21-EC35 AROM	0.0	0.000
7	EC35-EC40 AROM	0.0	0.000
	Total Peak Area	362.0	



CERTIFICATE OF ANALYSIS

SDG: 211201-105 **Report Number:** 627893 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

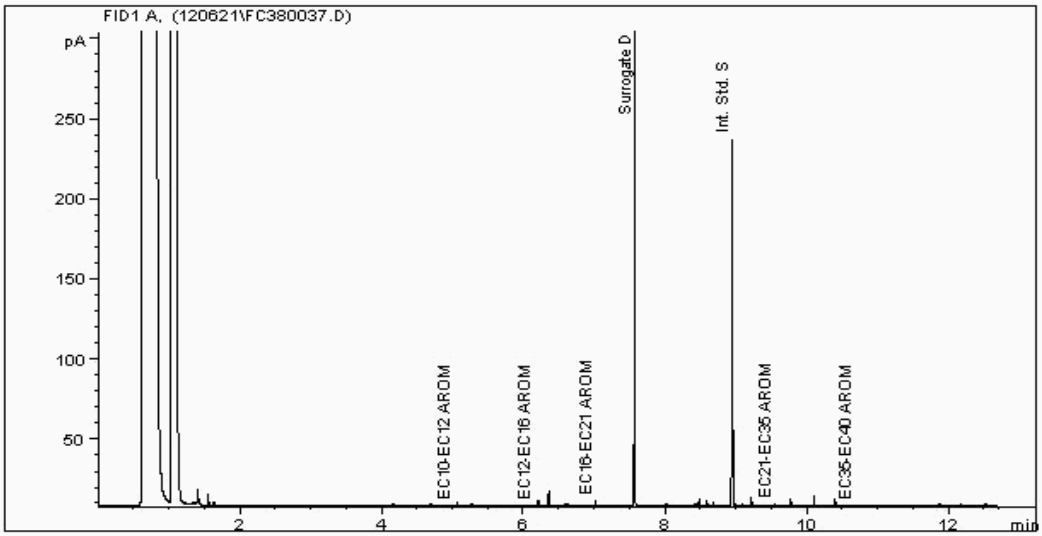
Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25440316 **Depth :** 0.00 - 0.00
Sample ID : SW2

Speciated TPH - AROM (C12 - C40)

Sample Identity: 23767318-
Date Acquired : 07/12/21 03:32:43 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	EC10-EC12 AROM	0.0	0.000
2	EC12-EC16 AROM	0.0	0.000
3	EC16-EC21 AROM	0.0	0.000
4	Surrogate D	180.6	0.229
5	Int. Std. S	182.1	0.250
6	EC21-EC35 AROM	0.0	0.000
7	EC35-EC40 AROM	0.0	0.000
	Total Peak Area	362.7	



CERTIFICATE OF ANALYSIS

SDG: 211201-105 **Report Number:** 627893 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

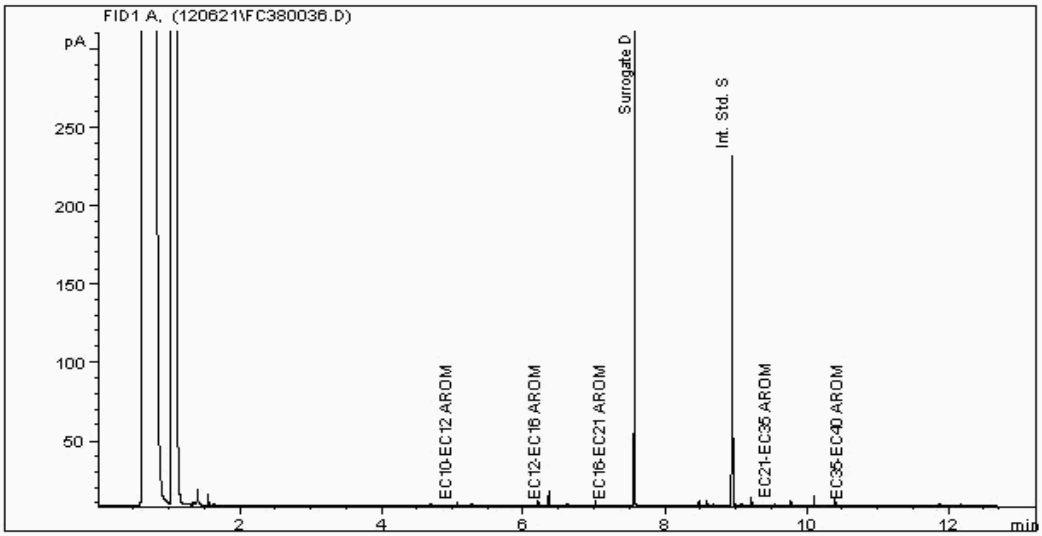
Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25440320 **Depth :** 0.00 - 0.00
Sample ID : SW1

Speciated TPH - AROM (C12 - C40)

Sample Identity: 23767288-
Date Acquired : 07/12/21 03:09:09 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.026

#	Compound Name	Main Peak Area	Amount
1	EC10-EC12 AROM	0.0	0.000
2	EC12-EC16 AROM	0.0	0.000
3	EC16-EC21 AROM	0.0	0.000
4	Surrogate D	174.6	0.242
5	Int. Std. S	175.1	0.263
6	EC21-EC35 AROM	0.0	0.000
7	EC35-EC40 AROM	0.0	0.000
	Total Peak Area	349.7	



CERTIFICATE OF ANALYSIS

SDG: 211201-105 **Report Number:** 627893 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

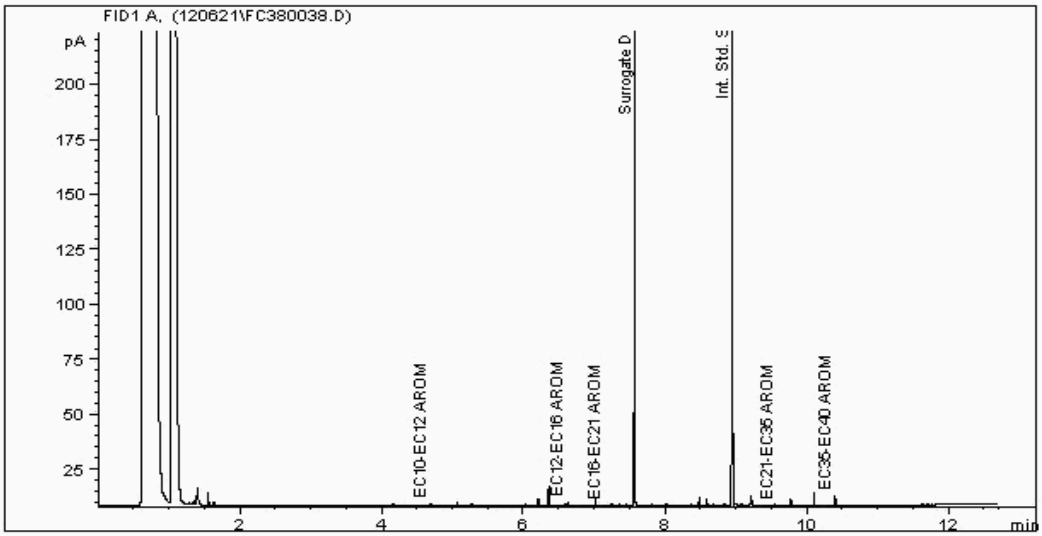
Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25440339 **Depth :** 0.00 - 0.00
Sample ID : SW6

Speciated TPH - AROM (C12 - C40)

Sample Identity: 23767432-
Date Acquired : 07/12/21 03:55:32 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	EC10-EC12 AROM	0.0	0.000
2	EC12-EC16 AROM	0.0	0.000
3	EC16-EC21 AROM	0.0	0.000
4	Surrogate D	171.1	0.231
5	Int. Std. S	171.0	0.250
6	EC21-EC35 AROM	0.0	0.000
7	EC35-EC40 AROM	0.0	0.000
	Total Peak Area	342.0	



CERTIFICATE OF ANALYSIS

SDG: 211201-105 **Report Number:** 627893 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

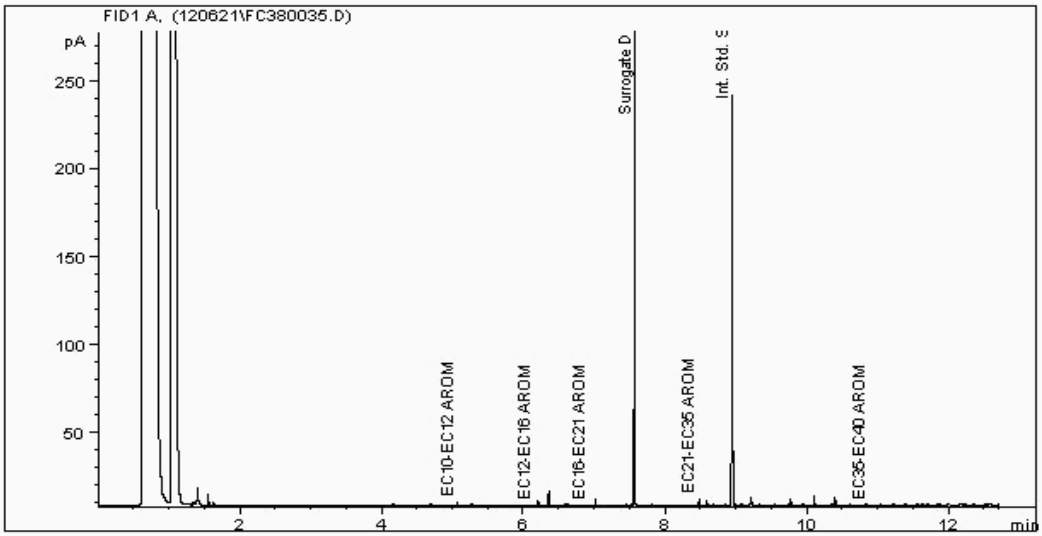
Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25440341 **Depth :** 0.00 - 0.00
Sample ID : SW5

Speciated TPH - AROM (C12 - C40)

Sample Identity: 23767414-
Date Acquired : 07/12/21 02:46:21 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.027

#	Compound Name	Main Peak Area	Amount
1	EC10-EC12 AROM	0.0	0.000
2	EC12-EC16 AROM	0.0	0.000
3	EC16-EC21 AROM	0.0	0.000
4	Surrogate D	168.7	0.238
5	EC21-EC35 AROM	0.0	0.000
6	Int. Std. S	179.4	0.275
7	EC35-EC40 AROM	0.0	0.000
	Total Peak Area	348.1	

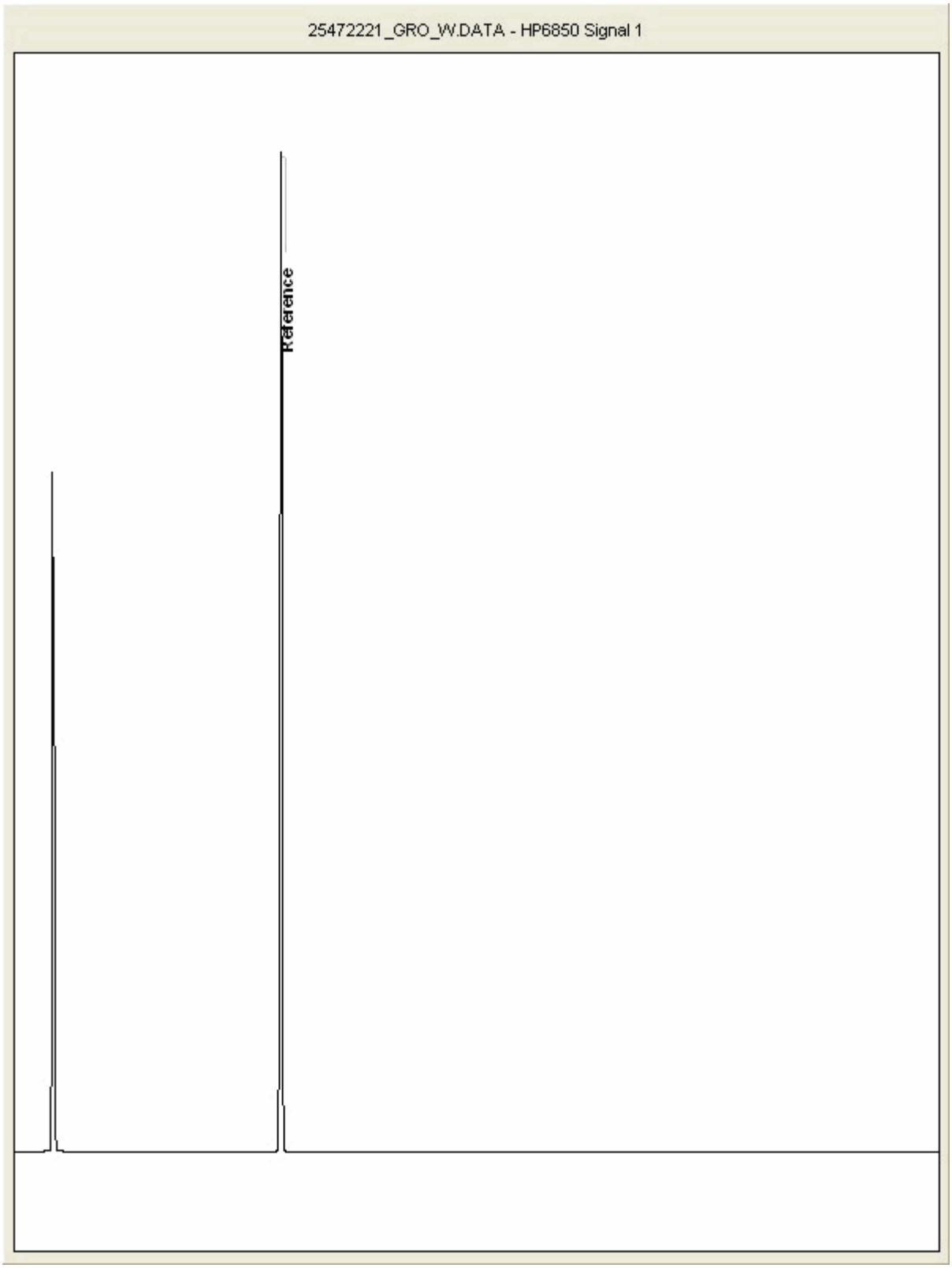


CERTIFICATE OF ANALYSIS

SDG: 211201-105 **Report Number:** 627893 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25472221 **Depth :** 0.00 - 0.00
Sample ID : SW6

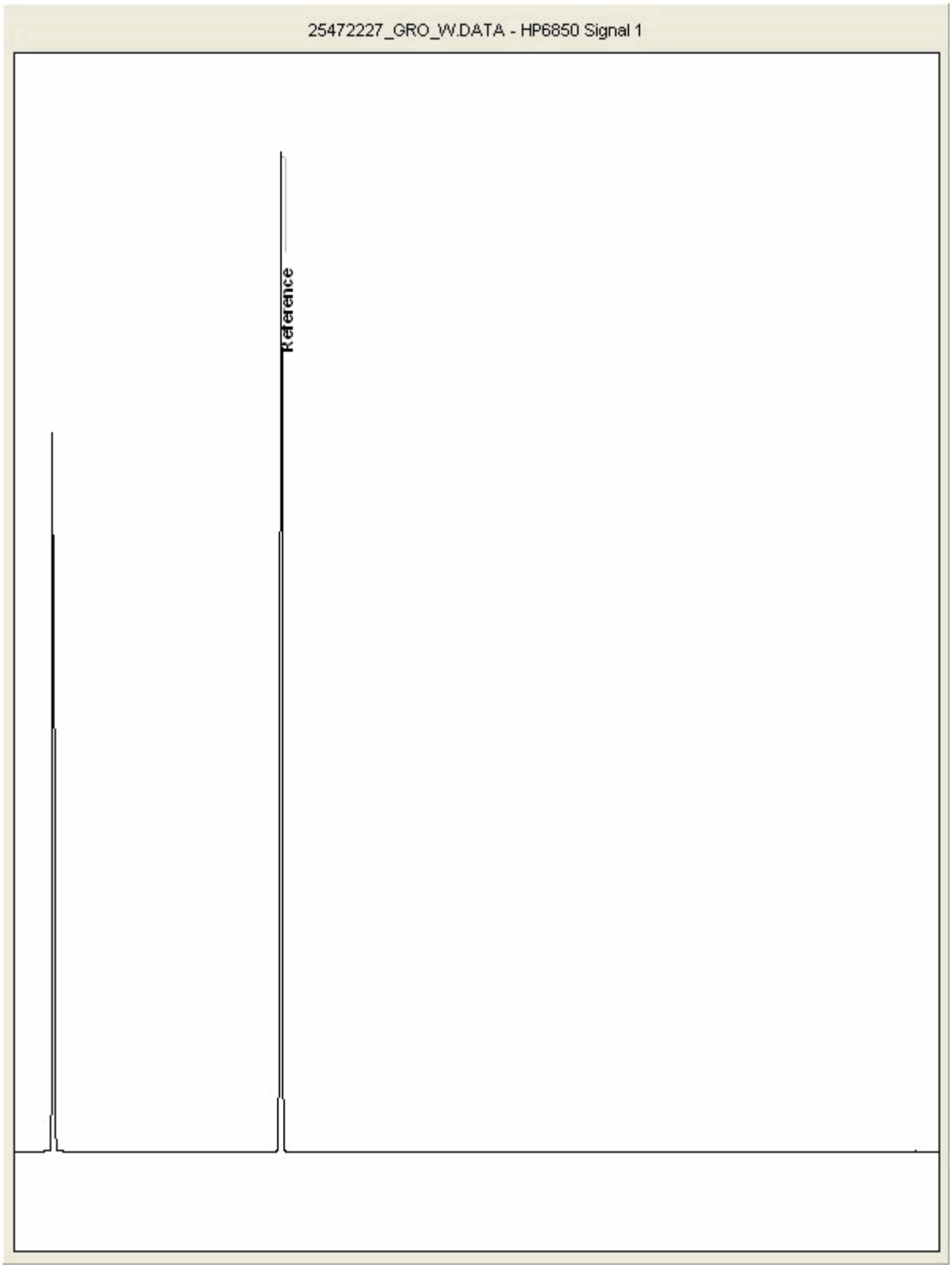


CERTIFICATE OF ANALYSIS

SDG: 211201-105 **Report Number:** 627893 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25472227 **Depth :** 0.00 - 0.00
Sample ID : SW5

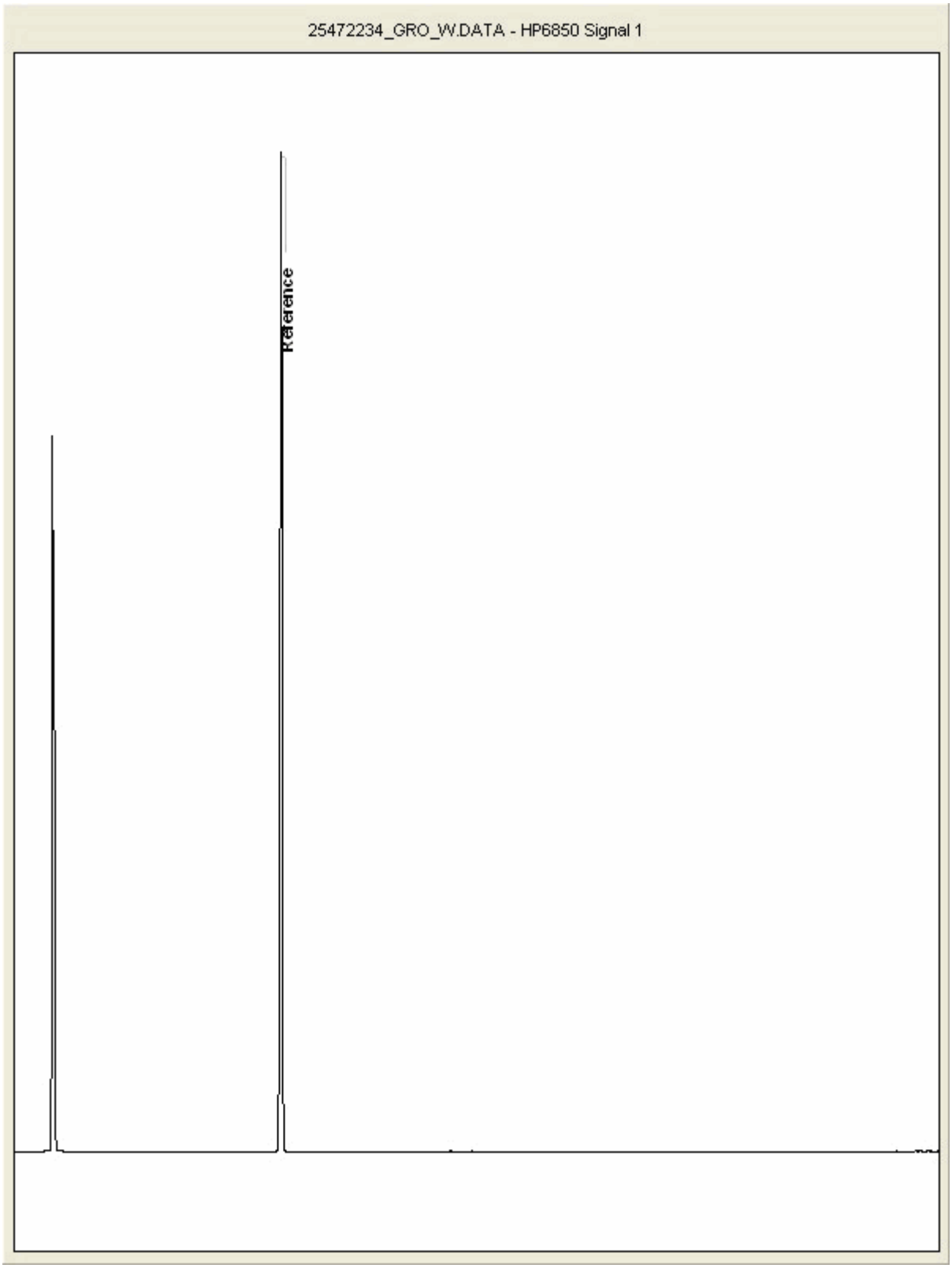


CERTIFICATE OF ANALYSIS

SDG: 211201-105 **Report Number:** 627893 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25472234 **Depth :** 0.00 - 0.00
Sample ID : SW3

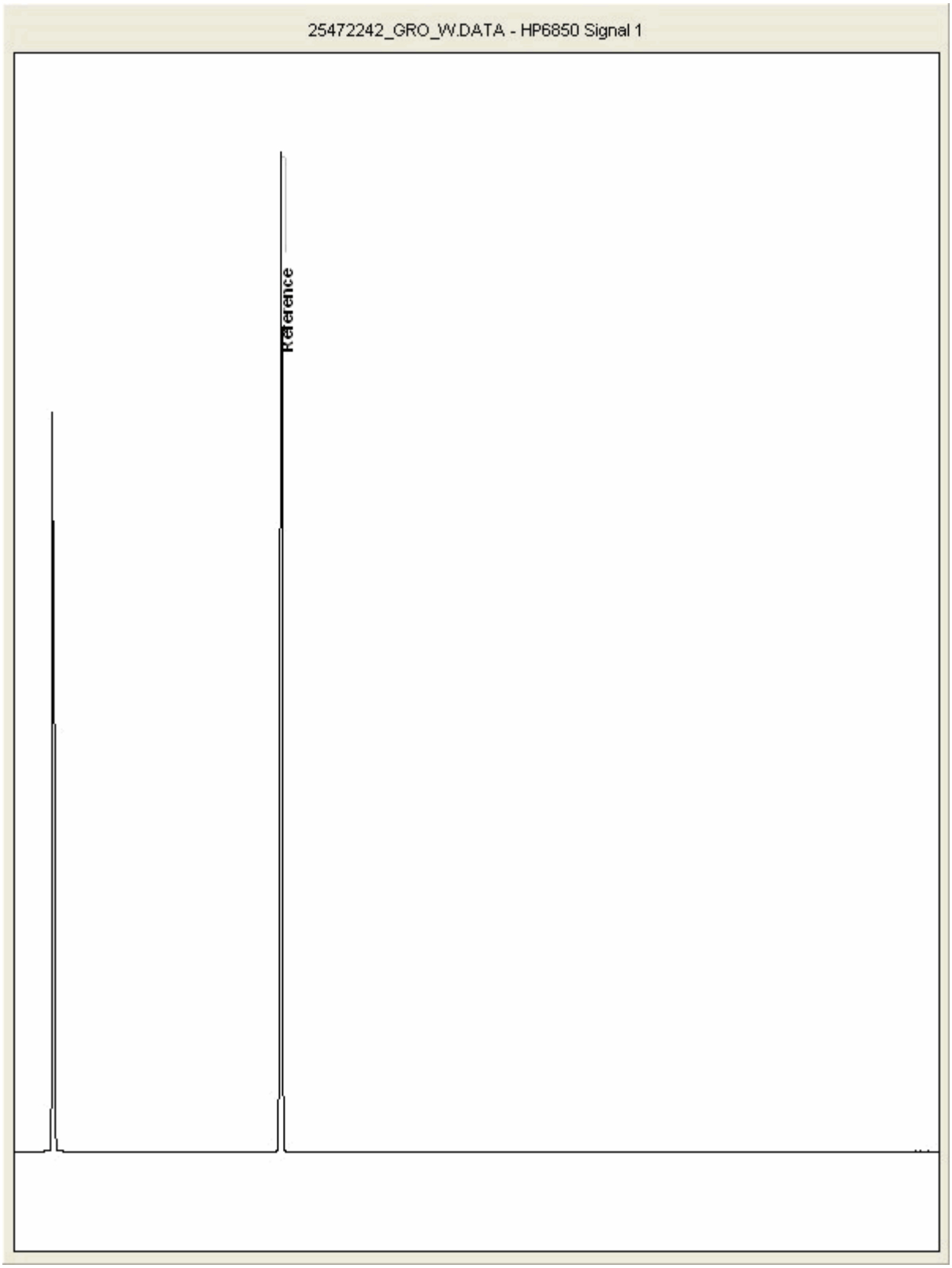


CERTIFICATE OF ANALYSIS

SDG: 211201-105 **Report Number:** 627893 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25472242 **Depth :** 0.00 - 0.00
Sample ID : SW4

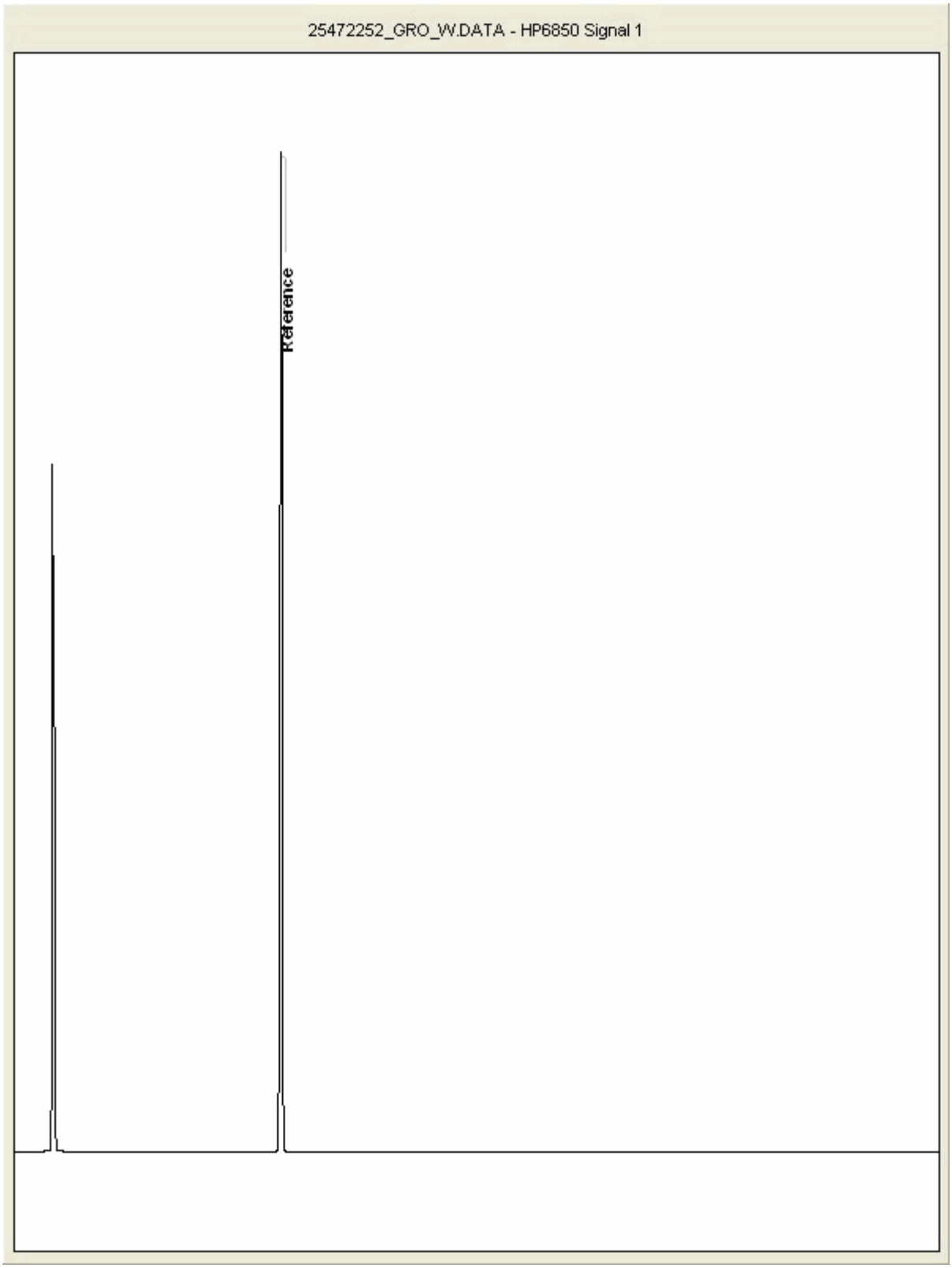


CERTIFICATE OF ANALYSIS

SDG: 211201-105 **Report Number:** 627893 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25472252 **Depth :** 0.00 - 0.00
Sample ID : SW2

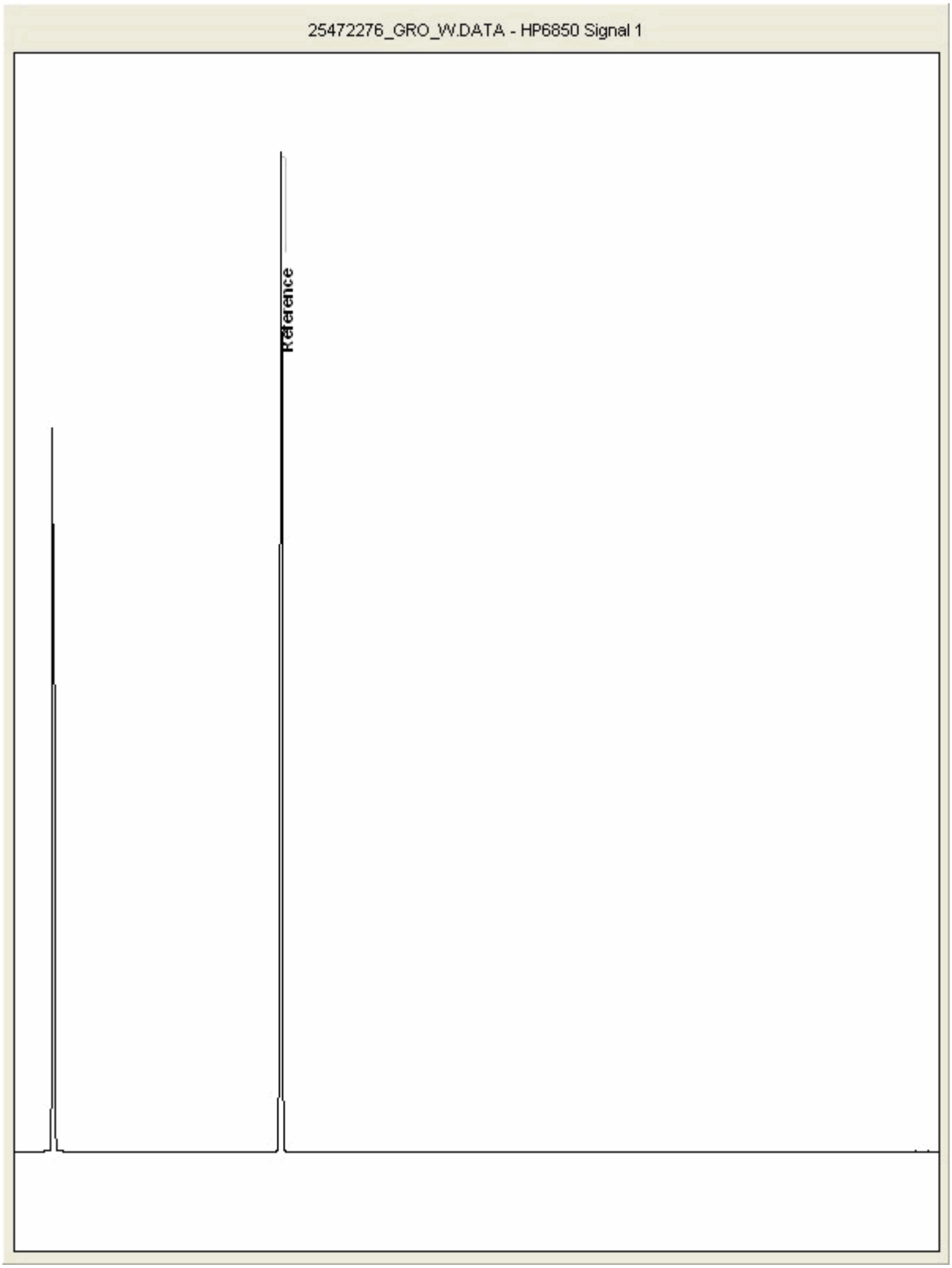


CERTIFICATE OF ANALYSIS

SDG: 211201-105 **Report Number:** 627893 **Superseded Report:**
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25472276 **Depth :** 0.00 - 0.00
Sample ID : SW1



Appendix General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Tetra Tech Europe
Newstead Court
Little Oak Drive
Nottingham
Nottinghamshire
NG15 0DR

Attention: Julian Carr

CERTIFICATE OF ANALYSIS

Date of report Generation:	13 March 2022
Customer:	Tetra Tech Europe
Sample Delivery Group (SDG):	220222-78
Your Reference:	784-B026948
Location:	A46 Newark Northern Bypass
Report No:	637302
Order Number:	7001649

This report has been revised and directly supersedes 636197 in its entirety.

We received 26 samples on Tuesday February 22, 2022 and 26 of these samples were scheduled for analysis which was completed on Friday March 04, 2022. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.

Approved By:

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25862967	BH01	EW1	0.00 - 0.00	16/02/2022
25862955	BH03	EW1	0.00 - 0.00	16/02/2022
25862899	BH05	EW1	0.00 - 0.00	18/02/2022
25862713	BH06	EW1	0.00 - 0.00	16/02/2022
25862807	BH07	EW1	0.00 - 0.00	17/02/2022
25862829	BH09	EW1	0.00 - 0.00	17/02/2022
25862840	BH10	EW1	0.00 - 0.00	17/02/2022
25862849	BH11	EW1	0.00 - 0.00	18/02/2022
25862763	BH12	EW1	0.00 - 0.00	17/02/2022
25862752	BH14	EW1	0.00 - 0.00	17/02/2022
25862860	BH15	EW1	0.00 - 0.00	18/02/2022
25862931	BH16	EW1	0.00 - 0.00	15/02/2022
25862920	BH17	EW1	0.00 - 0.00	15/02/2022
25862910	BH18	ES1	0.00 - 0.00	15/02/2022
25862874	BH19	EW1	0.00 - 0.00	18/02/2022
25862696	BH21	ES1	0.00 - 0.00	15/02/2022
25862885	BH22	EW1	0.00 - 0.00	18/02/2022
25862795	BH56	EW1	0.00 - 0.00	17/02/2022
25862732	BH60	EW1	0.00 - 0.00	16/02/2022
25862742	BH61	EW1	0.00 - 0.00	16/02/2022
25862941	WS08	EW1	0.00 - 0.00	16/02/2022
25862818	WS12	ES1	0.00 - 0.00	16/02/2022
25862784	WS15	EW1	0.00 - 0.00	17/02/2022
25862978	WS26	EW1	0.00 - 0.00	16/02/2022
25862722	WS31	EW1	0.00 - 0.00	16/02/2022
25862774	WS54	EW1	0.00 - 0.00	17/02/2022

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
			25862967	BH01	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Filtered (ALE204)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
			25862955	BH03	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Filtered (ALE204)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
			25862899	BH05	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Unfiltered (ALE204)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
			25862713	BH06	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 8	X					
Ammonium Low	All	NDPs: 0 Tests: 26			X			
							X	
								X
							X	
Anions by Kone (w)	All	NDPs: 0 Tests: 26		X				
							X	
								X
							X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 26				X		
								X
							X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 26				X		
							X	
								X
							X	
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 26	X					
							X	
								X
							X	
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 26	X					
							X	
								X
							X	
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 26	X					
							X	
								X
							X	
GRO by GC-FID (W)	All	NDPs: 0 Tests: 26				X		
							X	
								X
							X	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 26		X				
							X	
								X
							X	
Mercury Dissolved	All	NDPs: 0 Tests: 26				X		
							X	
								X
							X	
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 26	X					
							X	
								X
							X	
Pesticides (Suite I) by GCMS	All	NDPs: 0 Tests: 8	X					
Pesticides (Suite II) by GCMS	All	NDPs: 0 Tests: 8	X					
pH Value	All	NDPs: 0 Tests: 26		X				
							X	
								X
							X	

25862840	BH10	EW1	0.00 - 0.00	HNO3 Filtered (ALE204)	GW					X						X						
				H2SO4 (ALE244)	GW		X															
				500ml Plastic (ALE208)	GW			X								X						X
				250ml Amber Gl. PTFE/PE	GW						X	X	X				X					
25862829	BH09	EW1	0.00 - 0.00	Vial (ALE297)	GW									X								
				NaOH (ALE245)	GW				X													
				HNO3 Filtered (ALE204)	GW					X						X						
				H2SO4 (ALE244)	GW		X															
				500ml Plastic (ALE208)	GW			X								X						X
				250ml Amber Gl. PTFE/PE	GW	X					X	X	X				X	X	X			
25862807	BH07	EW1	0.00 - 0.00	Vial (ALE297)	GW									X								
				NaOH (ALE245)	GW				X													
				HNO3 Filtered (ALE204)	GW					X						X						
				H2SO4 (ALE244)	GW		X															
				500ml Plastic (ALE208)	GW			X								X						X
				250ml Amber Gl. PTFE/PE	GW						X	X	X				X					
25862713	BH06	EW1	0.00 - 0.00	Vial (ALE297)	GW									X								
				NaOH (ALE245)	GW				X													
				HNO3 Filtered (ALE204)	GW					X						X						

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
			25862967	BH01	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Filtered (ALE204)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
			25862955	BH03	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Filtered (ALE204)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
			25862899	BH05	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Unfiltered (ALE204)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
			25862713	BH06	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
Phenols by HPLC (W)	All	NDPs: 0 Tests: 26						
					X			
					X			
					X			
								X
Sulphide	All	NDPs: 0 Tests: 26						
				X				
								X
Total Metals by ICP-MS	All	NDPs: 0 Tests: 26						
				X				
								X
TPH CWG (W)	All	NDPs: 0 Tests: 26						
			X					
								X

25862840	BH10	EW1	0.00 - 0.00	HNO3 Filtered (ALE204)	GW					
				H2SO4 (ALE244)	GW		X			
				500ml Plastic (ALE208)	GW			X	X	
				250ml Amber Gl. PTFE/PE	GW					X
25862829	BH09	EW1	0.00 - 0.00	Vial (ALE297)	GW					
				NaOH (ALE245)	GW					
				HNO3 Filtered (ALE204)	GW					
				H2SO4 (ALE244)	GW		X			
				500ml Plastic (ALE208)	GW			X	X	
				250ml Amber Gl. PTFE/PE	GW					X
25862807	BH07	EW1	0.00 - 0.00	Vial (ALE297)	GW					
				NaOH (ALE245)	GW					
				HNO3 Filtered (ALE204)	GW					
				H2SO4 (ALE244)	GW		X			
				500ml Plastic (ALE208)	GW			X	X	
				250ml Amber Gl. PTFE/PE	GW					X
25862713	BH06	EW1	0.00 - 0.00	Vial (ALE297)	GW					
				NaOH (ALE245)	GW					
				HNO3 Filtered (ALE204)	GW					

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	25862840	25862849	25862763	25862752	25862860
			Customer Sample Reference	BH10	BH11	BH12	BH14	BH15
			AGS Reference	EW1	EW1	EW1	EW1	EW1
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Container	NaOH (ALE245)	Vial (ALE297)	250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Unfiltered (ALE204)	NaOH (ALE245)	Vial (ALE297)	250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	250ml Amber Gl. PTFE/PE
			Sample Type	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 8																						X
Ammonium Low	All	NDPs: 0 Tests: 26						X						X						X				
Anions by Kone (w)	All	NDPs: 0 Tests: 26				X							X						X					
BOD True Total	All	NDPs: 0 Tests: 3											X						X					
Clostridium Perfringens*	All	NDPs: 0 Tests: 3											X						X					
COD Unfiltered	All	NDPs: 0 Tests: 3											X						X					
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 26	X						X							X						X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 26				X									X						X			
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 26			X							X						X						X
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 26			X							X						X						X
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 26			X							X						X						X
Escherichia Coli*	All	NDPs: 3 Tests: 0											N						N					
Faecal Coliforms (W)*	All	NDPs: 0 Tests: 3											X						X					
Faecal Streptococci (W)*	All	NDPs: 0 Tests: 3											X						X					
GRO by GC-FID (W)	All	NDPs: 0 Tests: 26		X						X							X						X	

25862910	BH18	ES1	0.00 - 0.00	H2SO4 (ALE244)	GW	
				500ml Plastic (ALE208)	GW	
				250ml Amber Gl. PTFE/PE	GW	
25862920	BH17	EW1	0.00 - 0.00	Vial (ALE297)	GW	X
				NaOH (ALE245)	GW	
				H2SO4 (ALE244)	GW	X
				500ml Plastic (ALE208)	GW	X
				250ml Amber Gl. PTFE/PE	GW	
25862931	BH16	EW1	0.00 - 0.00	Vial (ALE297)	GW	X
				NaOH (ALE245)	GW	
				HNO3 Unfiltered (ALE204)	GW	
				HNO3 Filtered (ALE204)	GW	X
				500ml Plastic (ALE208)	GW	X
				250ml Amber Gl. PTFE/PE	GW	X
25862860	BH15	EW1	0.00 - 0.00	Vial (ALE297)	GW	X
				NaOH (ALE245)	GW	
				HNO3 Unfiltered (ALE204)	GW	
				H2SO4 (ALE244)	GW	X
				500ml Plastic (ALE208)	GW	X

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
			25862840	BH10	EW1	0.00 - 0.00	NaOH (ALE245)	GW
							Vial (ALE297)	GW
							250ml Amber Gl. PTFE/PE	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Unfiltered (ALE204)	GW
			25862849	BH11	EW1	0.00 - 0.00	NaOH (ALE245)	GW
							Vial (ALE297)	GW
							250ml Amber Gl. PTFE/PE	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Filtered (ALE204)	GW
			25862763	BH12	EW1	0.00 - 0.00	NaOH (ALE245)	GW
							Vial (ALE297)	GW
							250ml Amber Gl. PTFE/PE	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
			25862752	BH14	EW1	0.00 - 0.00	HNO3 Filtered (ALE204)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
			25862860	BH15	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	GW
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 26						X						X						X						X	
Mercury Dissolved	All	NDPs: 0 Tests: 26						X							X						X						
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 26						X					X							X							X	
Pesticides (Suite I) by GCMS	All	NDPs: 0 Tests: 8																										X
Pesticides (Suite II) by GCMS	All	NDPs: 0 Tests: 8																										X
pH Value	All	NDPs: 0 Tests: 26						X						X						X						X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 26					X						X								X						
Phosphate by Kone (w)	All	NDPs: 0 Tests: 3												X						X							
Salmonella (W)*	All	NDPs: 3 Tests: 0												N						N							
Sulphide	All	NDPs: 0 Tests: 26						X						X						X							
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 5			X						X																
Total Coliforms(W)*	All	NDPs: 0 Tests: 3												X						X							
Total Metals by ICP-MS	All	NDPs: 0 Tests: 26							X					X						X							
TPH CWG (W)	All	NDPs: 0 Tests: 26			X						X								X							X	
TVC 22C 3 day (W)*	All	NDPs: 3 Tests: 0												N						N							

25862910	BH18	ES1	0.00 - 0.00	H2SO4 (ALE244)	GW							X								
				500ml Plastic (ALE208)	GW	X					X				X			X		
				250ml Amber Gl. PTFE/PE	GW			X											X	
25862920	BH17	EW1	0.00 - 0.00	Vial (ALE297)	GW															
				NaOH (ALE245)	GW															
				H2SO4 (ALE244)	GW							X								
				500ml Plastic (ALE208)	GW	X	X				X				X			X		
				250ml Amber Gl. PTFE/PE	GW			X											X	
25862931	BH16	EW1	0.00 - 0.00	Vial (ALE297)	GW															
				NaOH (ALE245)	GW															
				HNO3 Unfiltered (ALE204)	GW													X		
				HNO3 Filtered (ALE204)	GW		X													
				500ml Plastic (ALE208)	GW	X					X	X			X					
				250ml Amber Gl. PTFE/PE	GW			X											X	
25862860	BH15	EW1	0.00 - 0.00	Vial (ALE297)	GW															
				NaOH (ALE245)	GW															
				HNO3 Unfiltered (ALE204)	GW													X		
				H2SO4 (ALE244)	GW							X								
				500ml Plastic (ALE208)	GW	X	X				X				X					

Validated

CERTIFICATE OF ANALYSIS

SDG: 220222-78
Client Ref.: 784-B026948
Report Number: 637302
Location: A46 Newark Northern Bypass
Superseded Report: 636197

Results Legend

- X Test
- N **No Determination Possible**

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			25862840		25862849						25862763						25862752						25862860
Customer Sample Reference			BH10		BH11						BH12						BH14						BH15
AGS Reference			EW1		EW1						EW1						EW1						EW1
Depth (m)			0.00 - 0.00		0.00 - 0.00						0.00 - 0.00						0.00 - 0.00						0.00 - 0.00
Container			NaOH (ALE245)	Vial (ALE297)	250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Unfiltered (ALE204)	NaOH (ALE245)	Vial (ALE297)	250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	250ml Amber Gl. PTFE/PE
Sample Type			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
TVC 37C 1 day (W)*	All	NDPs: 3 Tests: 0										N						N					
VOC MS (W)	All	NDPs: 0 Tests: 5								X						X							

25862910	BH18	ES1	0.00 - 0.00	H2SO4 (ALE244)	GW		
				500ml Plastic (ALE208)	GW		
				250ml Amber Gl. PTFE/PE	GW		
25862920	BH17	EW1	0.00 - 0.00	Vial (ALE297)	GW		
				NaOH (ALE245)	GW		
				H2SO4 (ALE244)	GW		
				500ml Plastic (ALE208)	GW		
				250ml Amber Gl. PTFE/PE	GW		
25862931	BH16	EW1	0.00 - 0.00	Vial (ALE297)	GW		
				NaOH (ALE245)	GW		
				HNO3 Unfiltered (ALE204)	GW		
				HNO3 Filtered (ALE204)	GW		
				500ml Plastic (ALE208)	GW		
				250ml Amber Gl. PTFE/PE	GW		
25862860	BH15	EW1	0.00 - 0.00	Vial (ALE297)	GW		
				NaOH (ALE245)	GW		
				HNO3 Unfiltered (ALE204)	GW		
				H2SO4 (ALE244)	GW		
				500ml Plastic (ALE208)	GW		

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)																					
			25862910			25862874							25862896							25862885					
			Customer Sample Reference			BH18							BH19							BH21					
			AGS Reference			ES1							EW1							ES1					
			Depth (m)			0.00 - 0.00							0.00 - 0.00							0.00 - 0.00					
			Container	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Unfiltered (ALE204)	NaOH (ALE245)	Vial (ALE297)	250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Unfiltered (ALE204)	NaOH (ALE245)	Vial (ALE297)	250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Unfiltered (ALE204)	NaOH (ALE245)	Vial (ALE297)
			Sample Type	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 8										X						X						
Ammonium Low	All	NDPs: 0 Tests: 26						X						X							X			
Anions by Kone (w)	All	NDPs: 0 Tests: 26					X						X						X					
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 26		X						X						X						X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 26	X				X						X						X					
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 26				X						X						X						
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 26				X						X						X						
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 26				X						X						X						
GRO by GC-FID (W)	All	NDPs: 0 Tests: 26			X						X						X							X
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 26					X						X						X					
Mercury Dissolved	All	NDPs: 0 Tests: 26	X				X						X						X					
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 26				X						X						X						
Pesticides (Suite I) by GCMS	All	NDPs: 0 Tests: 8										X						X						
Pesticides (Suite II) by GCMS	All	NDPs: 0 Tests: 8										X						X						
pH Value	All	NDPs: 0 Tests: 26					X						X						X					

25862941	25862742												25862732												25862795											
WS08	BH61												BH60												BH56											
EW1	EW1												EW1												EW1											
0.00 - 0.00	0.00 - 0.00												0.00 - 0.00												0.00 - 0.00											
250ml Amber Gl. PTFE/PE	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	250ml Amber Gl. PTFE/PE	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	250ml Amber Gl. PTFE/PE	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	250ml Amber Gl. PTFE/PE	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	250ml Amber Gl. PTFE/PE	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	250ml Amber Gl. PTFE/PE	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	250ml Amber Gl. PTFE/PE
GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
						X												X						X						X					
				X						X						X						X						X						X	
					X						X						X						X						X						X	
		X						X						X						X						X						X			
			X						X						X						X						X						X			
						X						X						X						X						X						X	
						X						X						X						X						X						X	
	X						X						X						X						X						X					
					X						X						X						X						X						X	
				X						X						X						X						X						X			
						X						X						X						X						X						X	
					X						X						X						X						X						X	

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
			25862910	BH18	ES1	0.00 - 0.00	HNO3 Filtered (ALE204)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
							250ml Amber Gl. PTFE/PE	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Unfiltered (ALE204)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
			25862874	BH19	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Unfiltered (ALE204)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
			25862696	BH21	ES1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Unfiltered (ALE204)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
			25862885	BH22	EW1	0.00 - 0.00	250ml Amber Gl. PTFE/PE	GW
							500ml Plastic (ALE208)	GW
							H2SO4 (ALE244)	GW
							HNO3 Unfiltered (ALE204)	GW
							NaOH (ALE245)	GW
							Vial (ALE297)	GW
Phenols by HPLC (W)	All	NDPs: 0 Tests: 26						
							X	
							X	
							X	
Sulphide	All	NDPs: 0 Tests: 26						
							X	
							X	
							X	
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 5						
							X	
Total Metals by ICP-MS	All	NDPs: 0 Tests: 26						
							X	
							X	
							X	
TPH CWG (W)	All	NDPs: 0 Tests: 26						
							X	
							X	
							X	
VOC MS (W)	All	NDPs: 0 Tests: 5						
							X	

25862941	25862742								25862732								25862795							
WS08	BH61								BH60								BH56							
EW1	EW1								EW1								EW1							
0.00 - 0.00	0.00 - 0.00								0.00 - 0.00								0.00 - 0.00							
250ml Amber Gl. PTFE/PE	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	250ml Amber Gl. PTFE/PE	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	250ml Amber Gl. PTFE/PE	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	250ml Amber Gl. PTFE/PE						
GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW						
				X						X							X							
					X						X						X							
						X						X												
					X						X						X							
X						X			X															
	X																							

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	25862941	25862818	25862784	25862978
			Customer Sample Reference	WS08	WS12	WS15	WS26
			AGS Reference	EW1	ES1	EW1	EW1
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Container	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)
			Sample Type	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 8							X						X						X			
Ammonium Low	All	NDPs: 0 Tests: 26		X						X						X						X		
Anions by Kone (w)	All	NDPs: 0 Tests: 26	X							X						X						X		
BOD True Total	All	NDPs: 0 Tests: 3																						
Clostridium Perfringens*	All	NDPs: 0 Tests: 3																						
COD Unfiltered	All	NDPs: 0 Tests: 3																						
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 26				X						X						X						
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 26			X						X						X							X
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 26						X							X						X			
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 26						X							X						X			
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 26						X							X						X			
Escherichia Coli*	All	NDPs: 3 Tests: 0																						
Faecal Coliforms (W)*	All	NDPs: 0 Tests: 3																						
Faecal Streptococci (W)*	All	NDPs: 0 Tests: 3																						
GRO by GC-FID (W)	All	NDPs: 0 Tests: 26					X						X						X					

25862774	WS54	EW1	0.00 - 0.00	Vial (ALE297)	GW																														X
				NaOH (ALE245)	GW														X																
				HNO3 Filtered (ALE204)	GW																X														
				H2SO4 (ALE244)	GW				X																										
				500ml Plastic (ALE208)	GW						X		X		X		X												N			X		X	
				250ml Amber Gl. PTFE/PE	GW																		X		X		X								
25862722	WS31	EW1	0.00 - 0.00	Vial (ALE297)	GW																														X
				NaOH (ALE245)	GW														X																
				HNO3 Filtered (ALE204)	GW																X														
				H2SO4 (ALE244)	GW				X																										
				500ml Plastic (ALE208)	GW						X																								
				250ml Amber Gl. PTFE/PE	GW																		X		X		X								
25862978	WS26	EW1	0.00 - 0.00	Vial (ALE297)	GW																														X
				NaOH (ALE245)	GW														X																

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	25862941	25862818	25862784	25862978
			Customer Sample Reference	WS08	WS12	WS15	WS26
			AGS Reference	EW1	ES1	EW1	EW1
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Container	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)
			Sample Type	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 26		X						X						X							X		
Mercury Dissolved	All	NDPs: 0 Tests: 26				X						X						X							X
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 26							X						X							X			
Pesticides (Suite I) by GCMS	All	NDPs: 0 Tests: 8													X							X			
Pesticides (Suite II) by GCMS	All	NDPs: 0 Tests: 8													X							X			
pH Value	All	NDPs: 0 Tests: 26		X						X						X							X		
Phenols by HPLC (W)	All	NDPs: 0 Tests: 26			X						X						X							X	
Phosphate by Kone (w)	All	NDPs: 0 Tests: 3																							
Salmonella (W)*	All	NDPs: 3 Tests: 0																							
Sulphide	All	NDPs: 0 Tests: 26		X						X						X							X		
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 5																							
Total Coliforms(W)*	All	NDPs: 0 Tests: 3																							
Total Metals by ICP-MS	All	NDPs: 0 Tests: 26		X						X						X							X		
TPH CWG (W)	All	NDPs: 0 Tests: 26							X						X							X			
TVC 22C 3 day (W)*	All	NDPs: 3 Tests: 0																							

25862774	WS54	EW1	0.00 - 0.00	Vial (ALE297)	GW																		
				NaOH (ALE245)	GW																		
				HNO3 Filtered (ALE204)	GW		X																
				H2SO4 (ALE244)	GW							X											
				500ml Plastic (ALE208)	GW	X					X		X	N		X			X		X		N
				250ml Amber Gl. PTFE/PE	GW			X										X				X	
25862722	WS31	EW1	0.00 - 0.00	Vial (ALE297)	GW																		
				NaOH (ALE245)	GW																		
				HNO3 Filtered (ALE204)	GW		X																
				H2SO4 (ALE244)	GW							X											
				500ml Plastic (ALE208)	GW	X					X					X					X		
				250ml Amber Gl. PTFE/PE	GW			X														X	
25862978	WS26	EW1	0.00 - 0.00	Vial (ALE297)	GW																		
				NaOH (ALE245)	GW																		

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			25862941					25862818					25862784					25862978							
Customer Sample Reference			WS08					WS12					WS15					WS26							
AGS Reference			EW1					ES1					EW1					EW1							
Depth (m)			0.00 - 0.00					0.00 - 0.00					0.00 - 0.00					0.00 - 0.00							
Container			500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	250ml Amber Gl. PTFE/PE	500ml Plastic (ALE208)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	
Sample Type			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
TVC 37C 1 day (W)*	All	NDPs: 3 Tests: 0																							
VOC MS (W)	All	NDPs: 0 Tests: 5																							

25862774	WS54	EW1	0.00 - 0.00	Vial (ALE297)	GW				X
				NaOH (ALE245)	GW				
				HNO3 Filtered (ALE204)	GW				
				H2SO4 (ALE244)	GW				
				500ml Plastic (ALE208)	GW	N			
				250ml Amber Gl. PTFE/PE	GW				
25862722	WS31	EW1	0.00 - 0.00	Vial (ALE297)	GW				
				NaOH (ALE245)	GW				
				HNO3 Filtered (ALE204)	GW				
				H2SO4 (ALE244)	GW				
				500ml Plastic (ALE208)	GW				
				250ml Amber Gl. PTFE/PE	GW				
25862978	WS26	EW1	0.00 - 0.00	Vial (ALE297)	GW				
				NaOH (ALE245)	GW				

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH01	BH03	BH05	BH06	BH07	BH09
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	16/02/2022	16/02/2022	18/02/2022	16/02/2022	17/02/2022	17/02/2022
			Sampled Time	.	.	.	.	.	.
			Date Received	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022
			SDG Ref	220222-78	220222-78	220222-78	220222-78	220222-78	220222-78
			Lab Sample No.(s)	25862967	25862955	25862899	25862713	25862807	25862829
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
Carbon, Organic (diss.filt)	<3 mg/l	TM090		<3	5.66	8.09	4.03	3.74	3.66
Ammoniacal Nitrogen as N (low level)	<0.01 mg/l	TM099		0.045 #	0.375 #	0.074 #	0.051 #	0.138 #	0.147 #
Ammoniacal Nitrogen Low as NH4	<0.01 mg/l	TM099		0.0579 #	0.482 #	0.0951 #	0.0656 #	0.177 #	0.189 #
Sulphide	<0.01 mg/l	TM101		0.0122 2 #	<0.01 2 #	<0.01 2 #	<0.01 2 #	<0.01 2 #	<0.01 2 #
Arsenic (diss.filt)	<0.5 µg/l	TM152		0.709 #	2.07 #	<0.5 2 #	1.15 #	1.65 #	1.6 #
Boron (diss.filt)	<10 µg/l	TM152		73.4 #	76.1 #	39.6 2 #	465 #	124 #	123 #
Cadmium (diss.filt)	<0.08 µg/l	TM152		<0.08 #	0.189 #	<0.08 2 #	0.478 #	0.628 #	0.697 #
Chromium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	<1 2 #	<1 #	<1 #	<1 #
Copper (diss.filt)	<0.3 µg/l	TM152		<0.3 #	3.6 #	1.71 2 #	0.543 #	1.29 #	1.2 #
Lead (diss.filt)	<0.2 µg/l	TM152		<0.2 #	1.19 #	<0.2 2 #	0.213 #	1.31 #	1.05 #
Manganese (diss.filt)	<3 µg/l	TM152		461 #	834 #	<3 2 #	1410 #	1430 #	1440 #
Nickel (diss.filt)	<0.4 µg/l	TM152		1.83 #	3.75 #	1.05 2 #	6.06 #	5.38 #	5.49 #
Selenium (diss.filt)	<1 µg/l	TM152		<1 #	1.22 #	4.69 2 #	<1 #	<1 #	<1 #
Vanadium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	<1 2 #	<1 #	<1 #	<1 #
Zinc (diss.filt)	<1 µg/l	TM152		3.06 #	25.2 #	<1 2 #	11.4 #	9.16 #	9.17 #
Calcium (Dis.Filt)	<0.2 mg/l	TM152		233 #	148 #	86.4 2 #	404 #	157 #	159 #
Iron (Dis.Filt)	<0.019 mg/l	TM152		0.0301 #	2.81 #	0.0824 2 #	0.553 #	5.07 #	4.88 #
Hardness, Total as CaCO3 unfiltered	<0.35 mg/l	TM152		731 2	529 2	349	1390 2	544 2	536 2
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 #	<0.01 2 #	<0.01 #	<0.01 #	<0.01 #
Sulphate	<2 mg/l	TM184		495 #	274 #	60.5 #	1350 #	191 #	191 #
Nitrate as NO3	<0.3 mg/l	TM184		<0.3	0.501	31.9	5.13	<0.3	<0.3
Cyanide, Total	<0.05 mg/l	TM227		<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
Cyanide, Free	<0.05 mg/l	TM227		<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.03 #	<0.03 #	<0.03 #	<0.03 #	<0.03 #	<0.03 #
pH	<1 pH Units	TM256		7.58 #	7.21 #	7.43 #	7.29 #	7.02 #	7.17 #
Phenol	<0.002 mg/l	TM259		<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 #
Cresols	<0.006 mg/l	TM259		<0.006 #	<0.006 #	<0.006 #	<0.006 #	<0.006 #	<0.006 #
Xylenols	<0.008 mg/l	TM259		<0.008 #	<0.008 #	<0.008 #	<0.008 #	<0.008 #	<0.008 #
Phenols, Total Detected monohydric	<0.016 mg/l	TM259		<0.016 #	<0.016 #	<0.016 #	<0.016 #	<0.016 #	<0.016 #
Trifluralin	<0.01 µg/l	TM343		<0.01					<0.01
alpha-HCH	<0.01 µg/l	TM343		<0.01					<0.01
gamma-HCH (Lindane)	<0.01 µg/l	TM343		<0.01					<0.01

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend		Customer Sample Ref.	BH01	BH03	BH05	BH06	BH07	BH09
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-4+S@	Sample deviation (see appendix)							
		Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
		Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
		Date Sampled	16/02/2022	16/02/2022	18/02/2022	16/02/2022	17/02/2022	17/02/2022
		Sampled Time	.	.	.	.	.	.
		Date Received	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022
		SDG Ref	220222-78	220222-78	220222-78	220222-78	220222-78	220222-78
		Lab Sample No.(s)	25862967	25862955	25862899	25862713	25862807	25862829
		AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1

Component	LOD/Units	Method						
Heptachlor	<0.01 µg/l	TM343	<0.01					<0.01
Aldrin	<0.01 µg/l	TM343	<0.01					<0.01
beta-HCH	<0.01 µg/l	TM343	<0.01					<0.01
Isodrin	<0.01 µg/l	TM343	<0.01					<0.01
delta-HCH	<0.01 µg/l	TM343	<0.01					<0.01
Heptachlor epoxide	<0.01 µg/l	TM343	<0.01					<0.01
o,p'-DDE	<0.01 µg/l	TM343	<0.01					<0.01
Endosulphan I	<0.01 µg/l	TM343	<0.01					<0.01
trans-Chlordane	<0.01 µg/l	TM343	<0.01					<0.01
cis-Chlordane	<0.01 µg/l	TM343	<0.01					<0.01
p,p'-DDE	<0.01 µg/l	TM343	<0.01					<0.01
Dieldrin	<0.01 µg/l	TM343	<0.01					<0.01
o,p'-DDD (TDE)	<0.01 µg/l	TM343	<0.01					<0.01
Endrin	<0.01 µg/l	TM343	<0.01					<0.01
o,p'-DDT	<0.01 µg/l	TM343	<0.01					<0.01
p,p'-DDD (TDE)	<0.01 µg/l	TM343	<0.01					<0.01
Endosulphan II	<0.02 µg/l	TM343	<0.02					<0.02
p,p'-DDT	<0.01 µg/l	TM343	<0.01					<0.01
o,p'-Methoxychlor	<0.01 µg/l	TM343	<0.01					<0.01
p,p'-Methoxychlor	<0.01 µg/l	TM343	<0.01					<0.01
Endosulphan Sulphate	<0.02 µg/l	TM343	<0.02					<0.02
Permethrin I	<0.01 µg/l	TM343	<0.01					<0.01
Permethrin II	<0.01 µg/l	TM343	<0.01					<0.01
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344	<0.01					<0.01
Hexachlorobutadiene	<0.01 µg/l	TM344	<0.01					<0.01
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344	0.014					<0.01
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344	<0.01					<0.01
Dichlorvos	<0.01 µg/l	TM344	<0.01					<0.01
Dichlobenil	<0.01 µg/l	TM344	<0.01					<0.01
Mevinphos	<0.01 µg/l	TM344	<0.01					<0.01
Tecnazene	<0.01 µg/l	TM344	<0.01					<0.01
Hexachlorobenzene	<0.01 µg/l	TM344	<0.01					<0.01

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH01	BH03	BH05	BH06	BH07	BH09
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	16/02/2022	16/02/2022	18/02/2022	16/02/2022	17/02/2022	17/02/2022
			Sampled Time	.	.	.	.	.	.
			Date Received	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022
			SDG Ref	220222-78	220222-78	220222-78	220222-78	220222-78	220222-78
			Lab Sample No.(s)	25862967	25862955	25862899	25862713	25862807	25862829
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
Demeton-S-methyl	<0.01 µg/l	TM344		<0.01					<0.01
Phorate	<0.01 µg/l	TM344		<0.01					<0.01
Diazinon	<0.01 µg/l	TM344		<0.01					<0.01
Triallate	<0.01 µg/l	TM344		<0.01					<0.01
Atrazine	<0.01 µg/l	TM344		<0.01					<0.01
Simazine	<0.01 µg/l	TM344		<0.01					<0.01
Disulfoton	<0.01 µg/l	TM344		<0.01					<0.01
Propetamphos	<0.01 µg/l	TM344		<0.01					<0.01
Chlorpyriphos-methyl	<0.01 µg/l	TM344		<0.01					<0.01
Dimethoate	<0.01 µg/l	TM344		<0.01					<0.01
Pirimiphos-methyl	<0.01 µg/l	TM344		<0.01					<0.01
Chlorpyriphos	<0.01 µg/l	TM344		0.0224					<0.01
Methyl Parathion	<0.01 µg/l	TM344		<0.01					<0.01
Malathion	<0.01 µg/l	TM344		<0.01					<0.01
Fenthion	<0.01 µg/l	TM344		<0.01					<0.01
Fenitrothion	<0.01 µg/l	TM344		<0.01					<0.01
Triadimefon	<0.01 µg/l	TM344		<0.01					<0.01
Pendimethalin	<0.01 µg/l	TM344		<0.01					<0.01
Parathion	<0.01 µg/l	TM344		<0.01					<0.01
Chlorfenvinphos	<0.01 µg/l	TM344		<0.01					<0.01
trans-Chlordane	<0.01 µg/l	TM344		<0.01					<0.01
cis-Chlordane	<0.01 µg/l	TM344		<0.01					<0.01
Ethion	<0.01 µg/l	TM344		<0.01					<0.01
Carbophenothion	<0.01 µg/l	TM344		<0.01					<0.01
Triazophos	<0.01 µg/l	TM344		<0.01					<0.01
Phosalone	<0.01 µg/l	TM344		<0.01					<0.01
Azinphos methyl	<0.02 µg/l	TM344		<0.02					<0.02
Azinphos ethyl	<0.02 µg/l	TM344		<0.02					<0.02
Dinitro-o-cresol	<0.1 µg/l	TM411		<0.1					<0.1
Clopyralid	<0.04 µg/l	TM411		<0.04					<0.04
MCPA	<0.05 µg/l	TM411		<0.05					<0.05
Mecoprop	<0.04 µg/l	TM411		<0.04					<0.04

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+S@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH01	BH03	BH05	BH06	BH07	BH09
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	16/02/2022	16/02/2022	18/02/2022	16/02/2022	17/02/2022	17/02/2022
			Sampled Time	.	.	.	.	.	.
			Date Received	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022
			SDG Ref	220222-78	220222-78	220222-78	220222-78	220222-78	220222-78
			Lab Sample No.(s)	25862967	25862955	25862899	25862713	25862807	25862829
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
Dicamba	<0.04 µg/l	TM411		<0.04					<0.04
MCPB	<0.05 µg/l	TM411		<0.05					<0.05
2,4-DB	<0.1 µg/l	TM411		<0.1					<0.1
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411		<0.05					<0.05
Dichlorprop	<0.1 µg/l	TM411		<0.1					<0.1
Triclopyr	<0.05 µg/l	TM411		<0.05					<0.05
Fenoprop (Silvex)	<0.1 µg/l	TM411		<0.1					<0.1
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411		<0.05					<0.05
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411		<0.05					<0.05
Bromoxynil	<0.04 µg/l	TM411		<0.04					<0.04
Benazolin	<0.04 µg/l	TM411		<0.04					<0.04
Ioxynil	<0.05 µg/l	TM411		<0.05					<0.05
Pentachlorophenol	<0.04 µg/l	TM411		<0.04					<0.04
Fluoroxypyr	<0.1 µg/l	TM411		<0.1					<0.1

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+5@ Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH10	BH11	BH12	BH14	BH15	BH16
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	17/02/2022	18/02/2022	17/02/2022	17/02/2022	18/02/2022	15/02/2022
			Sampled Time	.	.	.	.	.	.
			Date Received	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022
			SDG Ref	220222-78	220222-78	220222-78	220222-78	220222-78	220222-78
			Lab Sample No.(s)	25862840	25862849	25862763	25862752	25862860	25862931
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
Clostridium perfringens (M1U)*	CFU/100ml	SUB				1	29		
Enterococci Presumptive (M1L)*	CFU/100ml	SUB				2	10		
Faecal coliforms confirmed (M7M)*	0 CFU/100ml	SUB				0	3		
Clostridium Perfringens (MZP)	CFU/100ml	SUB				1	32		
Enterococci Confirmed (M1E)*	CFU/100ml	SUB				2	3		
Total Coliform Presumptive (M16)*	CFU/100ml	SUB				5	>100		
Total Coliform Confirmed (M14)*	CFU/100ml	SUB				3	>100		
BOD, unfiltered	<1 mg/l	TM045				<1 @ #	<1 @ #		
Carbon, Organic (diss.filt)	<3 mg/l	TM090		3.76	7.63	<3	<3	8.07	<3
Ammoniacal Nitrogen as N (low level)	<0.01 mg/l	TM099		0.128 #	0.069 #	0.018 #	0.015 #	0.054 #	<0.01 2 #
Ammoniacal Nitrogen Low as NH4	<0.01 mg/l	TM099		0.165 #	0.0887 #	0.0231 #	0.0193 #	0.0694 #	<0.01 2 #
Sulphide	<0.01 mg/l	TM101		0.0118 2 #	<0.01 2 #	0.0172 2 #	0.025 2 #	<0.01 2 #	<0.01 2 #
COD, unfiltered	<7 mg/l	TM107				<7 #	<7 #		
Arsenic (diss.filt)	<0.5 µg/l	TM152		1.24 #	<0.5 2 #	3.3 #	5.06 #	0.541 2 #	4.38 #
Boron (diss.filt)	<10 µg/l	TM152		124 #	153 2 #	326 #	288 #	45.9 2 #	171 #
Cadmium (diss.filt)	<0.08 µg/l	TM152		0.898 #	0.146 2 #	<0.08 #	<0.08 #	<0.08 2 #	<0.08 #
Chromium (diss.filt)	<1 µg/l	TM152		<1 #	<1 2 #	<1 #	<1 #	<1 2 #	<1 #
Copper (diss.filt)	<0.3 µg/l	TM152		1.45 #	1.97 2 #	0.64 #	1.01 #	2.01 2 #	0.429 #
Lead (diss.filt)	<0.2 µg/l	TM152		1.27 #	<0.2 2 #	0.244 #	0.717 #	0.252 2 #	<0.2 #
Manganese (diss.filt)	<3 µg/l	TM152		1390 #	<3 2 #	94.8 #	120 #	<3 2 #	4.79 #
Nickel (diss.filt)	<0.4 µg/l	TM152		5.4 #	1.1 2 #	2.34 #	2.36 #	1.01 2 #	2.06 #
Phosphorus (diss.filt)	<10 µg/l	TM152				24.7 #	34.2 #		
Selenium (diss.filt)	<1 µg/l	TM152		<1 #	4.78 2 #	2.82 #	3.58 #	4.45 2 #	<1 #
Vanadium (diss.filt)	<1 µg/l	TM152		<1 #	<1 2 #	3.22 #	4.01 #	<1 2 #	4.68 #
Zinc (diss.filt)	<1 µg/l	TM152		13.4 #	159 2 #	4.26 #	12.9 #	1.37 2 #	2.85 #
Calcium (Dis.Filt)	<0.2 mg/l	TM152		156 #	86 2 #	559 #	567 #	86.4 2 #	410 #
Iron (Dis.Filt)	<0.019 mg/l	TM152		3.33 #	0.0288 2 #	0.0936 #	0.154 #	0.107 2 #	<0.019 #
Hardness, Total as CaCO3 unfiltered	<0.35 mg/l	TM152		521 2	366	1770 2	1770 2	366	349
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 2 #	<0.01 #	<0.01 #	<0.01 2 #	<0.01 #
Sulphate	<2 mg/l	TM184		184 #	60.1 #	1550 #	1520 #	60.4 #	764 #
Phosphate (Ortho as P)	<0.02 mg/l	TM184				<0.02 #	<0.02 #		
Nitrate as NO3	<0.3 mg/l	TM184		<0.3	31.7	22.8	23.2	31.8	25.5

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+S@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH10	BH11	BH12	BH14	BH15	BH16
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	17/02/2022	18/02/2022	17/02/2022	17/02/2022	18/02/2022	15/02/2022
			Sampled Time	.	.	.	.	.	.
			Date Received	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022
			SDG Ref	220222-78	220222-78	220222-78	220222-78	220222-78	220222-78
			Lab Sample No.(s)	25862840	25862849	25862763	25862752	25862860	25862931
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
Cyanide, Total	<0.05 mg/l	TM227		<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
Cyanide, Free	<0.05 mg/l	TM227		<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.03 #	<0.03 #	<0.03 #	<0.03 #	<0.03 #	<0.03 #
pH	<1 pH Units	TM256		7.17 #	7.52 #	7.6 #	7.51 #	7.47 #	7.55 #
Phenol	<0.002 mg/l	TM259		<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 2 #
Cresols	<0.006 mg/l	TM259		<0.006 #	<0.006 #	<0.006 #	<0.006 #	<0.006 #	<0.006 2 #
Xylenols	<0.008 mg/l	TM259		<0.008 #	<0.008 #	<0.008 #	<0.008 #	<0.008 #	<0.008 2 #
Phenols, Total Detected monohydric	<0.016 mg/l	TM259		<0.016 #	<0.016 #	<0.016 #	<0.016 #	<0.016 #	<0.016 2 #
Trifluralin	<0.01 µg/l	TM343						<0.01	
alpha-HCH	<0.01 µg/l	TM343						<0.01	
gamma-HCH (Lindane)	<0.01 µg/l	TM343						<0.01	
Heptachlor	<0.01 µg/l	TM343						<0.01	
Aldrin	<0.01 µg/l	TM343						<0.01	
beta-HCH	<0.01 µg/l	TM343						<0.01	
Isodrin	<0.01 µg/l	TM343						<0.01	
delta-HCH	<0.01 µg/l	TM343						<0.01	
Heptachlor epoxide	<0.01 µg/l	TM343						<0.01	
o,p'-DDE	<0.01 µg/l	TM343						<0.01	
Endosulphan I	<0.01 µg/l	TM343						<0.01	
trans-Chlordane	<0.01 µg/l	TM343						<0.01	
cis-Chlordane	<0.01 µg/l	TM343						<0.01	
p,p'-DDE	<0.01 µg/l	TM343						<0.01	
Dieldrin	<0.01 µg/l	TM343						<0.01	
o,p'-DDD (TDE)	<0.01 µg/l	TM343						<0.01	
Endrin	<0.01 µg/l	TM343						<0.01	
o,p'-DDT	<0.01 µg/l	TM343						<0.01	
p,p'-DDD (TDE)	<0.01 µg/l	TM343						<0.01	
Endosulphan II	<0.02 µg/l	TM343						<0.02	
p,p'-DDT	<0.01 µg/l	TM343						<0.01	
o,p'-Methoxychlor	<0.01 µg/l	TM343						<0.01	
p,p'-Methoxychlor	<0.01 µg/l	TM343						<0.01	
Endosulphan Sulphate	<0.02 µg/l	TM343						<0.02	

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+$@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH10	BH11	BH12	BH14	BH15	BH16
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	17/02/2022	18/02/2022	17/02/2022	17/02/2022	18/02/2022	15/02/2022
			Sampled Time	.	.	.	.	.	.
			Date Received	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022
			SDG Ref	220222-78	220222-78	220222-78	220222-78	220222-78	220222-78
			Lab Sample No.(s)	25862840	25862849	25862763	25862752	25862860	25862931
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
Permethrin I	<0.01 µg/l	TM343						<0.01	
Permethrin II	<0.01 µg/l	TM343						<0.01	
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344						<0.01	
Hexachlorobutadiene	<0.01 µg/l	TM344						<0.01	
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344						<0.01	
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344						<0.01	
Dichlorvos	<0.01 µg/l	TM344						<0.01	
Dichlobenil	<0.01 µg/l	TM344						<0.01	
Mevinphos	<0.01 µg/l	TM344						<0.01	
Tecnazene	<0.01 µg/l	TM344						<0.01	
Hexachlorobenzene	<0.01 µg/l	TM344						<0.01	
Demeton-S-methyl	<0.01 µg/l	TM344						<0.01	
Phorate	<0.01 µg/l	TM344						<0.01	
Diazinon	<0.01 µg/l	TM344						<0.01	
Triallate	<0.01 µg/l	TM344						<0.01	
Atrazine	<0.01 µg/l	TM344						<0.01	
Simazine	<0.01 µg/l	TM344						<0.01	
Disulfoton	<0.01 µg/l	TM344						<0.01	
Propetamphos	<0.01 µg/l	TM344						<0.01	
Chlorpyriphos-methyl	<0.01 µg/l	TM344						<0.01	
Dimethoate	<0.01 µg/l	TM344						<0.01	
Pirimiphos-methyl	<0.01 µg/l	TM344						<0.01	
Chlorpyriphos	<0.01 µg/l	TM344						<0.01	
Methyl Parathion	<0.01 µg/l	TM344						<0.01	
Malathion	<0.01 µg/l	TM344						<0.01	
Fenthion	<0.01 µg/l	TM344						<0.01	
Fenitrothion	<0.01 µg/l	TM344						<0.01	
Triadimefon	<0.01 µg/l	TM344						<0.01	
Pendimethalin	<0.01 µg/l	TM344						<0.01	
Parathion	<0.01 µg/l	TM344						<0.01	
Chlorfenvinphos	<0.01 µg/l	TM344						<0.01	
trans-Chlordane	<0.01 µg/l	TM344						<0.01	

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+S@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH10	BH11	BH12	BH14	BH15	BH16
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	17/02/2022	18/02/2022	17/02/2022	17/02/2022	18/02/2022	15/02/2022
			Sampled Time	.	.	.	.	.	.
			Date Received	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022
			SDG Ref	220222-78	220222-78	220222-78	220222-78	220222-78	220222-78
			Lab Sample No.(s)	25862840	25862849	25862763	25862752	25862860	25862931
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
cis-Chlordane	<0.01 µg/l	TM344						<0.01	
Ethion	<0.01 µg/l	TM344						<0.01	
Carbophenothion	<0.01 µg/l	TM344						<0.01	
Triazophos	<0.01 µg/l	TM344						<0.01	
Phosalone	<0.01 µg/l	TM344						<0.01	
Azinphos methyl	<0.02 µg/l	TM344						<0.02	
Azinphos ethyl	<0.02 µg/l	TM344						<0.02	
Dinitro-o-cresol	<0.1 µg/l	TM411						<0.1	
Clopyralid	<0.04 µg/l	TM411						<0.04	
MCPA	<0.05 µg/l	TM411						<0.05	
Mecoprop	<0.04 µg/l	TM411						<0.04	
Dicamba	<0.04 µg/l	TM411						<0.04	
MCPB	<0.05 µg/l	TM411						<0.05	
2,4-DB	<0.1 µg/l	TM411						<0.1	
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411						<0.05	
Dichlorprop	<0.1 µg/l	TM411						<0.1	
Triclopyr	<0.05 µg/l	TM411						<0.05	
Fenoprop (Silvex)	<0.1 µg/l	TM411						<0.1	
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411						<0.05	
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411						<0.05	
Bromoxynil	<0.04 µg/l	TM411						<0.04	
Benazolin	<0.04 µg/l	TM411						<0.04	
Ioxynil	<0.05 µg/l	TM411						<0.05	
Pentachlorophenol	<0.04 µg/l	TM411						<0.04	
Fluoroxypyr	<0.1 µg/l	TM411						<0.1	

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH17	BH18	BH19	BH21	BH22	BH56
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	15/02/2022	15/02/2022	18/02/2022	15/02/2022	18/02/2022	17/02/2022
			Sampled Time	.	.	.	.	.	.
			Date Received	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022
			SDG Ref	220222-78	220222-78	220222-78	220222-78	220222-78	220222-78
			Lab Sample No.(s)	25862920	25862910	25862874	25862696	25862885	25862795
			AGS Reference	EW1	ES1	EW1	ES1	EW1	EW1
Carbon, Organic (diss.filt)	<3 mg/l	TM090		<3	<3	6.75	3.58	8.38	3.72
Ammoniacal Nitrogen as N (low level)	<0.01 mg/l	TM099		0.025 #	0.265 #	0.063 #	0.038 #	0.079 #	0.122 #
Ammoniacal Nitrogen Low as NH4	<0.01 mg/l	TM099		0.0321 #	0.341 #	0.081 #	0.0489 #	0.102 #	0.157 #
Sulphide	<0.01 mg/l	TM101		<0.01 2 #	<0.01 2 #	<0.01 2 #	<0.01 2 #	<0.01 2 #	<0.01 2 #
Arsenic (diss.filt)	<0.5 µg/l	TM152		3.37 2 #	3.94 #	0.527 2 #	<0.5 2 #	<0.5 2 #	1.27 #
Boron (diss.filt)	<10 µg/l	TM152		135 2 #	157 #	43.4 2 #	51.9 2 #	39.5 2 #	123 #
Cadmium (diss.filt)	<0.08 µg/l	TM152		<0.08 2 #	<0.08 #	<0.08 2 #	1.43 2 #	<0.08 2 #	0.799 #
Chromium (diss.filt)	<1 µg/l	TM152		<1 2 #	<1 #	<1 2 #	<1 2 #	<1 2 #	<1 #
Copper (diss.filt)	<0.3 µg/l	TM152		1.2 2 #	0.574 #	1.84 2 #	0.758 2 #	1.57 2 #	1.45 #
Lead (diss.filt)	<0.2 µg/l	TM152		<0.2 2 #	<0.2 #	<0.2 2 #	<0.2 2 #	<0.2 2 #	1.19 #
Manganese (diss.filt)	<3 µg/l	TM152		<3 2 #	18.3 #	<3 2 #	7460 2 #	<3 2 #	1380 #
Nickel (diss.filt)	<0.4 µg/l	TM152		1.34 2 #	1.17 #	1.23 2 #	10.4 2 #	1.02 2 #	5.1 #
Selenium (diss.filt)	<1 µg/l	TM152		<1 2 #	1.82 #	4.53 2 #	<1 2 #	4.4 2 #	<1 #
Vanadium (diss.filt)	<1 µg/l	TM152		5.69 2 #	4.47 #	<1 2 #	<1 2 #	<1 2 #	<1 #
Zinc (diss.filt)	<1 µg/l	TM152		3.56 2 #	5.57 #	1.44 2 #	13.1 2 #	<1 2 #	13.1 #
Calcium (Dis.Filt)	<0.2 mg/l	TM152		211 2 #	265 #	91 2 #	101 2 #	85.5 2 #	156 #
Iron (Dis.Filt)	<0.019 mg/l	TM152		<0.019 2 #	<0.019 #	0.139 2 #	<0.019 2 #	0.123 2 #	3.25 #
Hardness, Total as CaCO3 unfiltered	<0.35 mg/l	TM152		660 2	887 2	349	338	373	533 2
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 2 #	<0.01 #	<0.01 2 #	<0.01 2 #	<0.01 2 #	<0.01 #
Sulphate	<2 mg/l	TM184		304 #	540 #	60.9 #	60.1 #	59.7 #	181 #
Nitrate as NO3	<0.3 mg/l	TM184		93.2	36.7	32.3	31.8	31.5	<0.3
Cyanide, Total	<0.05 mg/l	TM227		<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
Cyanide, Free	<0.05 mg/l	TM227		<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.03 #	<0.03 #	<0.03 #	<0.03 #	<0.03 #	<0.03 #
pH	<1 pH Units	TM256		7.67 #	7.55 #	7.46 #	7.59 #	7.52 #	7.39 #
Phenol	<0.002 mg/l	TM259		<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 #
Cresols	<0.006 mg/l	TM259		<0.006 #	<0.006 #	<0.006 #	<0.006 #	<0.006 #	<0.006 #
Xylenols	<0.008 mg/l	TM259		<0.008 #	<0.008 #	<0.008 #	<0.008 #	<0.008 #	<0.008 #
Phenols, Total Detected monohydric	<0.016 mg/l	TM259		<0.016 #	<0.016 #	<0.016 #	<0.016 #	<0.016 #	<0.016 #
Trifluralin	<0.01 µg/l	TM343					<0.01	<0.01	
alpha-HCH	<0.01 µg/l	TM343					<0.01	<0.01	
gamma-HCH (Lindane)	<0.01 µg/l	TM343					<0.01	<0.01	

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH17	BH18	BH19	BH21	BH22	BH56
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	15/02/2022	15/02/2022	18/02/2022	15/02/2022	18/02/2022	17/02/2022
			Sampled Time	.	.	.	.	.	.
			Date Received	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022
			SDG Ref	220222-78	220222-78	220222-78	220222-78	220222-78	220222-78
			Lab Sample No.(s)	25862920	25862910	25862874	25862696	25862885	25862795
			AGS Reference	EW1	ES1	EW1	ES1	EW1	EW1
Heptachlor	<0.01 µg/l	TM343					<0.01	<0.01	
Aldrin	<0.01 µg/l	TM343					<0.01	<0.01	
beta-HCH	<0.01 µg/l	TM343					<0.01	<0.01	
Isodrin	<0.01 µg/l	TM343					<0.01	<0.01	
delta-HCH	<0.01 µg/l	TM343					<0.01	<0.01	
Heptachlor epoxide	<0.01 µg/l	TM343					<0.01	<0.01	
o,p'-DDE	<0.01 µg/l	TM343					<0.01	<0.01	
Endosulphan I	<0.01 µg/l	TM343					<0.01	<0.01	
trans-Chlordane	<0.01 µg/l	TM343					<0.01	<0.01	
cis-Chlordane	<0.01 µg/l	TM343					<0.01	<0.01	
p,p'-DDE	<0.01 µg/l	TM343					<0.01	<0.01	
Dieldrin	<0.01 µg/l	TM343					<0.01	<0.01	
o,p'-DDD (TDE)	<0.01 µg/l	TM343					<0.01	<0.01	
Endrin	<0.01 µg/l	TM343					<0.01	<0.01	
o,p'-DDT	<0.01 µg/l	TM343					<0.01	<0.01	
p,p'-DDD (TDE)	<0.01 µg/l	TM343					<0.01	<0.01	
Endosulphan II	<0.02 µg/l	TM343					<0.02	<0.02	
p,p'-DDT	<0.01 µg/l	TM343					<0.01	<0.01	
o,p'-Methoxychlor	<0.01 µg/l	TM343					<0.01	<0.01	
p,p'-Methoxychlor	<0.01 µg/l	TM343					<0.01	<0.01	
Endosulphan Sulphate	<0.02 µg/l	TM343					<0.02	<0.02	
Permethrin I	<0.01 µg/l	TM343					<0.01	<0.01	
Permethrin II	<0.01 µg/l	TM343					<0.01	<0.01	
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344					<0.01	<0.01	
Hexachlorobutadiene	<0.01 µg/l	TM344					<0.01	<0.01	
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344					<0.01	<0.01	
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344					<0.01	<0.01	
Dichlorvos	<0.01 µg/l	TM344					<0.01	<0.01	
Dichlobenil	<0.01 µg/l	TM344					<0.01	<0.01	
Mevinphos	<0.01 µg/l	TM344					<0.01	<0.01	
Tecnazene	<0.01 µg/l	TM344					<0.01	<0.01	
Hexachlorobenzene	<0.01 µg/l	TM344					<0.01	<0.01	

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+S@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH17	BH18	BH19	BH21	BH22	BH56
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	15/02/2022	15/02/2022	18/02/2022	15/02/2022	18/02/2022	17/02/2022
			Sampled Time	.	.	.	.	.	.
			Date Received	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022
			SDG Ref	220222-78	220222-78	220222-78	220222-78	220222-78	220222-78
			Lab Sample No.(s)	25862920	25862910	25862874	25862696	25862885	25862795
			AGS Reference	EW1	ES1	EW1	ES1	EW1	EW1
Demeton-S-methyl	<0.01 µg/l	TM344					<0.01	<0.01	
Phorate	<0.01 µg/l	TM344					<0.01	<0.01	
Diazinon	<0.01 µg/l	TM344					<0.01	<0.01	
Triallate	<0.01 µg/l	TM344					<0.01	<0.01	
Atrazine	<0.01 µg/l	TM344					<0.01	<0.01	
Simazine	<0.01 µg/l	TM344					<0.01	<0.01	
Disulfoton	<0.01 µg/l	TM344					<0.01	<0.01	
Propetamphos	<0.01 µg/l	TM344					<0.01	<0.01	
Chlorpyriphos-methyl	<0.01 µg/l	TM344					<0.01	<0.01	
Dimethoate	<0.01 µg/l	TM344					<0.01	<0.01	
Pirimiphos-methyl	<0.01 µg/l	TM344					<0.01	<0.01	
Chlorpyriphos	<0.01 µg/l	TM344					<0.01	<0.01	
Methyl Parathion	<0.01 µg/l	TM344					<0.01	<0.01	
Malathion	<0.01 µg/l	TM344					<0.01	<0.01	
Fenthion	<0.01 µg/l	TM344					<0.01	<0.01	
Fenitrothion	<0.01 µg/l	TM344					<0.01	<0.01	
Triadimefon	<0.01 µg/l	TM344					<0.01	<0.01	
Pendimethalin	<0.01 µg/l	TM344					<0.01	<0.01	
Parathion	<0.01 µg/l	TM344					<0.01	<0.01	
Chlorfenvinphos	<0.01 µg/l	TM344					<0.01	<0.01	
trans-Chlordane	<0.01 µg/l	TM344					<0.01	<0.01	
cis-Chlordane	<0.01 µg/l	TM344					<0.01	<0.01	
Ethion	<0.01 µg/l	TM344					<0.01	<0.01	
Carbophenothion	<0.01 µg/l	TM344					<0.01	<0.01	
Triazophos	<0.01 µg/l	TM344					<0.01	<0.01	
Phosalone	<0.01 µg/l	TM344					<0.01	<0.01	
Azinphos methyl	<0.02 µg/l	TM344					<0.02	<0.02	
Azinphos ethyl	<0.02 µg/l	TM344					<0.02	<0.02	
Dinitro-o-cresol	<0.1 µg/l	TM411					<0.1	<0.1	
Clopyralid	<0.04 µg/l	TM411					<0.04	<0.04	
MCPA	<0.05 µg/l	TM411					<0.05	<0.05	
Mecoprop	<0.04 µg/l	TM411					<0.04	<0.04	

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+S@ Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH17	BH18	BH19	BH21	BH22	BH56
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	15/02/2022	15/02/2022	18/02/2022	15/02/2022	18/02/2022	17/02/2022
			Sampled Time	.	.	.	.	.	.
			Date Received	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022
			SDG Ref	220222-78	220222-78	220222-78	220222-78	220222-78	220222-78
			Lab Sample No.(s)	25862920	25862910	25862874	25862696	25862885	25862795
			AGS Reference	EW1	ES1	EW1	ES1	EW1	EW1
Dicamba	<0.04 µg/l	TM411					<0.04	<0.04	
MCPB	<0.05 µg/l	TM411					<0.05	<0.05	
2,4-DB	<0.1 µg/l	TM411					<0.1	<0.1	
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411					<0.05	<0.05	
Dichlorprop	<0.1 µg/l	TM411					<0.1	<0.1	
Triclopyr	<0.05 µg/l	TM411					<0.05	<0.05	
Fenoprop (Silvex)	<0.1 µg/l	TM411					<0.1	<0.1	
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411					<0.05	<0.05	
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411					<0.05	<0.05	
Bromoxynil	<0.04 µg/l	TM411					<0.04	<0.04	
Benazolin	<0.04 µg/l	TM411					<0.04	<0.04	
Ioxynil	<0.05 µg/l	TM411					<0.05	<0.05	
Pentachlorophenol	<0.04 µg/l	TM411					<0.04	<0.04	
Fluoroxypyr	<0.1 µg/l	TM411					<0.1	<0.1	

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH60	BH61	WS08	WS12	WS15	WS26
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	16/02/2022	16/02/2022	16/02/2022	16/02/2022	17/02/2022	16/02/2022
			Sampled Time	.	.	.	.	.	.
			Date Received	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022
			SDG Ref	220222-78	220222-78	220222-78	220222-78	220222-78	220222-78
			Lab Sample No.(s)	25862732	25862742	25862941	25862818	25862784	25862978
			AGS Reference	EW1	EW1	EW1	ES1	EW1	EW1
Carbon, Organic (diss.filt)	<3 mg/l	TM090		5.53	4.16	4.1	4.47	3.86	<3
Ammoniacal Nitrogen as N (low level)	<0.01 mg/l	TM099		0.163 #	0.122 #	0.139 #	0.16 #	0.134 #	0.031 #
Ammoniacal Nitrogen Low as NH4	<0.01 mg/l	TM099		0.21 #	0.157 #	0.179 #	0.206 #	0.172 #	0.0399 #
Sulphide	<0.01 mg/l	TM101		<0.01 2 #	<0.01 2 #	<0.01 2 #	<0.01 2 #	<0.01 2 #	<0.01 2 #
Arsenic (diss.filt)	<0.5 µg/l	TM152		1.09 #	2.22 #	0.533 #	1.75 #	1.16 #	<0.5 #
Boron (diss.filt)	<10 µg/l	TM152		157 #	73.6 #	102 #	69.2 #	124 #	80.9 #
Cadmium (diss.filt)	<0.08 µg/l	TM152		8.55 #	<0.08 #	0.809 #	<0.08 #	0.747 #	<0.08 #
Chromium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Copper (diss.filt)	<0.3 µg/l	TM152		8.66 #	<0.3 #	23.8 #	<0.3 #	1.47 #	0.578 #
Lead (diss.filt)	<0.2 µg/l	TM152		5.63 #	<0.2 #	<0.2 #	<0.2 #	1.18 #	<0.2 #
Manganese (diss.filt)	<3 µg/l	TM152		395 #	3530 #	2680 #	6790 #	1350 #	5.79 #
Nickel (diss.filt)	<0.4 µg/l	TM152		231 #	5.81 #	5.43 #	5.23 #	4.88 #	0.89 #
Selenium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Vanadium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Zinc (diss.filt)	<1 µg/l	TM152		97.9 #	9.21 #	21.1 #	3.9 #	12 #	8.78 #
Calcium (Dis.Filt)	<0.2 mg/l	TM152		229 #	130 #	83.5 #	150 #	151 #	61.8 #
Iron (Dis.Filt)	<0.019 mg/l	TM152		0.778 #	11.2 #	0.0242 #	12.9 #	3.2 #	<0.019 #
Hardness, Total as CaCO3 unfiltered	<0.35 mg/l	TM152		783 2	442 2	333 2	590 2	518 2	234 2
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #
Sulphate	<2 mg/l	TM184		497 #	91.6 #	155 #	202 #	182 #	92.3 #
Nitrate as NO3	<0.3 mg/l	TM184		0.898	<0.3	0.813	<0.3	<0.3	0.83
Cyanide, Total	<0.05 mg/l	TM227		<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
Cyanide, Free	<0.05 mg/l	TM227		<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.03 #	<0.03 #	<0.03 #	<0.03 #	<0.03 #	<0.03 #
pH	<1 pH Units	TM256		6.78 #	7.01 #	6.92 #	6.83 #	7.27 #	7.03 #
Phenol	<0.002 mg/l	TM259		<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 #	<0.002 #
Cresols	<0.006 mg/l	TM259		<0.006 #	<0.006 #	<0.006 #	<0.006 #	<0.006 #	<0.006 #
Xylenols	<0.008 mg/l	TM259		<0.008 #	<0.008 #	<0.008 #	<0.008 #	<0.008 #	<0.008 #
Phenols, Total Detected monohydric	<0.016 mg/l	TM259		<0.016 #	<0.016 #	<0.016 #	<0.016 #	<0.016 #	<0.016 #
Trifluralin	<0.01 µg/l	TM343			<0.01			<0.01	<0.01
alpha-HCH	<0.01 µg/l	TM343			<0.01			<0.01	<0.01
gamma-HCH (Lindane)	<0.01 µg/l	TM343			<0.01			<0.01	<0.01

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH60	BH61	WS08	WS12	WS15	WS26
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	16/02/2022	16/02/2022	16/02/2022	16/02/2022	17/02/2022	16/02/2022
			Sampled Time	.	.	.	.	.	.
			Date Received	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022
			SDG Ref	220222-78	220222-78	220222-78	220222-78	220222-78	220222-78
			Lab Sample No.(s)	25862732	25862742	25862941	25862818	25862784	25862978
			AGS Reference	EW1	EW1	EW1	ES1	EW1	EW1
Heptachlor	<0.01 µg/l	TM343		<0.01			<0.01	<0.01
Aldrin	<0.01 µg/l	TM343		<0.01			<0.01	<0.01
beta-HCH	<0.01 µg/l	TM343		<0.01			<0.01	<0.01
Isodrin	<0.01 µg/l	TM343		<0.01			<0.01	<0.01
delta-HCH	<0.01 µg/l	TM343		<0.01			<0.01	<0.01
Heptachlor epoxide	<0.01 µg/l	TM343		<0.01			<0.01	<0.01
o,p'-DDE	<0.01 µg/l	TM343		<0.01			<0.01	<0.01
Endosulphan I	<0.01 µg/l	TM343		<0.01			<0.01	<0.01
trans-Chlordane	<0.01 µg/l	TM343		<0.01			<0.01	<0.01
cis-Chlordane	<0.01 µg/l	TM343		<0.01			<0.01	<0.01
p,p'-DDE	<0.01 µg/l	TM343		<0.01			<0.01	<0.01
Dieldrin	<0.01 µg/l	TM343		<0.01			<0.01	<0.01
o,p'-DDD (TDE)	<0.01 µg/l	TM343		<0.01			<0.01	<0.01
Endrin	<0.01 µg/l	TM343		<0.01			<0.01	<0.01
o,p'-DDT	<0.01 µg/l	TM343		<0.01			<0.01	<0.01
p,p'-DDD (TDE)	<0.01 µg/l	TM343		<0.01			<0.01	<0.01
Endosulphan II	<0.02 µg/l	TM343		<0.02			<0.02	<0.02
p,p'-DDT	<0.01 µg/l	TM343		<0.01			<0.01	<0.01
o,p'-Methoxychlor	<0.01 µg/l	TM343		<0.01			<0.01	<0.01
p,p'-Methoxychlor	<0.01 µg/l	TM343		<0.01			<0.01	<0.01
Endosulphan Sulphate	<0.02 µg/l	TM343		<0.02			<0.02	<0.02
Permethrin I	<0.01 µg/l	TM343		<0.01			<0.01	<0.01
Permethrin II	<0.01 µg/l	TM343		<0.01			<0.01	<0.01
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344		<0.01			<0.01	<0.01
Hexachlorobutadiene	<0.01 µg/l	TM344		<0.01			<0.01	<0.01
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344		0.0117			<0.01	<0.01
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344		<0.01			<0.01	<0.01
Dichlorvos	<0.01 µg/l	TM344		<0.01			<0.01	<0.01
Dichlobenil	<0.01 µg/l	TM344		<0.01			<0.01	<0.01
Mevinphos	<0.01 µg/l	TM344		<0.01			<0.01	<0.01
Tecnazene	<0.01 µg/l	TM344		<0.01			<0.01	<0.01
Hexachlorobenzene	<0.01 µg/l	TM344		<0.01			<0.01	<0.01

Results Legend
ISO17025 accredited.
M *m*CERTS accredited.
aq Aqueous / settled sample.
diss.filt Dissolved / filtered sample.
tot.unfilt Total / unfiltered sample.
* Subcontracted - refer to subcontractor report for accreditation status.
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F) Trigger breach confirmed
1-4+S@ Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH60	BH61	WS08	WS12	WS15	WS26
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	16/02/2022	16/02/2022	16/02/2022	16/02/2022	17/02/2022	16/02/2022
			Sampled Time	.	.	.	.	.	.
			Date Received	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022
			SDG Ref	220222-78	220222-78	220222-78	220222-78	220222-78	220222-78
			Lab Sample No.(s)	25862732	25862742	25862941	25862818	25862784	25862978
			AGS Reference	EW1	EW1	EW1	ES1	EW1	EW1
Demeton-S-methyl	<0.01 µg/l	TM344		<0.01				<0.01	<0.01
Phorate	<0.01 µg/l	TM344		<0.01				<0.01	<0.01
Diazinon	<0.01 µg/l	TM344		<0.01				<0.01	<0.01
Triallate	<0.01 µg/l	TM344		<0.01				<0.01	<0.01
Atrazine	<0.01 µg/l	TM344		<0.01				<0.01	<0.01
Simazine	<0.01 µg/l	TM344		<0.01				<0.01	<0.01
Disulfoton	<0.01 µg/l	TM344		<0.01				<0.01	<0.01
Propetamphos	<0.01 µg/l	TM344		<0.01				<0.01	<0.01
Chlorpyriphos-methyl	<0.01 µg/l	TM344		<0.01				<0.01	<0.01
Dimethoate	<0.01 µg/l	TM344		<0.01				<0.01	<0.01
Pirimiphos-methyl	<0.01 µg/l	TM344		<0.01				<0.01	<0.01
Chlorpyriphos	<0.01 µg/l	TM344		0.039				0.0169	<0.01
Methyl Parathion	<0.01 µg/l	TM344		<0.01				<0.01	<0.01
Malathion	<0.01 µg/l	TM344		<0.01				<0.01	<0.01
Fenthion	<0.01 µg/l	TM344		<0.01				<0.01	<0.01
Fenitrothion	<0.01 µg/l	TM344		<0.01				<0.01	<0.01
Triadimefon	<0.01 µg/l	TM344		<0.01				<0.01	<0.01
Pendimethalin	<0.01 µg/l	TM344		<0.01				<0.01	<0.01
Parathion	<0.01 µg/l	TM344		<0.01				<0.01	<0.01
Chlorfenvinphos	<0.01 µg/l	TM344		<0.01				<0.01	<0.01
trans-Chlordane	<0.01 µg/l	TM344		<0.01				<0.01	<0.01
cis-Chlordane	<0.01 µg/l	TM344		<0.01				<0.01	<0.01
Ethion	<0.01 µg/l	TM344		<0.01				<0.01	<0.01
Carbophenothion	<0.01 µg/l	TM344		<0.01				<0.01	<0.01
Triazophos	<0.01 µg/l	TM344		<0.01				<0.01	<0.01
Phosalone	<0.01 µg/l	TM344		<0.01				<0.01	<0.01
Azinphos methyl	<0.02 µg/l	TM344		<0.02				<0.02	<0.02
Azinphos ethyl	<0.02 µg/l	TM344		<0.02				<0.02	<0.02
Dinitro-o-cresol	<0.1 µg/l	TM411		<0.1				<0.1	<0.1
Clopyralid	<0.04 µg/l	TM411		<0.04				<0.04	<0.04
MCPA	<0.05 µg/l	TM411		<0.05				<0.05	<0.05
Mecoprop	<0.04 µg/l	TM411		<0.04				<0.04	<0.04

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH60	BH61	WS08	WS12	WS15	WS26
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	16/02/2022	16/02/2022	16/02/2022	16/02/2022	17/02/2022	16/02/2022
			Sampled Time	.	.	.	.	.	.
			Date Received	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022
			SDG Ref	220222-78	220222-78	220222-78	220222-78	220222-78	220222-78
			Lab Sample No.(s)	25862732	25862742	25862941	25862818	25862784	25862978
			AGS Reference	EW1	EW1	EW1	ES1	EW1	EW1
Dicamba	<0.04 µg/l	TM411		<0.04			<0.04	<0.04	
MCPB	<0.05 µg/l	TM411		<0.05			<0.05	<0.05	
2,4-DB	<0.1 µg/l	TM411		<0.1			<0.1	<0.1	
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411		<0.05			<0.05	<0.05	
Dichlorprop	<0.1 µg/l	TM411		<0.1			<0.1	<0.1	
Triclopyr	<0.05 µg/l	TM411		<0.05			<0.05	<0.05	
Fenoprop (Silvex)	<0.1 µg/l	TM411		<0.1			<0.1	<0.1	
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411		<0.05			<0.05	<0.05	
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411		<0.05			<0.05	<0.05	
Bromoxynil	<0.04 µg/l	TM411		<0.04			<0.04	<0.04	
Benazolin	<0.04 µg/l	TM411		<0.04			<0.04	<0.04	
Ioxynil	<0.05 µg/l	TM411		<0.05			<0.05	<0.05	
Pentachlorophenol	<0.04 µg/l	TM411		<0.04			<0.04	<0.04	
Fluoroxypyr	<0.1 µg/l	TM411		<0.1			<0.1	<0.1	

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS31	WS54				
			Depth (m)	0.00 - 0.00	0.00 - 0.00				
			Sample Type	Ground Water (GW)	Ground Water (GW)				
			Date Sampled	16/02/2022	17/02/2022				
			Sampled Time	.	.				
			Date Received	22/02/2022	22/02/2022				
			SDG Ref	220222-78	220222-78				
			Lab Sample No.(s)	25862722	25862774				
			AGS Reference	EW1	EW1				
Clostridium perfringens (M1U)*	CFU/100ml	SUB			0				
Enterococci Presumptive (M1L)*	CFU/100ml	SUB			0				
Faecal coliforms confirmed (M7M)*	0 CFU/100ml	SUB			0				
Clostridium Perfringens (MZP)	CFU/100ml	SUB			0				
Enterococci Confirmed (M1E)*	CFU/100ml	SUB			0				
Total Coliform Presumptive (M16)*	CFU/100ml	SUB			0				
Total Coliform Confirmed (M14)*	CFU/100ml	SUB			0				
BOD, unfiltered	<1 mg/l	TM045			<1 @ #				
Carbon, Organic (diss.filt)	<3 mg/l	TM090		3.69	<3				
Ammoniacal Nitrogen as N (low level)	<0.01 mg/l	TM099		0.079 #	0.024 #				
Ammoniacal Nitrogen Low as NH4	<0.01 mg/l	TM099		0.102 #	0.0309 #				
Sulphide	<0.01 mg/l	TM101		<0.01 2 #	<0.01 2 #				
COD, unfiltered	<7 mg/l	TM107			9.9 #				
Arsenic (diss.filt)	<0.5 µg/l	TM152		1.16 #	6.82 #				
Boron (diss.filt)	<10 µg/l	TM152		80 #	275 #				
Cadmium (diss.filt)	<0.08 µg/l	TM152		0.0919 #	0.124 #				
Chromium (diss.filt)	<1 µg/l	TM152		<1 #	<1 #				
Copper (diss.filt)	<0.3 µg/l	TM152		0.356 #	5.92 #				
Lead (diss.filt)	<0.2 µg/l	TM152		<0.2 #	2.07 #				
Manganese (diss.filt)	<3 µg/l	TM152		998 #	293 #				
Nickel (diss.filt)	<0.4 µg/l	TM152		3.25 #	2.97 #				
Phosphorus (diss.filt)	<10 µg/l	TM152			64.4 #				
Selenium (diss.filt)	<1 µg/l	TM152		<1 #	4.26 #				
Vanadium (diss.filt)	<1 µg/l	TM152		<1 #	6.6 #				
Zinc (diss.filt)	<1 µg/l	TM152		6.42 #	27.8 #				
Calcium (Dis.Filt)	<0.2 mg/l	TM152		67.1 #	567 #				
Iron (Dis.Filt)	<0.019 mg/l	TM152		0.436 #	0.438 #				
Hardness, Total as CaCO3 unfiltered	<0.35 mg/l	TM152		247 2	1750 2				
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 #				
Sulphate	<2 mg/l	TM184		65.9 #	1530 #				
Phosphate (Ortho as P)	<0.02 mg/l	TM184			<0.02 #				
Nitrate as NO3	<0.3 mg/l	TM184		<0.3	22				

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS31	WS54				
			Depth (m)	0.00 - 0.00	0.00 - 0.00				
			Sample Type	Ground Water (GW)	Ground Water (GW)				
			Date Sampled	16/02/2022	17/02/2022				
			Sampled Time	.	.				
			Date Received	22/02/2022	22/02/2022				
			SDG Ref	220222-78	220222-78				
			Lab Sample No.(s)	25862722	25862774				
			AGS Reference	EW1	EW1				
Cyanide, Total	<0.05 mg/l	TM227		<0.05 #	<0.05 #				
Cyanide, Free	<0.05 mg/l	TM227		<0.05 #	<0.05 #				
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.03 #	<0.03 #				
pH	<1 pH Units	TM256		7.06 #	7.59 #				
Phenol	<0.002 mg/l	TM259		<0.002 #	<0.002 #				
Cresols	<0.006 mg/l	TM259		<0.006 #	<0.006 #				
Xylenols	<0.008 mg/l	TM259		<0.008 #	<0.008 #				
Phenols, Total Detected monohydric	<0.016 mg/l	TM259		<0.016 #	<0.016 #				

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH01	BH03	BH05	BH06	BH07	BH09
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	16/02/2022	16/02/2022	18/02/2022	16/02/2022	17/02/2022	17/02/2022
			Sampled Time	.	.	.	.	.	.
			Date Received	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022
			SDG Ref	220222-78	220222-78	220222-78	220222-78	220222-78	220222-78
			Lab Sample No.(s)	25862967	25862955	25862899	25862713	25862807	25862829
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
Naphthalene (aq)	<0.01 µg/l	TM178		<0.01 #	1.16 #	<0.01 #	<0.01 #	0.0269 #	<0.01 #
Acenaphthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.5 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Acenaphthylene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.5 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Fluoranthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.5 #	0.18 #	0.012 #	<0.005 #	<0.005 #
Anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.5 #	0.015 #	<0.005 #	<0.005 #	<0.005 #
Phenanthrene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.5 #	0.0672 #	<0.005 #	<0.005 #	<0.005 #
Fluorene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.5 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Chrysene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.5 #	0.0888 #	<0.005 #	<0.005 #	<0.005 #
Pyrene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.5 #	0.163 #	0.0144 #	<0.005 #	<0.005 #
Benzo(a)anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.5 #	0.0831 #	<0.005 #	<0.005 #	<0.005 #
Benzo(b)fluoranthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.5 #	0.157 #	0.011 #	<0.005 #	<0.005 #
Benzo(k)fluoranthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.5 #	0.0755 #	0.00563 #	<0.005 #	<0.005 #
Benzo(a)pyrene (aq)	<0.002 µg/l	TM178		<0.002 #	<0.2 #	0.11 #	0.00659 #	<0.002 #	<0.002 #
Dibenzo(a,h)anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.5 #	0.0147 #	<0.005 #	<0.005 #	<0.005 #
Benzo(g,h,i)perylene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.5 #	0.102 #	<0.005 #	<0.005 #	<0.005 #
Indeno(1,2,3-cd)pyrene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.5 #	0.0647 #	<0.005 #	<0.005 #	<0.005 #
PAH, Total Detected USEPA 16 (aq)	<0.082 µg/l	TM178		<0.082 #	<8.2 #	1.12 #	<0.082 #	<0.082 #	<0.082 #

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH10	BH11	BH12	BH14	BH15	BH16
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	17/02/2022	18/02/2022	17/02/2022	17/02/2022	18/02/2022	15/02/2022
			Sampled Time	.	.	.	.	.	.
			Date Received	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022
			SDG Ref	220222-78	220222-78	220222-78	220222-78	220222-78	220222-78
			Lab Sample No.(s)	25862840	25862849	25862763	25862752	25862860	25862931
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
Naphthalene (aq)	<0.01 µg/l	TM178		0.0237 #	1.47 #	<0.01 #	0.014 #	<0.01 #	<0.01 #
Acenaphthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.5 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Acenaphthylene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.5 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Fluoranthene (aq)	<0.005 µg/l	TM178		0.011 #	<0.5 #	<0.005 #	0.018 #	0.207 #	0.0237 #
Anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.5 #	<0.005 #	<0.005 #	0.0199 #	<0.005 #
Phenanthrene (aq)	<0.005 µg/l	TM178		0.00904 #	<0.5 #	<0.005 #	0.0062 #	0.0819 #	<0.005 #
Fluorene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.5 #	<0.005 #	<0.005 #	0.00648 #	<0.005 #
Chrysene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.5 #	<0.005 #	<0.005 #	0.113 #	0.0133 #
Pyrene (aq)	<0.005 µg/l	TM178		0.013 #	<0.5 #	<0.005 #	0.0178 #	0.187 #	0.0237 #
Benzo(a)anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.5 #	<0.005 #	<0.005 #	0.104 #	<0.005 #
Benzo(b)fluoranthene (aq)	<0.005 µg/l	TM178		0.00672 #	<0.5 #	<0.005 #	<0.005 #	0.178 #	0.0175 #
Benzo(k)fluoranthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.5 #	<0.005 #	<0.005 #	0.0882 #	0.01 #
Benzo(a)pyrene (aq)	<0.002 µg/l	TM178		0.00411 #	<0.2 #	<0.002 #	<0.002 #	0.136 #	0.0137 #
Dibenzo(a,h)anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.5 #	<0.005 #	<0.005 #	0.0247 #	<0.005 #
Benzo(g,h,i)perylene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.5 #	<0.005 #	<0.005 #	0.123 #	<0.005 #
Indeno(1,2,3-cd)pyrene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.5 #	<0.005 #	<0.005 #	0.0932 #	<0.005 #
PAH, Total Detected USEPA 16 (aq)	<0.082 µg/l	TM178		<0.082 #	<8.2 #	<0.082 #	<0.082 #	1.36 #	0.102 #

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH17	BH18	BH19	BH21	BH22	BH56
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	15/02/2022	15/02/2022	18/02/2022	15/02/2022	18/02/2022	17/02/2022
			Sampled Time	.	.	.	.	.	.
			Date Received	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022
			SDG Ref	220222-78	220222-78	220222-78	220222-78	220222-78	220222-78
			Lab Sample No.(s)	25862920	25862910	25862874	25862696	25862885	25862795
			AGS Reference	EW1	ES1	EW1	ES1	EW1	EW1
Naphthalene (aq)	<0.01 µg/l	TM178		0.0102 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #	0.0219 #
Acenaphthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Acenaphthylene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #	<0.005 #
Fluoranthene (aq)	<0.005 µg/l	TM178		0.0087 #	0.00579 #	0.0473 #	0.0158 #	0.384 #	0.0108 #
Anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	0.00515 #	<0.005 #	0.0326 #	<0.005 #
Phenanthrene (aq)	<0.005 µg/l	TM178		0.0065 #	<0.005 #	0.0195 #	<0.005 #	0.142 #	0.00709 #
Fluorene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	0.0116 #	<0.005 #
Chrysene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	0.0217 #	<0.005 #	0.21 #	<0.005 #
Pyrene (aq)	<0.005 µg/l	TM178		0.0092 #	0.00692 #	0.0441 #	0.0183 #	0.346 #	0.0116 #
Benzo(a)anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	0.0215 #	<0.005 #	0.193 #	<0.005 #
Benzo(b)fluoranthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	0.0331 #	<0.005 #	0.329 #	0.00649 #
Benzo(k)fluoranthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	0.0163 #	<0.005 #	0.172 #	<0.005 #
Benzo(a)pyrene (aq)	<0.002 µg/l	TM178		<0.002 #	<0.002 #	0.0251 #	<0.002 #	0.262 #	0.00457 #
Dibenzo(a,h)anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	<0.005 #	<0.005 #	0.0324 #	<0.005 #
Benzo(g,h,i)perylene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	0.0232 #	<0.005 #	0.217 #	<0.005 #
Indeno(1,2,3-cd)pyrene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #	0.0151 #	<0.005 #	0.165 #	<0.005 #
PAH, Total Detected USEPA 16 (aq)	<0.082 µg/l	TM178		<0.082 #	<0.082 #	0.272 #	<0.082 #	2.5 #	<0.082 #

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH60	BH61	WS08	WS12	WS15	WS26
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	16/02/2022	16/02/2022	16/02/2022	16/02/2022	17/02/2022	16/02/2022
			Sampled Time	.	.	.	.	.	.
			Date Received	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022
			SDG Ref	220222-78	220222-78	220222-78	220222-78	220222-78	220222-78
			Lab Sample No.(s)	25862732	25862742	25862941	25862818	25862784	25862978
			AGS Reference	EW1	EW1	EW1	ES1	EW1	EW1
Naphthalene (aq)	<0.01 µg/l	TM178		0.0278 #	0.0117 @ #	<0.01 #	1.19 #	0.0276 #	0.0125 #
Acenaphthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 @ #	<0.005 #	<0.5 #	<0.005 #	<0.005 #
Acenaphthylene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 @ #	<0.005 #	<0.5 #	<0.005 #	<0.005 #
Fluoranthene (aq)	<0.005 µg/l	TM178		<0.005 #	0.00663 @ #	0.0192 #	<0.5 #	0.00572 #	<0.005 #
Anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 @ #	<0.005 #	<0.5 #	<0.005 #	<0.005 #
Phenanthrene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 @ #	0.0157 #	<0.5 #	0.00547 #	<0.005 #
Fluorene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 @ #	0.00701 #	<0.5 #	<0.005 #	<0.005 #
Chrysene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 @ #	<0.005 #	<0.5 #	<0.005 #	<0.005 #
Pyrene (aq)	<0.005 µg/l	TM178		0.00733 #	0.00751 @ #	0.0256 #	<0.5 #	0.00751 #	<0.005 #
Benzo(a)anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 @ #	<0.005 #	<0.5 #	<0.005 #	<0.005 #
Benzo(b)fluoranthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 @ #	0.011 #	<0.5 #	<0.005 #	<0.005 #
Benzo(k)fluoranthene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 @ #	<0.005 #	<0.5 #	<0.005 #	<0.005 #
Benzo(a)pyrene (aq)	<0.002 µg/l	TM178		<0.002 #	<0.002 @ #	0.00769 #	<0.2 #	<0.002 #	<0.002 #
Dibenzo(a,h)anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 @ #	<0.005 #	<0.5 #	<0.005 #	<0.005 #
Benzo(g,h,i)perylene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 @ #	<0.005 #	<0.5 #	<0.005 #	<0.005 #
Indeno(1,2,3-cd)pyrene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 @ #	<0.005 #	<0.5 #	<0.005 #	<0.005 #
PAH, Total Detected USEPA 16 (aq)	<0.082 µg/l	TM178		<0.082 #	<0.082 @ #	0.0862 #	<8.2 #	<0.082 #	<0.082 #

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS31	WS54
			Depth (m)	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)
			Date Sampled	16/02/2022	17/02/2022
			Sampled Time	.	.
			Date Received	22/02/2022	22/02/2022
			SDG Ref	220222-78	220222-78
			Lab Sample No.(s)	25862722	25862774
			AGS Reference	EW1	EW1
Naphthalene (aq)	<0.01 µg/l	TM178		0.0152 #	<0.01 #
Acenaphthene (aq)	<0.005 µg/l	TM178		<0.005 #	0.00621 #
Acenaphthylene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #
Fluoranthene (aq)	<0.005 µg/l	TM178		<0.005 #	0.03 #
Anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	0.00716 #
Phenanthrene (aq)	<0.005 µg/l	TM178		0.0077 #	0.0277 #
Fluorene (aq)	<0.005 µg/l	TM178		<0.005 #	0.00633 #
Chrysene (aq)	<0.005 µg/l	TM178		<0.005 #	0.0107 #
Pyrene (aq)	<0.005 µg/l	TM178		<0.005 #	0.0276 #
Benzo(a)anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	0.00615 #
Benzo(b)fluoranthene (aq)	<0.005 µg/l	TM178		<0.005 #	0.012 #
Benzo(k)fluoranthene (aq)	<0.005 µg/l	TM178		<0.005 #	0.00695 #
Benzo(a)pyrene (aq)	<0.002 µg/l	TM178		<0.002 #	0.00866 #
Dibenzo(a,h)anthracene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #
Benzo(g,h,i)perylene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #
Indeno(1,2,3-cd)pyrene (aq)	<0.005 µg/l	TM178		<0.005 #	<0.005 #
PAH, Total Detected USEPA 16 (aq)	<0.082 µg/l	TM178		<0.082 #	0.149 #

SVOC MS (W) - Aqueous

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+5@ Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH11	BH12	BH19	BH61	WS54
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	18/02/2022	17/02/2022	18/02/2022	16/02/2022	17/02/2022
			Sampled Time	.	.	.	.	.
			Date Received	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022
			SDG Ref	220222-78	220222-78	220222-78	220222-78	220222-78
			Lab Sample No.(s)	25862849	25862763	25862874	25862742	25862774
			AGS Reference	EW1	EW1	EW1	EW1	EW1
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
2,4-Dichlorophenol (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
2,4-Dimethylphenol (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
2-Chloronaphthalene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
2-Chlorophenol (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
2-Methylnaphthalene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
2-Methylphenol (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
2-Nitroaniline (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
2-Nitrophenol (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
3-Nitroaniline (aq)	<1 µg/l	TM176		<10	<1	<10	<1	<1
4-Bromophenylphenylether (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
4-Chloroaniline (aq)	<1 µg/l	TM176		<10	<1	<10	<1	<1
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
4-Methylphenol (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
4-Nitroaniline (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
4-Nitrophenol (aq)	<1 µg/l	TM176		<10	<1	<10	<1	<1
Azobenzene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
Acenaphthylene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
Acenaphthene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
Anthracene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176		<20 #	<2 #	<20 #	<2 #	<2 #
Butylbenzyl phthalate (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

SVOC MS (W) - Aqueous

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH11	BH12	BH19	BH61	WS54
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	18/02/2022	17/02/2022	18/02/2022	16/02/2022	17/02/2022
			Sampled Time	.	.	.	.	.
			Date Received	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022
			SDG Ref	220222-78	220222-78	220222-78	220222-78	220222-78
			Lab Sample No.(s)	25862849	25862763	25862874	25862742	25862774
			AGS Reference	EW1	EW1	EW1	EW1	EW1
Benzo(a)anthracene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
Benzo(a)pyrene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
Carbazole (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
Chrysene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
Dibenzofuran (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
n-Dibutyl phthalate (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
Diethyl phthalate (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
Dimethyl phthalate (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
n-Dioctyl phthalate (aq)	<5 µg/l	TM176		<50 #	<5 #	<50 #	<5 #	<5 #
Fluoranthene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
Fluorene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
Hexachlorobenzene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
Hexachlorobutadiene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
Pentachlorophenol (aq)	<1 µg/l	TM176		<10	<1	<10	<1	<1
Phenol (aq)	<1 µg/l	TM176		<10	<1	<10	<1	<1
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
Hexachloroethane (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
Nitrobenzene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
Naphthalene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
Isophorone (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176		<10	<1	<10	<1	<1
Phenanthrene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #
Pyrene (aq)	<1 µg/l	TM176		<10 #	<1 #	<10 #	<1 #	<1 #

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH01	BH03	BH05	BH06	BH07	BH09
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	16/02/2022	16/02/2022	18/02/2022	16/02/2022	17/02/2022	17/02/2022
			Sampled Time	.	.	.	.	.	.
			Date Received	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022
			SDG Ref	220222-78	220222-78	220222-78	220222-78	220222-78	220222-78
			Lab Sample No.(s)	25862967	25862955	25862899	25862713	25862807	25862829
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
GRO Surrogate % recovery**	%	TM245		101	104	97	100	105	104
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #	<50 #	<50 #	<50 #	<50 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Benzene	<7 µg/l	TM245		<7 #	<7 #	<7 #	<7 #	<7 #	<7 #
Toluene	<4 µg/l	TM245		<4 #	<4 #	<4 #	<4 #	<4 #	<4 #
Ethylbenzene	<5 µg/l	TM245		<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
m,p-Xylene	<8 µg/l	TM245		<8 #	<8 #	<8 #	<8 #	<8 #	<8 #
o-Xylene	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Sum of detected Xylenes	<11 µg/l	TM245		<11	<11	<11	<11	<11	<11
Sum of detected BTEX	<28 µg/l	TM245		<28	<28	<28	<28	<28	<28
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	<10	75	<10	<10	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	<10	75	<10	<10	<10
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		<10	<10	75	<10	<10	<10
Aliphatics >C16-C35 Aqueous	<10 µg/l	TM174		<10	<10	75	<10	<10	<10

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH10	BH11	BH12	BH14	BH15	BH16
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	17/02/2022	18/02/2022	17/02/2022	17/02/2022	18/02/2022	15/02/2022
			Sampled Time	.	.	.	.	.	.
			Date Received	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022
			SDG Ref	220222-78	220222-78	220222-78	220222-78	220222-78	220222-78
			Lab Sample No.(s)	25862840	25862849	25862763	25862752	25862860	25862931
			AGS Reference	EW1	EW1	EW1	EW1	EW1	EW1
GRO Surrogate % recovery**	%	TM245		95	97	86	85	103	84
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #	<50 #	<50 #	<50 #	<50 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Benzene	<7 µg/l	TM245		<7 #	<7 #	<7 #	<7 #	<7 #	<7 #
Toluene	<4 µg/l	TM245		<4 #	<4 #	<4 #	<4 #	<4 #	<4 #
Ethylbenzene	<5 µg/l	TM245		<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
m,p-Xylene	<8 µg/l	TM245		<8 #	<8 #	<8 #	<8 #	<8 #	<8 #
o-Xylene	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Sum of detected Xylenes	<11 µg/l	TM245		<11	<11	<11	<11	<11	<11
Sum of detected BTEX	<28 µg/l	TM245		<28	<28	<28	<28	<28	<28
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	32	<10	<10	79	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	32	<10	<10	79	<10
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		<10	32	<10	<10	79	<10
Aliphatics >C16-C35 Aqueous	<10 µg/l	TM174		<10	32	<10	<10	79	<10

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH17	BH18	BH19	BH21	BH22	BH56
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	15/02/2022	15/02/2022	18/02/2022	15/02/2022	18/02/2022	17/02/2022
			Sampled Time	.	.	.	.	.	.
			Date Received	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022
			SDG Ref	220222-78	220222-78	220222-78	220222-78	220222-78	220222-78
			Lab Sample No.(s)	25862920	25862910	25862874	25862696	25862885	25862795
			AGS Reference	EW1	ES1	EW1	ES1	EW1	EW1
GRO Surrogate % recovery**	%	TM245		108	81	103	101	99	100
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #	<50 #	<50 #	<50 #	<50 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Benzene	<7 µg/l	TM245		<7 #	<7 #	<7 #	<7 #	<7 #	<7 #
Toluene	<4 µg/l	TM245		<4 #	<4 #	<4 #	<4 #	<4 #	<4 #
Ethylbenzene	<5 µg/l	TM245		<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
m,p-Xylene	<8 µg/l	TM245		<8 #	<8 #	<8 #	<8 #	<8 #	<8 #
o-Xylene	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Sum of detected Xylenes	<11 µg/l	TM245		<11	<11	<11	<11	<11	<11
Sum of detected BTEX	<28 µg/l	TM245		<28	<28	<28	<28	<28	<28
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	<10	13	<10	123	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	<10	13	<10	123	<10
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		<10	<10	13	<10	123	<10
Aliphatics >C16-C35 Aqueous	<10 µg/l	TM174		<10	<10	13	<10	123	<10

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH60	BH61	WS08	WS12	WS15	WS26
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	16/02/2022	16/02/2022	16/02/2022	16/02/2022	17/02/2022	16/02/2022
			Sampled Time	.	.	.	.	.	.
			Date Received	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022
			SDG Ref	220222-78	220222-78	220222-78	220222-78	220222-78	220222-78
			Lab Sample No.(s)	25862732	25862742	25862941	25862818	25862784	25862978
			AGS Reference	EW1	EW1	EW1	ES1	EW1	EW1
GRO Surrogate % recovery**	%	TM245		95	93	104	98	105	95
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #	<50 #	<50 #	<50 #	<50 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Benzene	<7 µg/l	TM245		<7 #	<7 #	<7 #	<7 #	<7 #	<7 #
Toluene	<4 µg/l	TM245		<4 #	<4 #	<4 #	<4 #	<4 #	<4 #
Ethylbenzene	<5 µg/l	TM245		<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
m,p-Xylene	<8 µg/l	TM245		<8 #	<8 #	<8 #	<8 #	<8 #	<8 #
o-Xylene	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Sum of detected Xylenes	<11 µg/l	TM245		<11	<11	<11	<11	<11	<11
Sum of detected BTEX	<28 µg/l	TM245		<28	<28	<28	<28	<28	<28
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	<10	<10	<10	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10
Aliphatics >C16-C35 Aqueous	<10 µg/l	TM174		<10	<10	<10	<10	<10	<10

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS31	WS54				
			Depth (m)	0.00 - 0.00	0.00 - 0.00				
			Sample Type	Ground Water (GW)	Ground Water (GW)				
			Date Sampled	16/02/2022	17/02/2022				
			Sampled Time	.	.				
			Date Received	22/02/2022	22/02/2022				
			SDG Ref	220222-78	220222-78				
			Lab Sample No.(s)	25862722	25862774				
			AGS Reference	EW1	EW1				
GRO Surrogate % recovery**	%	TM245		104	100				
GRO >C5-C12	<50 µg/l	TM245		<50 #	<50 #				
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #				
Benzene	<7 µg/l	TM245		<7 #	<7 #				
Toluene	<4 µg/l	TM245		<4 #	<4 #				
Ethylbenzene	<5 µg/l	TM245		<5 #	<5 #				
m,p-Xylene	<8 µg/l	TM245		<8 #	<8 #				
o-Xylene	<3 µg/l	TM245		<3 #	<3 #				
Sum of detected Xylenes	<11 µg/l	TM245		<11	<11				
Sum of detected BTEX	<28 µg/l	TM245		<28	<28				
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10				
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10				
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10				
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10				
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10				
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10				
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	<10				
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	<10				
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10				
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10				
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10				
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10				
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	<10				
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	<10				
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	<10				
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	<10				
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		<10	<10				
Aliphatics >C16-C35 Aqueous	<10 µg/l	TM174		<10	<10				

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

VOC MS (W)

Results Legend
- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+S@ Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH11	BH12	BH19	BH61	WS54
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	18/02/2022	17/02/2022	18/02/2022	16/02/2022	17/02/2022
			Sampled Time	.	.	.	.	.
			Date Received	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022
			SDG Ref	220222-78	220222-78	220222-78	220222-78	220222-78
			Lab Sample No.(s)	25862849	25862763	25862874	25862742	25862774
			AGS Reference	EW1	EW1	EW1	EW1	EW1
Dibromofluoromethane**	%	TM208		104	115	117	104	105
Toluene-d8**	%	TM208		98.4	102	100	98.5	99.3
4-Bromofluorobenzene**	%	TM208		97.4	97.3	96.8	98.5	98.1
Dichlorodifluoromethane	µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Chloromethane	µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Vinyl chloride	µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Bromomethane	µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Chloroethane	µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Trichlorofluoromethane	µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloroethene	µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Carbon disulphide	µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Dichloromethane	µg/l	TM208		<3 #	<3 #	<3 #	<3 #	<3 #
Methyl tertiary butyl ether (MTBE)	µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
trans-1,2-Dichloroethene	µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloroethane	µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
cis-1,2-Dichloroethene	µg/l	TM208		<1 #	4.39 #	<1 #	<1 #	5.06 #
2,2-Dichloropropane	µg/l	TM208		<1	<1	<1	<1	<1
Bromochloromethane	µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Chloroform	µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,1,1-Trichloroethane	µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,1-Dichloropropene	µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Carbontetrachloride	µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloroethane	µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Benzene	µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Trichloroethene	µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichloropropane	µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Dibromomethane	µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Bromodichloromethane	µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
cis-1,3-Dichloropropene	µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Toluene	µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
trans-1,3-Dichloropropene	µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,1,2-Trichloroethane	µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

VOC MS (W)

Results Legend
- # ISO17025 accredited.
- M *m*CERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted - refer to subcontractor report for accreditation status.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-4+S@ Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH11	BH12	BH19	BH61	WS54
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	18/02/2022	17/02/2022	18/02/2022	16/02/2022	17/02/2022
			Sampled Time	.	.	.	.	.
			Date Received	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022
			SDG Ref	220222-78	220222-78	220222-78	220222-78	220222-78
			Lab Sample No.(s)	25862849	25862763	25862874	25862742	25862774
			AGS Reference	EW1	EW1	EW1	EW1	EW1
1,3-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Tetrachloroethene	<1 µg/l	TM208		<1 #	1.46 #	<1 #	<1 #	1.51 #
Dibromochloromethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dibromoethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Chlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Ethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
m,p-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
o-Xylene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Styrene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Bromoform	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Isopropylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,2,3-Trichloropropane	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Bromobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Propylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
2-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,3,5-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
4-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
tert-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,2,4-Trimethylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
sec-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
4-iso-Propyltoluene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,4-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
n-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208		<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Hexachlorobutadiene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Naphthalene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+5@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	BH11	BH12	BH19	BH61	WS54
			Depth (m)	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
			Sample Type	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
			Date Sampled	18/02/2022	17/02/2022	18/02/2022	16/02/2022	17/02/2022
			Sampled Time	.	.	.	.	.
			Date Received	22/02/2022	22/02/2022	22/02/2022	22/02/2022	22/02/2022
			SDG Ref	220222-78	220222-78	220222-78	220222-78	220222-78
			Lab Sample No.(s)	25862849	25862763	25862874	25862742	25862774
			AGS Reference	EW1	EW1	EW1	EW1	EW1
1,2,3-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
1,3,5-Trichlorobenzene	<1 µg/l	TM208		<1	<1	<1	<1	<1

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Notification of NDPs (No determination possible)

Date Received : 22/02/2022 14:56:08

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
25862752	BH14 EW1	0.00 - 0.00	Escherichia Coli*	See Comments for cancellation details
25862752	BH14 EW1	0.00 - 0.00	Salmonella (W)*	See Comments for cancellation details
25862752	BH14 EW1	0.00 - 0.00	TVC 22C 3 day (W)*	See Comments for cancellation details
25862752	BH14 EW1	0.00 - 0.00	TVC 37C 1 day (W)*	See Comments for cancellation details
25862763	BH12 EW1	0.00 - 0.00	Escherichia Coli*	See Comments for cancellation details
25862763	BH12 EW1	0.00 - 0.00	Salmonella (W)*	See Comments for cancellation details
25862763	BH12 EW1	0.00 - 0.00	TVC 22C 3 day (W)*	See Comments for cancellation details
25862763	BH12 EW1	0.00 - 0.00	TVC 37C 1 day (W)*	See Comments for cancellation details
25862774	WS54 EW1	0.00 - 0.00	Escherichia Coli*	See Comments for cancellation details
25862774	WS54 EW1	0.00 - 0.00	Salmonella (W)*	See Comments for cancellation details
25862774	WS54 EW1	0.00 - 0.00	TVC 22C 3 day (W)*	See Comments for cancellation details
25862774	WS54 EW1	0.00 - 0.00	TVC 37C 1 day (W)*	See Comments for cancellation details

Table of Results - Appendix

Method No	Reference	Description
SUB		Subcontracted Test
TM045	MEWAM BOD5 2nd Ed.HMSO 1988 / Method 5210B, AWWA/APHA, 20th Ed., 1999; SCA Blue Book 130	Determination of BOD5 (ATU) Filtered by Oxygen Meter on liquids
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser
TM107	ISO 6060-1989	Determination of Chemical Oxygen Demand using COD Dr Lange Kit
TM152	ISO 17294-2:2016 Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS)	Analysis of Aqueous Samples by ICP-MS
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4, Standard Methods for the examination of waters and wastewaters 20th Edition, PHA, Washington DC, USA. ISBN 0-87553-235-7 and The Determination of Alkalinity and Acidity in water HMSO, 1981, ISBN 0 11 751601 5.	Determination of pH, EC, TDS and Alkalinity in Aqueous samples
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM343	EPA 8270D - Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of Selected Pesticides (Suite I) in Liquids by GCMS
TM344	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite II) by GCMS
TM411	Acid_Herbs_GCMS	Acid Herbs in Water by GCMS

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

Test Completion Dates

Lab Sample No(s)	25862967	25862955	25862899	25862713	25862807	25862829	25862840	25862849	25862763	25862752
Customer Sample Ref.	BH01	BH03	BH05	BH06	BH07	BH09	BH10	BH11	BH12	BH14
AGS Ref.	EW1	EW1	EW1	EW1	EW1	EW1	EW1	EW1	EW1	EW1
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Acid Herbicides by GCMS	04-Mar-2022					04-Mar-2022				
Ammonium Low	28-Feb-2022	28-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	28-Feb-2022	25-Feb-2022	25-Feb-2022
Anions by Kone (w)	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022
BOD True Total									01-Mar-2022	01-Mar-2022
Clostridium Perfringens*									02-Mar-2022	02-Mar-2022
COD Unfiltered									01-Mar-2022	01-Mar-2022
Cyanide Comp/Free/Total/Thiocyanate	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022
Dissolved Metals by ICP-MS	24-Feb-2022	24-Feb-2022	01-Mar-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	01-Mar-2022	24-Feb-2022	24-Feb-2022
Dissolved Organic/Inorganic Carbon	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022
EPH CWG (Aliphatic) Aqueous GC (W)	02-Mar-2022	02-Mar-2022	03-Mar-2022	03-Mar-2022	02-Mar-2022	03-Mar-2022	03-Mar-2022	02-Mar-2022	03-Mar-2022	02-Mar-2022
EPH CWG (Aromatic) Aqueous GC (W)	02-Mar-2022	02-Mar-2022	03-Mar-2022	03-Mar-2022	02-Mar-2022	03-Mar-2022	03-Mar-2022	02-Mar-2022	03-Mar-2022	02-Mar-2022
Faecal Coliforms (W)*									02-Mar-2022	02-Mar-2022
Faecal Streptococci (W)*									02-Mar-2022	02-Mar-2022
GRO by GC-FID (W)	26-Feb-2022	26-Feb-2022	26-Feb-2022	26-Feb-2022	26-Feb-2022	26-Feb-2022	26-Feb-2022	26-Feb-2022	26-Feb-2022	28-Feb-2022
Hexavalent Chromium (w)	26-Feb-2022	26-Feb-2022	26-Feb-2022	26-Feb-2022	26-Feb-2022	26-Feb-2022	26-Feb-2022	26-Feb-2022	26-Feb-2022	26-Feb-2022
Mercury Dissolved	25-Feb-2022	25-Feb-2022	01-Mar-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	01-Mar-2022	25-Feb-2022	25-Feb-2022
Nitrite by Kone (w)	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022
PAH Spec MS - Aqueous (W)	24-Feb-2022	01-Mar-2022	25-Feb-2022	25-Feb-2022	24-Feb-2022	25-Feb-2022	25-Feb-2022	01-Mar-2022	25-Feb-2022	24-Feb-2022
Pesticides (Suite I) by GCMS	28-Feb-2022					28-Feb-2022				
Pesticides (Suite II) by GCMS	28-Feb-2022					28-Feb-2022				
pH Value	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022
Phenols by HPLC (W)	25-Feb-2022	28-Feb-2022	25-Feb-2022	28-Feb-2022	25-Feb-2022	25-Feb-2022	28-Feb-2022	25-Feb-2022	25-Feb-2022	28-Feb-2022
Phosphate by Kone (w)									25-Feb-2022	25-Feb-2022
Sulphide	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022
SVOC MS (W) - Aqueous								25-Feb-2022	25-Feb-2022	
Total Coliforms(W)*									02-Mar-2022	02-Mar-2022
Total Metals by ICP-MS	01-Mar-2022	01-Mar-2022	25-Feb-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	25-Feb-2022	01-Mar-2022	01-Mar-2022
TPH CWG (W)	02-Mar-2022	02-Mar-2022	03-Mar-2022	03-Mar-2022	02-Mar-2022	03-Mar-2022	03-Mar-2022	02-Mar-2022	03-Mar-2022	02-Mar-2022
VOC MS (W)								25-Feb-2022	25-Feb-2022	

Lab Sample No(s)	25862860	25862931	25862920	25862910	25862874	25862696	25862885	25862795	25862732	25862742
Customer Sample Ref.	BH15	BH16	BH17	BH18	BH19	BH21	BH22	BH56	BH60	BH61
AGS Ref.	EW1	EW1	EW1	ES1	EW1	ES1	EW1	EW1	EW1	EW1
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Acid Herbicides by GCMS	04-Mar-2022					04-Mar-2022	04-Mar-2022			04-Mar-2022
Ammonium Low	25-Feb-2022	01-Mar-2022	25-Feb-2022	25-Feb-2022	28-Feb-2022	25-Feb-2022	28-Feb-2022	25-Feb-2022	28-Feb-2022	25-Feb-2022
Anions by Kone (w)	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022
Cyanide Comp/Free/Total/Thiocyanate	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022
Dissolved Metals by ICP-MS	01-Mar-2022	24-Feb-2022	01-Mar-2022	24-Feb-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022
Dissolved Organic/Inorganic Carbon	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022
EPH CWG (Aliphatic) Aqueous GC (W)	03-Mar-2022	03-Mar-2022	02-Mar-2022	03-Mar-2022	03-Mar-2022	02-Mar-2022	03-Mar-2022	03-Mar-2022	03-Mar-2022	03-Mar-2022
EPH CWG (Aromatic) Aqueous GC (W)	03-Mar-2022	03-Mar-2022	02-Mar-2022	03-Mar-2022	03-Mar-2022	02-Mar-2022	03-Mar-2022	03-Mar-2022	03-Mar-2022	03-Mar-2022
GRO by GC-FID (W)	26-Feb-2022	26-Feb-2022	26-Feb-2022	28-Feb-2022	26-Feb-2022	26-Feb-2022	26-Feb-2022	26-Feb-2022	26-Feb-2022	26-Feb-2022
Hexavalent Chromium (w)	26-Feb-2022	26-Feb-2022	26-Feb-2022	26-Feb-2022	26-Feb-2022	26-Feb-2022	26-Feb-2022	26-Feb-2022	26-Feb-2022	26-Feb-2022
Mercury Dissolved	01-Mar-2022	25-Feb-2022	01-Mar-2022	25-Feb-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022
Nitrite by Kone (w)	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022
PAH Spec MS - Aqueous (W)	25-Feb-2022	25-Feb-2022	24-Feb-2022	25-Feb-2022	25-Feb-2022	24-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	01-Mar-2022
Pesticides (Suite I) by GCMS	28-Feb-2022					28-Feb-2022	28-Feb-2022			28-Feb-2022
Pesticides (Suite II) by GCMS	28-Feb-2022					28-Feb-2022	28-Feb-2022			28-Feb-2022
pH Value	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022
Phenols by HPLC (W)	28-Feb-2022	01-Mar-2022	25-Feb-2022	28-Feb-2022	25-Feb-2022	28-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022
Sulphide	01-Mar-2022	01-Mar-2022	28-Feb-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022
SVOC MS (W) - Aqueous					25-Feb-2022					25-Feb-2022
Total Metals by ICP-MS	25-Feb-2022	25-Feb-2022	01-Mar-2022	01-Mar-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022
TPH CWG (W)	03-Mar-2022	03-Mar-2022	02-Mar-2022	03-Mar-2022	03-Mar-2022	02-Mar-2022	03-Mar-2022	03-Mar-2022	03-Mar-2022	03-Mar-2022
VOC MS (W)					25-Feb-2022					25-Feb-2022

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Lab Sample No(s)	25862941	25862818	25862784	25862978	25862722	25862774
Customer Sample Ref.	WS08	WS12	WS15	WS26	WS31	WS54
AGS Ref.	EW1	ES1	EW1	EW1	EW1	EW1
Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Acid Herbicides by GCMS			04-Mar-2022	04-Mar-2022		
Ammonium Low	28-Feb-2022	25-Feb-2022	28-Feb-2022	28-Feb-2022	28-Feb-2022	25-Feb-2022
Anions by Kone (w)	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022
BOD True Total						01-Mar-2022
Clostridium Perfringens*						02-Mar-2022
COD Unfiltered						01-Mar-2022
Cyanide Comp/Free/Total/Thiocyanate	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022
Dissolved Metals by ICP-MS	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022
Dissolved Organic/Inorganic Carbon	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022
EPH CWG (Aliphatic) Aqueous GC (W)	03-Mar-2022	02-Mar-2022	03-Mar-2022	02-Mar-2022	02-Mar-2022	03-Mar-2022
EPH CWG (Aromatic) Aqueous GC (W)	03-Mar-2022	02-Mar-2022	03-Mar-2022	02-Mar-2022	02-Mar-2022	03-Mar-2022
Faecal Coliforms (W)*						02-Mar-2022
Faecal Streptococci (W)*						02-Mar-2022
GRO by GC-FID (W)	26-Feb-2022	26-Feb-2022	26-Feb-2022	26-Feb-2022	26-Feb-2022	26-Feb-2022
Hexavalent Chromium (w)	26-Feb-2022	26-Feb-2022	26-Feb-2022	26-Feb-2022	26-Feb-2022	26-Feb-2022
Mercury Dissolved	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022
Nitrite by Kone (w)	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022
PAH Spec MS - Aqueous (W)	25-Feb-2022	01-Mar-2022	25-Feb-2022	24-Feb-2022	24-Feb-2022	25-Feb-2022
Pesticides (Suite I) by GCMS			28-Feb-2022	28-Feb-2022		
Pesticides (Suite II) by GCMS			28-Feb-2022	28-Feb-2022		
pH Value	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022
Phenols by HPLC (W)	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022
Phosphate by Kone (w)						25-Feb-2022
Sulphide	01-Mar-2022	01-Mar-2022	01-Mar-2022	28-Feb-2022	01-Mar-2022	01-Mar-2022
SVOC MS (W) - Aqueous						25-Feb-2022
Total Coliforms(W)*						02-Mar-2022
Total Metals by ICP-MS	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022
TPH CWG (W)	03-Mar-2022	02-Mar-2022	03-Mar-2022	02-Mar-2022	02-Mar-2022	03-Mar-2022
VOC MS (W)						25-Feb-2022

ASSOCIATED AQC DATA

Acid Herbicides by GCMS

Component	Method Code	QC 2542	QC 2560
2,3,6-TBA (Raw)	TM411	**100.15** 72.24 : 118.28	**101.54** 72.24 : 118.28
2,4,5-T (Raw)	TM411	**92.13** 66.88 : 130.00	**85.59** 66.88 : 130.00
2,4-D (Raw)	TM411	**110.71** 68.29 : 133.58	**108.57** 68.29 : 133.58
2,4-DB (Raw)	TM411	**74.93** 57.23 : 133.50	**85.91** 57.23 : 133.50
Benazolin (Raw)	TM411	**110.04** 78.76 : 146.78	**110.44** 78.76 : 146.78
Bromoxynil (Raw)	TM411	**99.09** 77.69 : 118.97	**101.84** 77.69 : 118.97
Clopyralid (Raw)	TM411	**93.51** 64.11 : 124.08	**101.44** 64.11 : 124.08
Dicamba (Raw)	TM411	**104.76** 77.45 : 123.02	**111.01** 77.45 : 123.02
Dichloroprop (Raw)	TM411	**104.23** 74.86 : 126.35	**91.73** 74.86 : 126.35
DNOC (Raw)	TM411	**88.92** 65.53 : 129.07	**88.82** 65.53 : 129.07
Fenoprop (Raw)	TM411	**82.37** 74.33 : 126.19	**89.15** 74.33 : 126.19
Fluroxypyr (Raw)	TM411	**89.66** 80.51 : 140.78	**107.2** 80.51 : 140.78
Ioxynil (Raw)	TM411	**107.5** 42.19 : 122.44	**112.06** 42.19 : 122.44
MCPA (Raw)	TM411	**100.22** 79.83 : 124.11	**95.67** 79.83 : 124.11
MCPB (Raw)	TM411	**77.16** 33.12 : 147.97	**84.84** 33.12 : 147.97
Mecoprop (Raw)	TM411	**108.83** 80.77 : 125.74	**101.1** 80.77 : 125.74
Pentachlorophenol (Raw)	TM411	**90.3** 76.67 : 131.12	**108.46** 76.67 : 131.12
Triclopyr (Raw)	TM411	**84.05** 69.64 : 132.21	**86.25** 69.64 : 132.21

Ammonium Low

Component	Method Code	QC 2550	QC 2566	QC 2578	QC 2512	QC 2522	QC 2526
Ammoniacal Nitrogen as N	TM099	**104.0** 96.00 : 108.00	**103.4** 96.00 : 108.00	**103.0** 96.00 : 108.00	**100.4** 96.00 : 108.00	**105.2** 96.00 : 108.00	**102.6** 96.00 : 108.00

Anions by Kone (w)

Anions by Kone (w)

Component	Method Code	QC 2577	QC 2595
Sulphate (soluble)	TM184	**105.6** 91.99 : 109.30	**105.6** 91.99 : 109.30
TON as NO3	TM184	**97.0** 90.35 : 108.35	**97.5** 90.35 : 108.35

BOD True Total

Component	Method Code	QC 2520
BOD	TM045	**87.44** 72.19 : 121.74

COD Unfiltered

Component	Method Code	QC 2564	QC 2588
COD	TM107	**102.66** 97.45 : 103.77	**102.47** 97.45 : 103.77

Cyanide Comp/Free/Total/Thiocyanate

Component	Method Code	QC 2564	QC 2587
Free Cyanide (W)	TM227	**81.0** 80.33 : 126.33	**81.5** 80.33 : 126.33
Thiocyanate (W)	TM227	**102.25** 84.05 : 116.45	**102.25** 84.05 : 116.45
Total Cyanide (W)	TM227	**104.25** 79.19 : 117.11	**104.75** 79.19 : 117.11

Dissolved Metals by ICP-MS

Component	Method Code	QC 2546	QC 2560	QC 2590
Aluminium	TM152	**105.67** 90.98 : 111.82	**105.33** 90.98 : 111.82	**103.0** 90.98 : 111.82
Antimony	TM152	**102.83** 90.44 : 113.04	**103.83** 90.44 : 113.04	**102.33** 90.44 : 113.04
Arsenic	TM152	**103.83** 94.87 : 109.67	**104.5** 94.87 : 109.67	**102.67** 94.87 : 109.67
Barium	TM152	**103.0** 90.20 : 111.19	**103.5** 90.20 : 111.19	**99.83** 90.20 : 111.19
Beryllium	TM152	**105.5** 87.77 : 113.97	**105.0** 87.77 : 113.97	**103.67** 87.77 : 113.97
Bismuth	TM152	**106.33** 91.90 : 112.20	**107.83** 91.90 : 112.20	**103.67** 91.90 : 112.20
Borate	TM152	**106.79** 88.00 : 112.00	**105.56** 88.00 : 112.00	**102.47** 88.00 : 112.00
Boron	TM152	**106.67** 92.27 : 112.40	**105.67** 92.27 : 112.40	**102.67** 92.27 : 112.40

Dissolved Metals by ICP-MS

		QC 2546	QC 2560	QC 2590
Cadmium	TM152	**106.5** 96.43 : 110.53	**106.5** 96.43 : 110.53	**102.5** 96.43 : 110.53
Calcium	TM152	**104.0** 95.14 : 110.01	**103.33** 95.14 : 110.01	**103.33** 95.14 : 110.01
Chromium	TM152	**103.5** 91.84 : 108.67	**103.33** 91.84 : 108.67	**100.5** 91.84 : 108.67
Cobalt	TM152	**103.33** 90.72 : 109.61	**104.17** 90.72 : 109.61	**100.0** 90.72 : 109.61
Copper	TM152	**104.67** 94.47 : 109.05	**104.33** 94.47 : 109.05	**100.83** 94.47 : 109.05
Iron	TM152	**104.0** 94.40 : 107.90	**104.0** 94.40 : 107.90	**99.33** 94.40 : 107.90
Lead	TM152	**105.33** 93.55 : 109.46	**106.17** 93.55 : 109.46	**102.0** 93.55 : 109.46
Lithium	TM152	**105.0** 91.62 : 113.12	**105.33** 91.62 : 113.12	**103.0** 91.62 : 113.12
Magnesium	TM152	**104.0** 92.30 : 110.57	**104.67** 92.30 : 110.57	**104.0** 92.30 : 110.57
Manganese	TM152	**105.17** 94.75 : 108.21	**103.5** 94.75 : 108.21	**100.33** 94.75 : 108.21
Molybdenum	TM152	**102.17** 93.55 : 107.66	**103.0** 93.55 : 107.66	**101.5** 93.55 : 107.66
Nickel	TM152	**103.33** 88.00 : 112.00	**104.17** 88.00 : 112.00	**101.17** 88.00 : 112.00
Phosphorus	TM152	**103.17** 92.51 : 109.27	**103.17** 92.51 : 109.27	**101.0** 92.51 : 109.27
Potassium	TM152	**103.33** 92.16 : 109.93	**103.33** 92.16 : 109.93	**102.67** 92.16 : 109.93
Selenium	TM152	**104.83** 91.58 : 115.98	**105.33** 91.58 : 115.98	**101.33** 91.58 : 115.98
Silver	TM152	**104.83** 92.75 : 111.05	**106.17** 92.75 : 111.05	**101.67** 92.75 : 111.05
Sodium	TM152	**103.33** 89.47 : 109.62	**102.67** 89.47 : 109.62	**102.0** 89.47 : 109.62
Strontium	TM152	**104.33** 95.40 : 109.43	**103.33** 95.40 : 109.43	**101.67** 95.40 : 109.43
Tellurium	TM152	**107.0** 93.32 : 114.66	**107.83** 93.32 : 114.66	**103.83** 93.32 : 114.66
Thallium	TM152	**101.0** 88.00 : 112.00	**102.0** 88.00 : 112.00	**97.67** 88.00 : 112.00
Tin	TM152	**103.5** 92.63 : 109.70	**103.17** 92.63 : 109.70	**101.17** 92.63 : 109.70
Titanium	TM152	**104.83** 95.58 : 111.68	**106.17** 95.58 : 111.68	**101.67** 95.58 : 111.68
Tungsten	TM152	**102.0** 94.68 : 107.68	**102.0** 94.68 : 107.68	**101.17** 94.68 : 107.68
Uranium	TM152	**105.83** 88.00 : 112.00	**105.0** 88.00 : 112.00	**101.33** 88.00 : 112.00
Vanadium	TM152	**104.0** 88.00 : 112.00	**106.33** 88.00 : 112.00	**104.33** 88.00 : 112.00
Zinc	TM152	**105.33** 95.31 : 110.74	**105.0** 95.31 : 110.74	**102.33** 95.31 : 110.74

Dissolved Organic/Inorganic Carbon

Dissolved Organic/Inorganic Carbon

Component	Method Code	QC 2501	QC 2509
Dissolved Inorganic Carbon	TM090	**104.83** 93.58 : 112.28	**101.5** 93.58 : 112.28
Dissolved Organic Carbon	TM090	**101.17** 97.42 : 107.52	**101.33** 97.42 : 107.52

EPH CWG (Aliphatic) Aqueous GC (W)

Component	Method Code	QC 2558	QC 2515
Total Aliphatics >C10-C40	TM174	**107.92** 69.79 : 134.39	**108.58** 69.79 : 134.39

EPH CWG (Aromatic) Aqueous GC (W)

Component	Method Code	QC 2565	QC 2528
Total Aromatics >EC10-EC40	TM174	**90.98** 59.92 : 128.54	**88.05** 59.92 : 128.54

GRO by GC-FID (W)

Component	Method Code	QC 2536	QC 2540	QC 2520
Benzene by GC	TM245	**96.5** 83.48 : 117.21	**96.5** 83.48 : 117.21	**98.0** 83.48 : 117.21
Ethylbenzene by GC	TM245	**97.5** 84.11 : 114.89	**101.0** 84.11 : 114.89	**102.5** 84.11 : 114.89
m & p Xylene by GC	TM245	**97.5** 83.73 : 116.33	**100.25** 83.73 : 116.33	**102.0** 83.73 : 116.33
MTBE GC-FID	TM245	**97.0** 84.42 : 117.50	**93.0** 84.42 : 117.50	**94.0** 84.42 : 117.50
o Xylene by GC	TM245	**98.5** 85.03 : 117.59	**100.0** 85.03 : 117.59	**101.5** 85.03 : 117.59
QC	TM245	**69.27** 51.91 : 123.63	**77.29** 51.91 : 123.63	**77.88** 51.91 : 123.63
Toluene by GC	TM245	**97.5** 84.73 : 116.85	**99.5** 84.73 : 116.85	**101.5** 84.73 : 116.85

Hexavalent Chromium (w)

Component	Method Code	QC 2516	QC 2526
Hexavalent Chromium	TM241	**97.0** 94.17 : 106.17	**99.8** 94.17 : 106.17

Mercury Dissolved

Mercury Dissolved

Component	Method Code	QC 2591	QC 2586
Mercury Dissolved (CVAF)	TM183	**96.1** 0.00 : 0.00	**99.9** 69.30 : 128.70

PAH Spec MS - Aqueous (W)

Component	Method Code	QC 2571	QC 2543	QC 2583	QC 2524
Acenaphthene by GCMS	TM178	**106.4** 98.40 : 117.60	**108.0** 100.00 : 119.20	**115.2** 100.00 : 119.20	**112.8** 100.00 : 119.20
Acenaphthylene by GCMS	TM178	**106.4** 96.80 : 118.40	**109.2** 95.20 : 119.20	**115.6** 95.20 : 119.20	**110.0** 95.20 : 119.20
Anthracene by GCMS	TM178	**107.6** 94.40 : 116.00	**108.0** 91.60 : 113.20	**110.4** 91.60 : 113.20	**108.0** 91.60 : 113.20
Benz(a)anthracene by GCMS	TM178	**104.8** 92.80 : 116.80	**106.4** 90.40 : 119.20	**114.0** 90.40 : 119.20	**107.6** 90.40 : 119.20
Benzo(a)pyrene by GCMS	TM178	**108.8** 89.43 : 118.57	**106.8** 92.80 : 119.20	**112.8** 92.80 : 119.20	**112.4** 92.80 : 119.20
Benzo(b)fluoranthene by GCMS	TM178	**103.6** 87.80 : 121.80	**109.2** 89.60 : 120.80	**107.2** 89.60 : 120.80	**113.6** 89.60 : 120.80
Benzo(ghi)perylene by GCMS	TM178	**107.2** 92.00 : 116.00	**106.8** 93.20 : 117.20	**114.0** 93.20 : 117.20	**107.2** 93.20 : 117.20
Benzo(k)fluoranthene by GCMS	TM178	**115.2** 88.72 : 111.28	**109.2** 96.40 : 120.40	**104.8** 96.40 : 120.40	**112.8** 96.40 : 120.40
Chrysene by GCMS	TM178	**105.6** 88.68 : 116.92	**104.0** 96.40 : 125.20	**109.2** 96.40 : 125.20	**103.6** 96.40 : 125.20
Dibenzo(ah)anthracene by GCMS	TM178	**99.2** 86.24 : 118.56	**100.8** 92.00 : 113.60	**109.2** 92.00 : 113.60	**103.2** 92.00 : 113.60
Fluoranthene by GCMS	TM178	**106.0** 91.20 : 117.60	**108.4** 91.20 : 117.60	**115.6** 91.20 : 117.60	**104.4** 91.20 : 117.60
Fluorene by GCMS	TM178	**108.8** 90.76 : 121.24	**111.2** 95.60 : 122.00	**116.0** 95.60 : 122.00	**113.6** 95.60 : 122.00
Indeno(123cd)pyrene by GCMS	TM178	**106.4** 88.39 : 119.61	**102.8** 90.40 : 112.00	**108.0** 90.40 : 112.00	**105.2** 90.40 : 112.00
Naphthalene by GCMS	TM178	**111.6** 98.00 : 119.60	**112.4** 98.00 : 122.00	**118.0** 98.00 : 122.00	**117.2** 98.00 : 122.00
Phenanthrene by GCMS	TM178	**107.2** 96.00 : 117.60	**108.8** 94.00 : 120.40	**112.4** 94.00 : 120.40	**111.2** 94.00 : 120.40
Pyrene by GCMS	TM178	**109.6** 91.00 : 120.20	**110.8** 92.40 : 118.80	**114.8** 92.40 : 118.80	**102.8** 92.40 : 118.80

Pesticides (Suite I) by GCMS

Component	Method Code	QC 2503
Aldrin - (Inst.)	TM343	**117.44** 59.75 : 143.00
alpha-HCH - (Inst.)	TM343	**98.28** 75.13 : 166.63
beta-HCH - (Inst.)	TM343	**100.14** 85.48 : 166.48
cis-Chlordane - (Inst.)	TM343	**99.17** 71.70 : 156.00

Pesticides (Suite I) by GCMS

		QC 2503
delta-HCH - (Inst.)	TM343	**106.36** 83.98 : 156.58
Dieldrin - (Inst.)	TM343	**97.0** 77.45 : 154.10
Endosulphan I - (Inst.)	TM343	**93.97** 91.30 : 168.70
Endosulphan II - (Inst.)	TM343	**105.93** 82.68 : 161.13
Endosulphan Sulphate - (Inst.)	TM343	**98.05** 69.65 : 165.95
Endrin - (Inst.)	TM343	**89.4** 81.33 : 178.68
gamma-HCH (Lindane) - (Inst.)	TM343	**97.2** 83.15 : 175.40
Heptachlor - (Inst.)	TM343	**94.32** 63.65 : 167.80
Heptachlor epoxide - (Inst.)	TM343	**104.64** 73.28 : 159.38
Isodrin - (Inst.)	TM343	**122.77** 58.34 : 153.81
o,p-DDD (TDE) - (Inst.)	TM343	**105.66** 66.93 : 162.03
o,p-DDE - (Inst.)	TM343	**107.95** 64.68 : 156.78
o,p-DDT - (Inst.)	TM343	**86.47** 72.20 : 170.15
o,p-Methoxychlor - (Inst.)	TM343	**90.73** 73.33 : 171.13
p,p-DDD (TDE) - (Inst.)	TM343	**114.16** 67.95 : 160.20
p,p-DDE - (Inst.)	TM343	**102.71** 67.80 : 159.45
p,p-DDT - (Inst.)	TM343	**82.15** 68.30 : 178.25
p,p-Methoxychlor - (Inst.)	TM343	**84.55** 66.94 : 176.47
Permethrin I - (Inst.)	TM343	**119.39** 63.25 : 146.35
Permethrin II - (Inst.)	TM343	**104.04** 66.00 : 151.80
trans-Chlordane - (Inst.)	TM343	**102.74** 71.68 : 165.88
Trifluralin - (Inst.)	TM343	**98.43** 64.73 : 161.48

pH Value

Component	Method Code	QC 2552	QC 2552	QC 2555	QC 2558
pH	TM256	**100.67** 99.20 : 102.41	**100.27** 99.20 : 102.41	**100.27** 99.20 : 102.41	**100.27** 99.20 : 102.41

Phenols by HPLC (W)

Component	Method Code	QC 2538	QC 2551	QC 2572	QC 2579
2.3.5 Trimethyl-Phenol by HPLC (W)	TM259	**93.75** 76.00 : 124.00	**93.75** 76.00 : 124.00	**95.7** 76.00 : 124.00	**93.75** 76.00 : 124.00
2-Isopropyl Phenol by HPLC (W)	TM259	**91.78** 76.00 : 124.00	**91.78** 76.00 : 124.00	**95.6** 76.00 : 124.00	**91.78** 76.00 : 124.00
Cresols by HPLC (W)	TM259	**94.08** 76.00 : 124.00	**96.05** 76.00 : 124.00	**96.71** 76.00 : 124.00	**96.71** 76.00 : 124.00
Napthol by HPLC (W)	TM259	**91.8** 76.00 : 124.00	**95.7** 76.00 : 124.00	**95.7** 76.00 : 124.00	**95.7** 76.00 : 124.00
Phenol by HPLC (W)	TM259	**90.74** 76.00 : 124.00	**90.74** 76.00 : 124.00	**90.74** 76.00 : 124.00	**92.63** 76.00 : 124.00
Xylenols by HPLC (W)	TM259	**90.51** 76.00 : 124.00	**93.35** 76.00 : 124.00	**93.67** 76.00 : 124.00	**93.04** 76.00 : 124.00

Phosphate by Kone (w)

Component	Method Code	QC 2560	QC 2566
Phosphate (Ortho as PO4)	TM184	**102.4** 95.60 : 107.60	**101.6** 95.60 : 107.60

Sulphide

Component	Method Code	QC 2575	QC 2508	QC 2536
Sulphide	TM101	**110.0** 88.67 : 116.67	**105.33** 88.67 : 116.67	**110.0** 88.67 : 116.67

SVOC MS (W) - Aqueous

Component	Method Code	QC 2523
4-Bromophenylphenylether	TM176	**88.8** 52.80 : 111.84
Benzo(a)anthracene	TM176	**85.6** 59.28 : 107.76
Benzo(a)pyrene	TM176	**79.2** 54.40 : 105.76
Butylbenzyl phthalate	TM176	**79.36** 51.68 : 117.92
Hexachlorobutadiene	TM176	**75.84** 46.40 : 93.44
Naphthalene	TM176	**98.4** 63.04 : 111.04
Nitrobenzene	TM176	**82.4** 59.92 : 108.40
Phenol	TM176	**52.8** 36.88 : 72.40

Total Metals by ICP-MS

Total Metals by ICP-MS

Component	Method Code	QC 2590	QC 2577
Aluminium	TM152	**104.33** 94.52 : 115.29	**105.0** 88.99 : 114.16
Antimony	TM152	**105.33** 95.49 : 120.08	**106.83** 93.05 : 123.32
Arsenic	TM152	**104.83** 96.52 : 112.66	**106.5** 97.95 : 112.90
Barium	TM152	**103.0** 93.42 : 112.02	**107.0** 95.11 : 116.80
Beryllium	TM152	**108.83** 94.31 : 118.42	**106.83** 96.06 : 116.39
Bismuth	TM152	**104.83** 96.01 : 116.68	**108.0** 93.21 : 113.89
Boron	TM152	**107.33** 93.80 : 119.51	**108.33** 86.68 : 117.67
Cadmium	TM152	**102.33** 97.46 : 112.99	**108.5** 96.08 : 112.92
Calcium	TM152	**104.0** 95.21 : 112.87	**104.67** 95.17 : 121.17
Chromium	TM152	**103.17** 92.14 : 112.07	**105.83** 97.65 : 111.90
Cobalt	TM152	**103.17** 91.80 : 113.60	**106.33** 96.52 : 113.04
Copper	TM152	**104.17** 94.02 : 114.05	**106.17** 97.32 : 113.53
Iron	TM152	**103.33** 93.62 : 111.65	**106.0** 96.27 : 111.69
Lead	TM152	**103.83** 93.06 : 113.74	**104.83** 96.90 : 113.51
Lithium	TM152	**106.83** 89.26 : 119.04	**106.17** 94.68 : 116.74
Magnesium	TM152	**106.0** 90.21 : 113.53	**104.67** 92.42 : 114.10
Manganese	TM152	**103.83** 92.63 : 111.13	**106.67** 97.04 : 112.45
Molybdenum	TM152	**102.0** 90.69 : 112.73	**106.5** 90.74 : 110.67
Nickel	TM152	**104.0** 92.80 : 112.94	**106.5** 97.57 : 113.15
Phosphorus	TM152	**104.83** 89.80 : 113.16	**103.5** 96.28 : 113.79
Potassium	TM152	**104.67** 91.26 : 116.75	**104.0** 96.14 : 114.83
Selenium	TM152	**105.0** 88.44 : 113.86	**107.0** 96.70 : 113.86
Silver	TM152	**105.0** 88.22 : 124.02	**108.33** 82.13 : 120.33
Sodium	TM152	**104.67** 88.41 : 117.39	**103.33** 92.77 : 115.64
Strontium	TM152	**102.67** 90.72 : 114.82	**106.33** 90.72 : 114.82
Tellurium	TM152	**107.17** 100.53 : 113.91	**109.0** 95.55 : 115.82
Thallium	TM152	**94.33** 84.25 : 117.85	**106.83** 80.92 : 114.72

Total Metals by ICP-MS

		QC 2590	QC 2577
Tin	TM152	**103.67** 93.65 : 112.33	**107.0** 96.04 : 111.04
Titanium	TM152	**103.67** 93.82 : 116.72	**104.17** 96.48 : 114.94
Uranium	TM152	**102.5** 90.58 : 113.28	**106.0** 95.56 : 112.07
Vanadium	TM152	**104.5** 88.43 : 114.30	**104.5** 88.43 : 114.30
Zinc	TM152	**107.0** 95.48 : 113.79	**107.33** 97.95 : 113.95

VOC MS (W)

Component	Method Code	QC 2560	QC 2520
1,1,1,2-Tetrachloroethane	TM208	**106.0** 88.70 : 111.32	**105.0** 87.33 : 109.74
1,1,1-Trichloroethane	TM208	**101.5** 87.87 : 111.93	**100.5** 84.96 : 115.65
1,1-Dichloroethane	TM208	**102.0** 82.09 : 116.41	**101.5** 79.60 : 118.57
1,2-Dichloroethane	TM208	**100.5** 80.28 : 123.63	**107.5** 77.72 : 133.33
2-Chlorotoluene	TM208	**105.5** 83.31 : 110.91	**102.5** 82.89 : 116.61
4-Chlorotoluene	TM208	**105.5** 84.01 : 111.46	**101.5** 79.46 : 115.88
Benzene	TM208	**102.0** 87.46 : 118.30	**102.5** 88.14 : 120.48
Bromomethane	TM208	**100.5** 76.99 : 118.39	**99.0** 79.31 : 116.90
Carbontetrachloride	TM208	**104.5** 81.73 : 114.22	**102.0** 86.16 : 119.10
Chlorobenzene	TM208	**106.5** 90.24 : 109.71	**103.5** 89.56 : 113.29
Chloroform	TM208	**103.0** 83.67 : 118.08	**104.0** 83.01 : 121.64
Chloromethane	TM208	**103.0** 70.42 : 127.06	**99.5** 71.84 : 134.90
Cis-1,2-Dichloroethene	TM208	**102.5** 83.95 : 112.60	**105.5** 86.31 : 117.30
Dichloromethane	TM208	**99.0** 81.65 : 120.83	**103.5** 78.23 : 120.65
Ethylbenzene	TM208	**103.0** 85.59 : 106.44	**103.5** 79.55 : 110.51
Hexachlorobutadiene	TM208	**98.0** 66.83 : 108.27	**105.5** 68.58 : 117.78
o-Xylene	TM208	**103.5** 88.07 : 108.02	**105.0** 85.06 : 114.91
p/m-Xylene	TM208	**103.5** 82.64 : 112.12	**104.5** 85.78 : 109.72
Tert-butyl methyl ether	TM208	**96.5** 68.23 : 127.69	**106.0** 68.39 : 125.81
Tetrachloroethene	TM208	**104.0** 89.20 : 109.87	**100.0** 82.09 : 113.14

VOC MS (W)

		QC 2560	QC 2520
Toluene	TM208	**103.5** 87.40 : 109.78	**103.0** 79.88 : 116.83
Trichloroethene	TM208	**102.5** 89.09 : 109.64	**100.0** 82.30 : 112.45
Vinyl Chloride	TM208	**102.5** 72.73 : 123.40	**100.0** 71.34 : 122.34

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

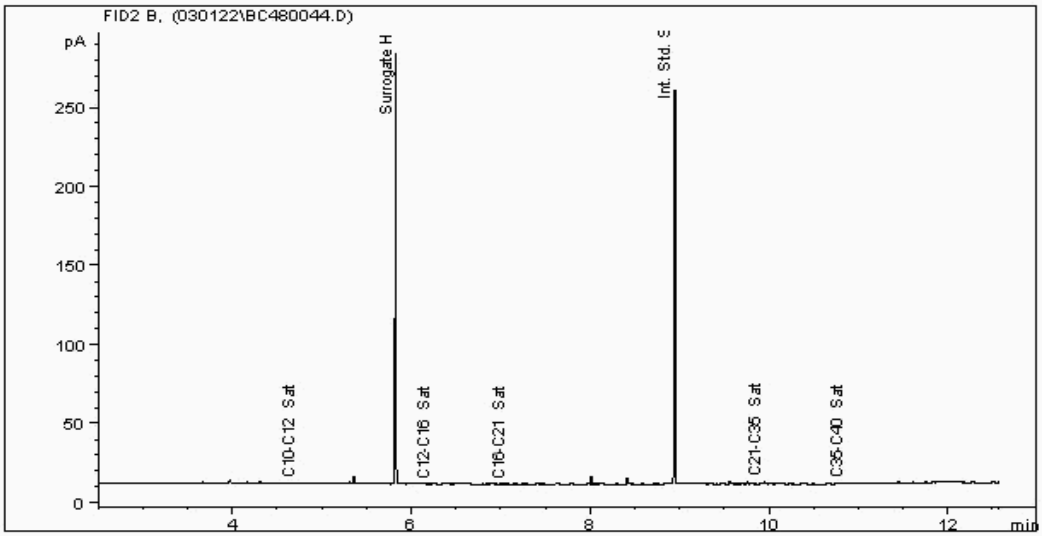
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25864629 **Depth :** 0.00 - 0.00
Sample ID : BH16

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 24144163-
Date Acquired : 02/03/2022 03:56:17 PM
Units : ppb
Dilution : SE BH16[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	178.2	0.197
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	Int. Std. S	198.7	0.250
6	C21-C35 Sat	0.0	0.000
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	376.9	



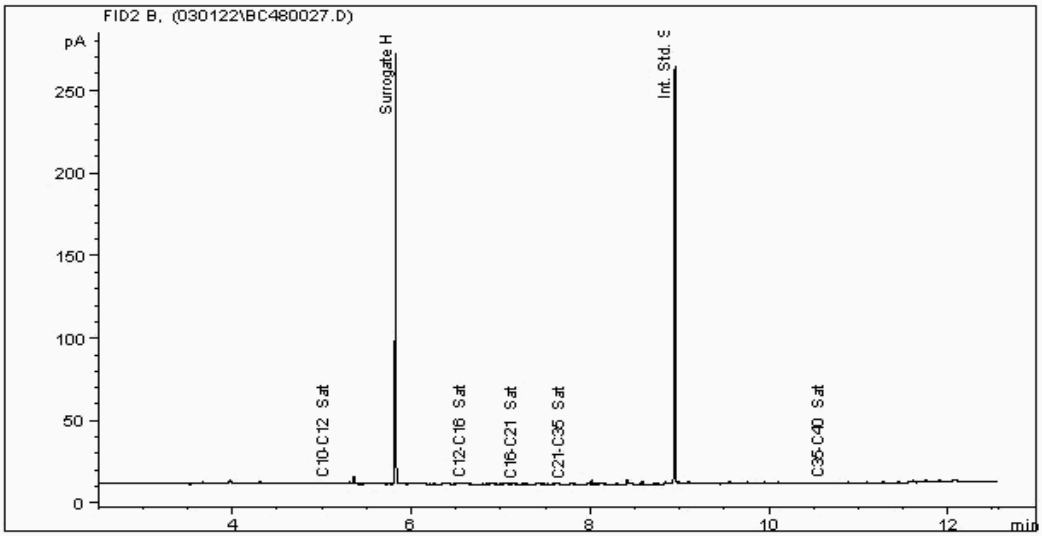
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25864799 **Depth :** 0.00 - 0.00
Sample ID : BH01

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 24144222-
Date Acquired : 01/03/2022 21:36:45 PM
Units : ppb
Dilution : SE BH01[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	177.7	0.193
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	202.1	0.250
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	379.8	



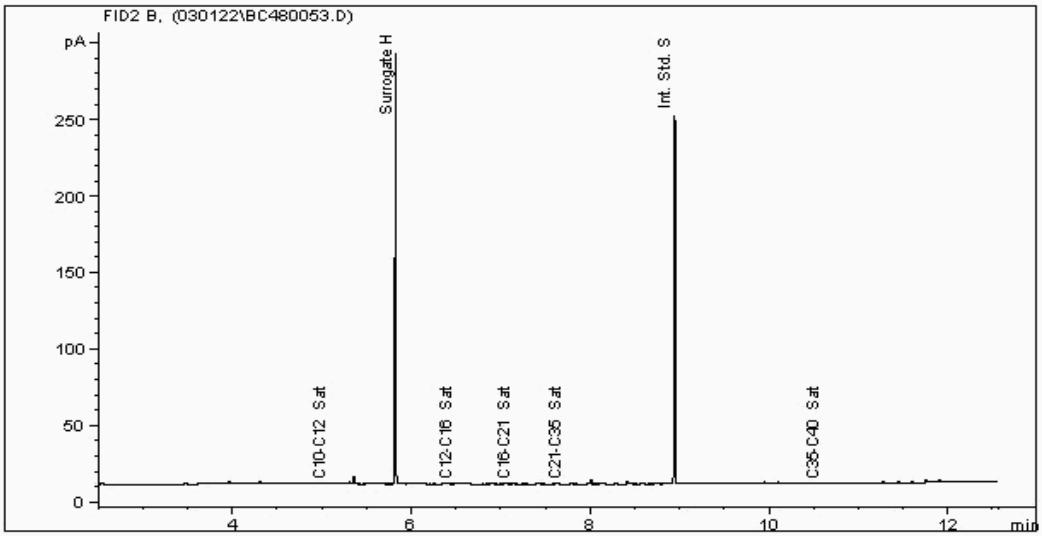
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25864871 **Depth :** 0.00 - 0.00
Sample ID : BH61

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 24143779-
Date Acquired : 02/03/2022 07:25:20 PM
Units : ppb
Dilution : SE BH61[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	186.7	0.208
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	197.0	0.250
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	383.6	



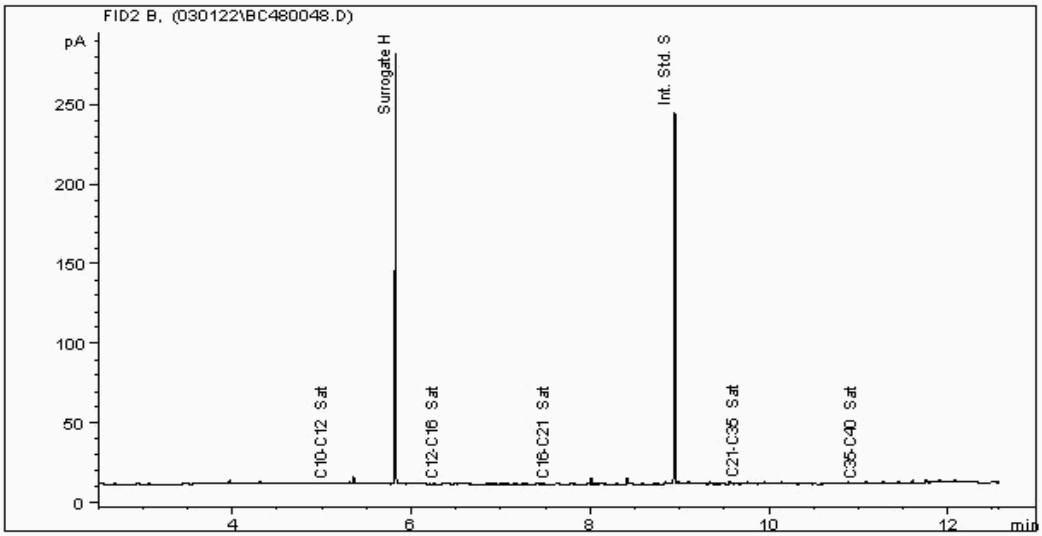
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25864888 **Depth :** 0.00 - 0.00
Sample ID : WS15

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 24143902-
Date Acquired : 02/03/2022 05:29:06 PM
Units : ppb
Dilution : SE WS15[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	171.9	0.203
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	Int. Std. S	186.3	0.250
6	C21-C35 Sat	0.0	0.000
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	358.2	



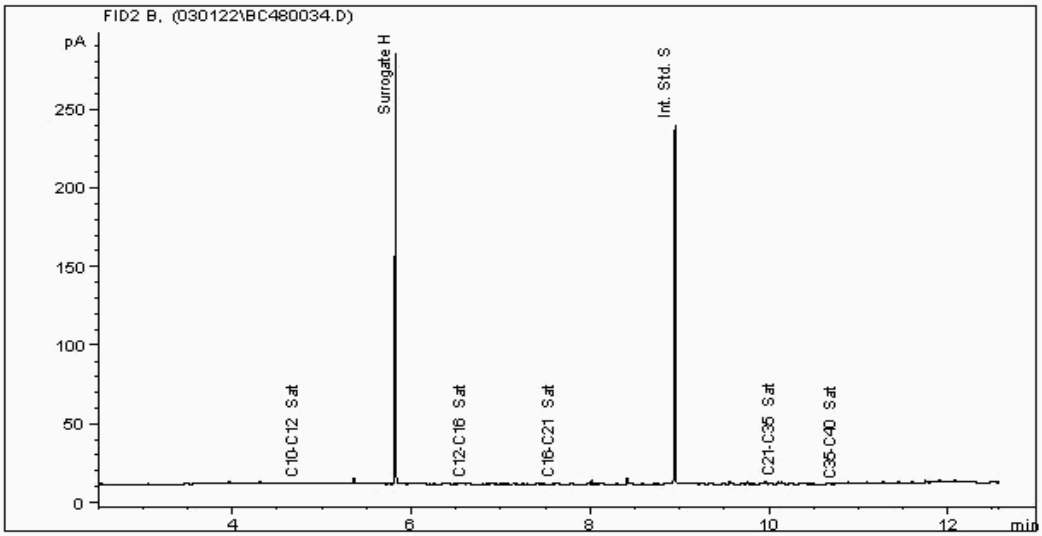
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25864913 **Depth :** 0.00 - 0.00
Sample ID : BH07

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 24143942-
Date Acquired : 02/03/2022 00:18:51 PM
Units : ppb
Dilution : SE BH07[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	174.4	0.204
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	Int. Std. S	187.7	0.250
6	C21-C35 Sat	0.0	0.000
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	362.1	



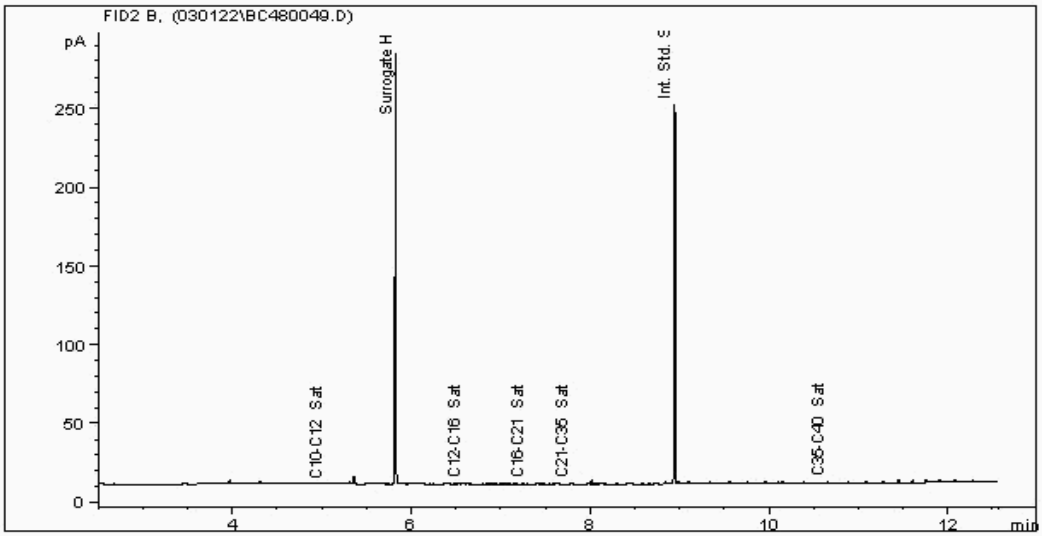
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25864926 **Depth :** 0.00 - 0.00
Sample ID : BH56

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 24143924-
Date Acquired : 02/03/2022 05:52:24 PM
Units : ppb
Dilution : SE BH56[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	185.1	0.207
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	196.8	0.250
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	381.9	



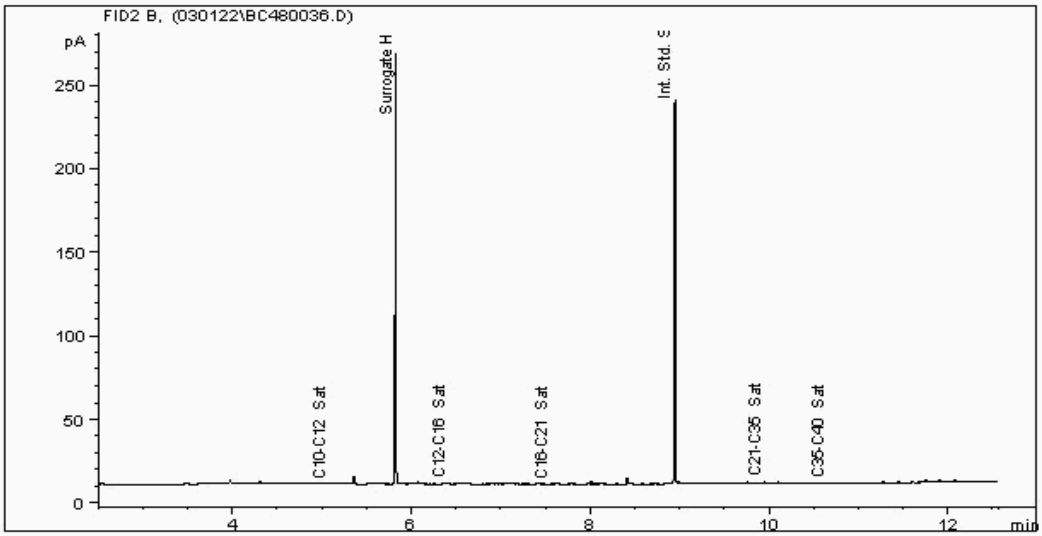
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25864929 **Depth :** 0.00 - 0.00
Sample ID : BH21

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 24143701-
Date Acquired : 02/03/2022 01:05:16 PM
Units : ppb
Dilution : SE BH21[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	172.4	0.204
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	Int. Std. S	186.3	0.250
6	C21-C35 Sat	0.0	0.000
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	358.7	



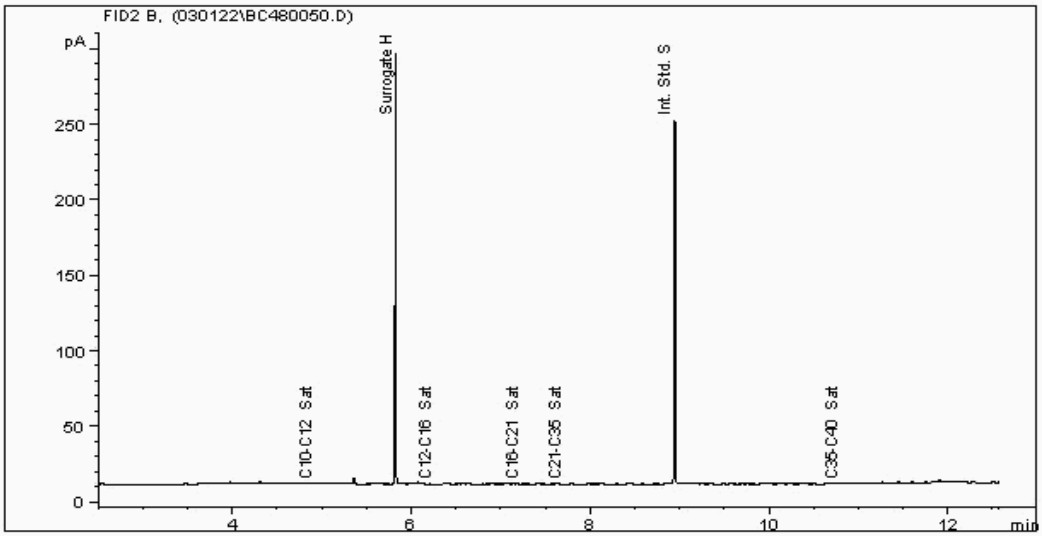
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25864932 **Depth :** 0.00 - 0.00
Sample ID : BH60

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 24143761-
Date Acquired : 02/03/2022 06:15:29 PM
Units : ppb
Dilution : SE BH60[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	186.6	0.202
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	203.6	0.250
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	390.3	



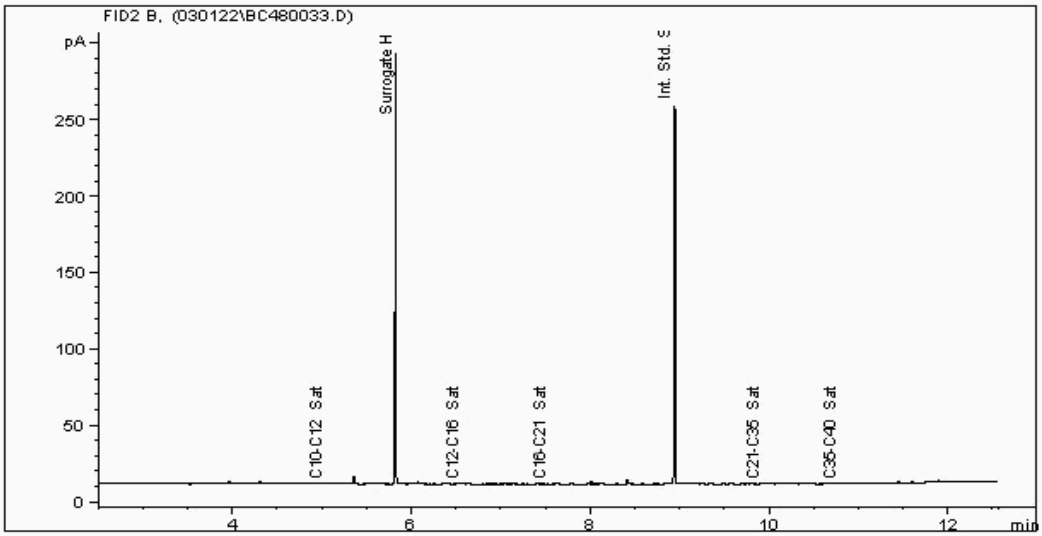
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25864943 **Depth :** 0.00 - 0.00
Sample ID : WS26

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 24144243-
Date Acquired : 01/03/2022 23:55:48 PM
Units : ppb
Dilution : SE WS26[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	182.5	0.203
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	Int. Std. S	197.3	0.250
6	C21-C35 Sat	0.0	0.000
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	379.8	



CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

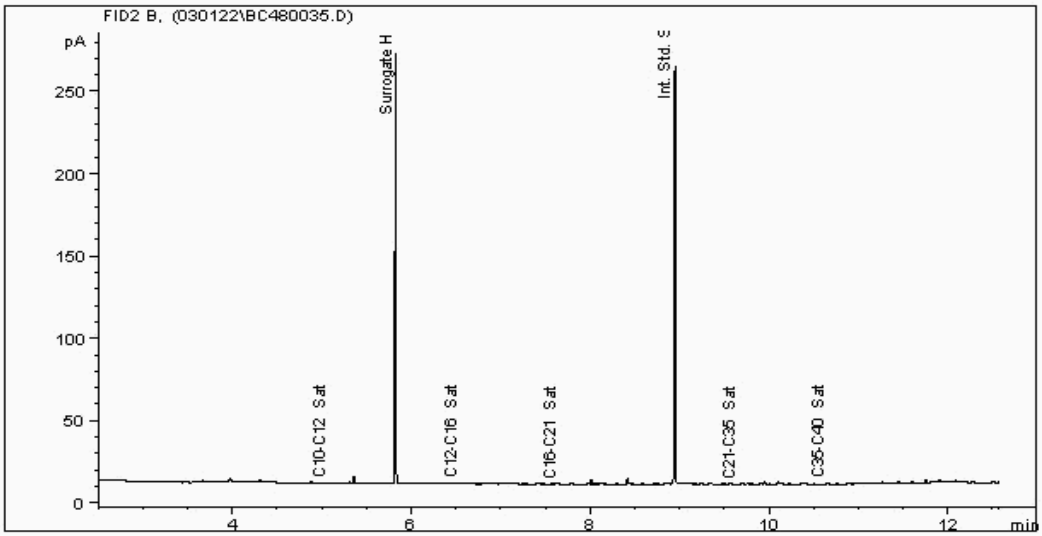
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25864984 **Depth :** 0.00 - 0.00
Sample ID : BH17

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 24144145-
Date Acquired : 02/03/2022 00:41:56 PM
Units : ppb
Dilution : SE BH17[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	178.4	0.196
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	Int. Std. S	199.6	0.250
6	C21-C35 Sat	0.0	0.000
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	378.0	



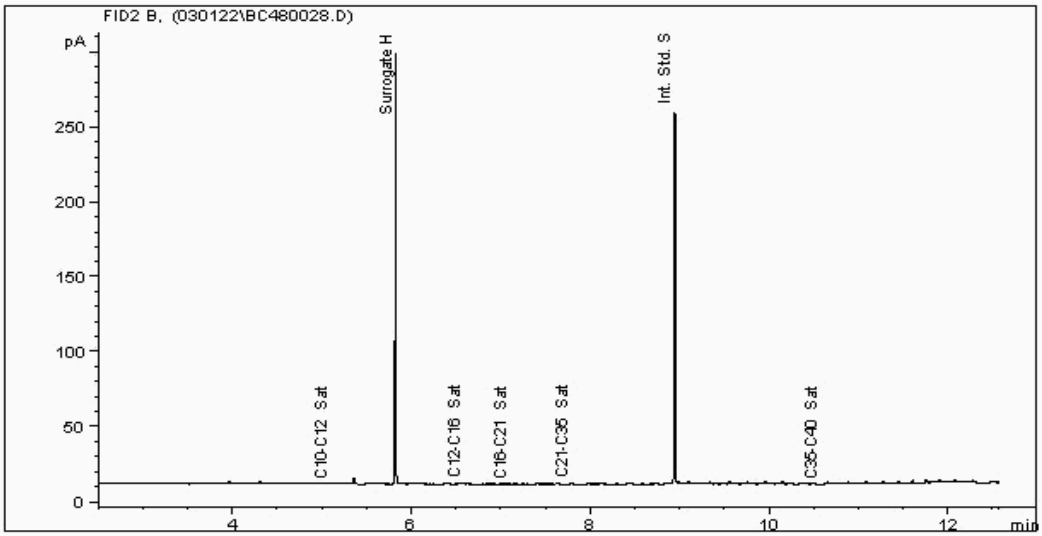
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25864986 **Depth :** 0.00 - 0.00
Sample ID : WS12

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 24143960-
Date Acquired : 01/03/2022 22:00:02 PM
Units : ppb
Dilution : SE WS12[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	183.5	0.201
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	200.2	0.250
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	383.7	



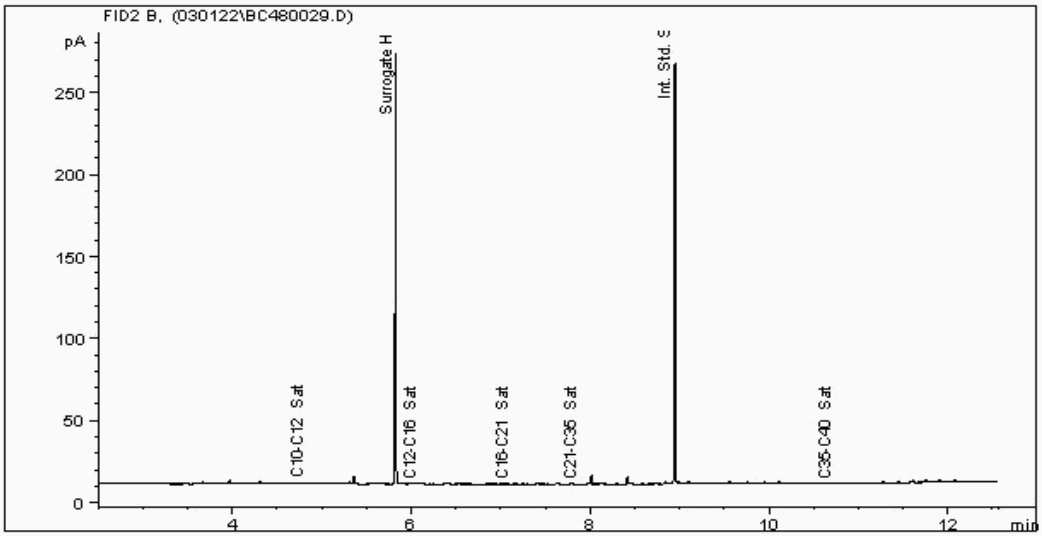
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25864997 **Depth :** 0.00 - 0.00
Sample ID : BH03

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 24144204-
Date Acquired : 01/03/2022 22:23:21 PM
Units : ppb
Dilution : SE BH03[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	168.8	0.182
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	203.4	0.250
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	372.2	



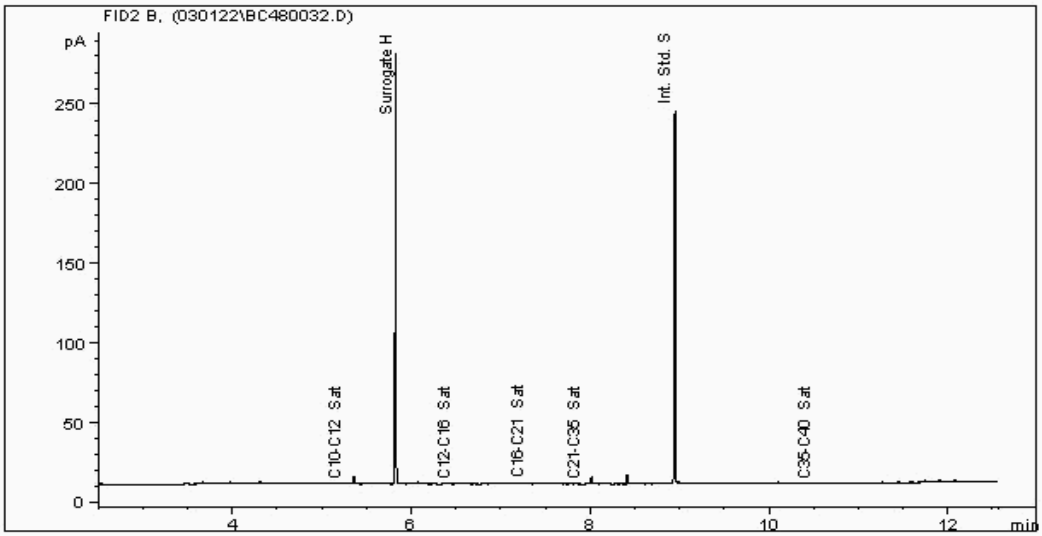
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25865007 **Depth :** 0.00 - 0.00
Sample ID : WS31

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 24143740-
Date Acquired : 01/03/2022 23:32:29 PM
Units : ppb
Dilution : SE WS31[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	177.3	0.203
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	191.6	0.250
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	368.9	



CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

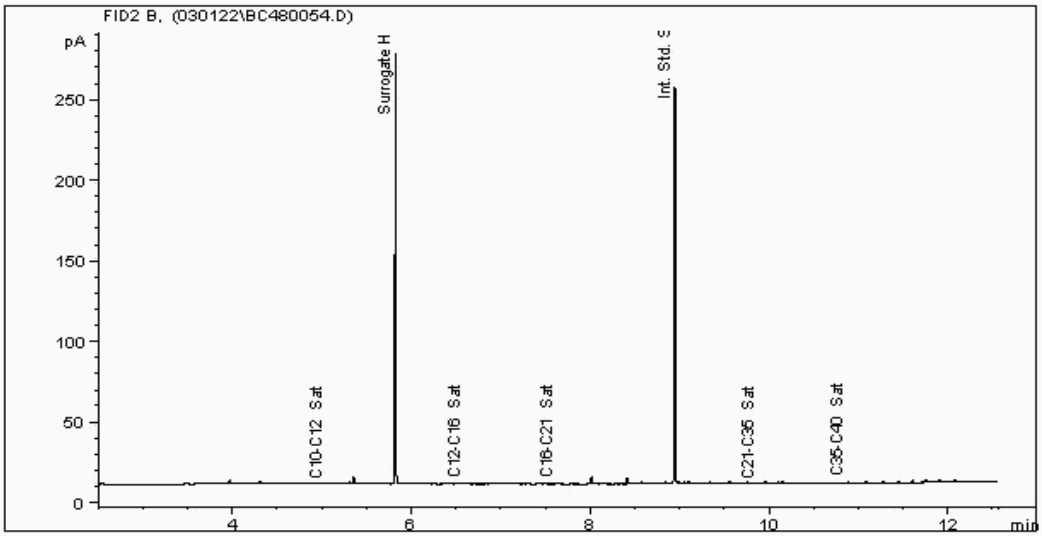
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25865013 **Depth :** 0.00 - 0.00
Sample ID : WS54

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 24143869-
Date Acquired : 02/03/2022 07:48:29 PM
Units : ppb
Dilution : SE WS54[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	182.7	0.203
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	Int. Std. S	198.0	0.250
6	C21-C35 Sat	0.0	0.000
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	380.8	



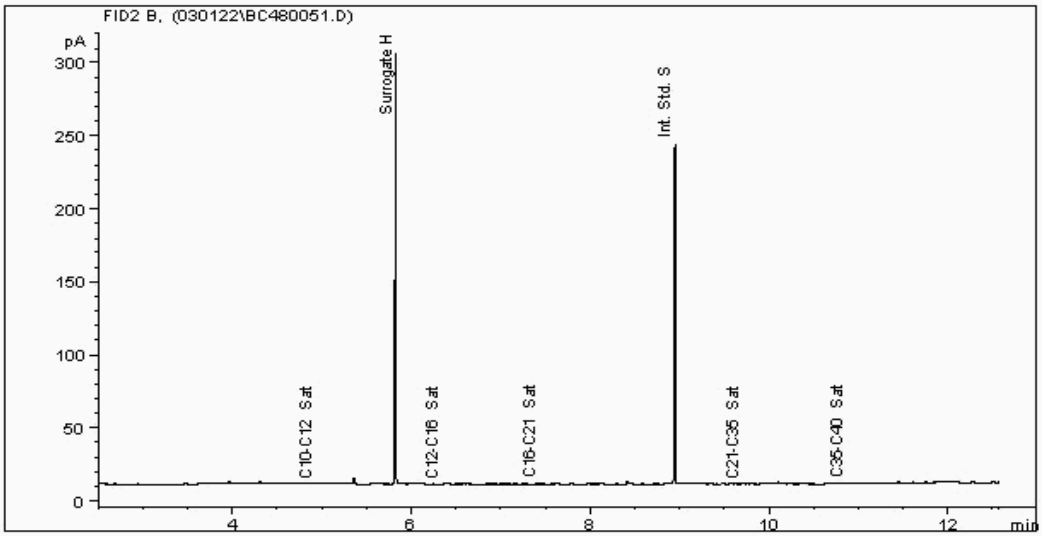
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25865030 **Depth :** 0.00 - 0.00
Sample ID : BH10

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 24144003-
Date Acquired : 02/03/2022 06:38:50 PM
Units : ppb
Dilution : SE BH10[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	184.2	0.212
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	Int. Std. S	190.9	0.250
6	C21-C35 Sat	0.0	0.000
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	375.1	



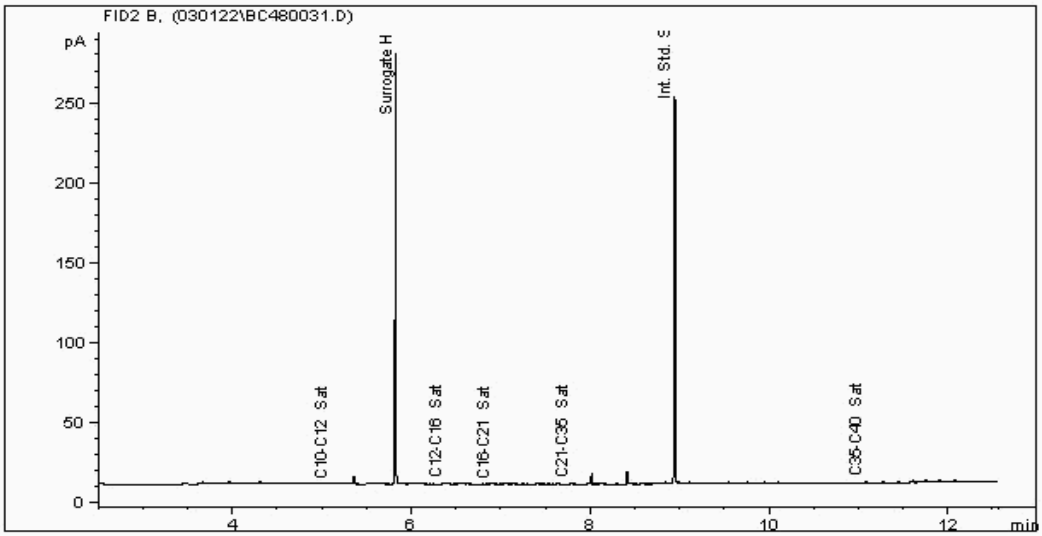
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25865034 **Depth :** 0.00 - 0.00
Sample ID : BH14

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 24143802-
Date Acquired : 01/03/2022 23:09:27 PM
Units : ppb
Dilution : SE BH14[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	176.7	0.212
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	183.5	0.250
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	360.2	



CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

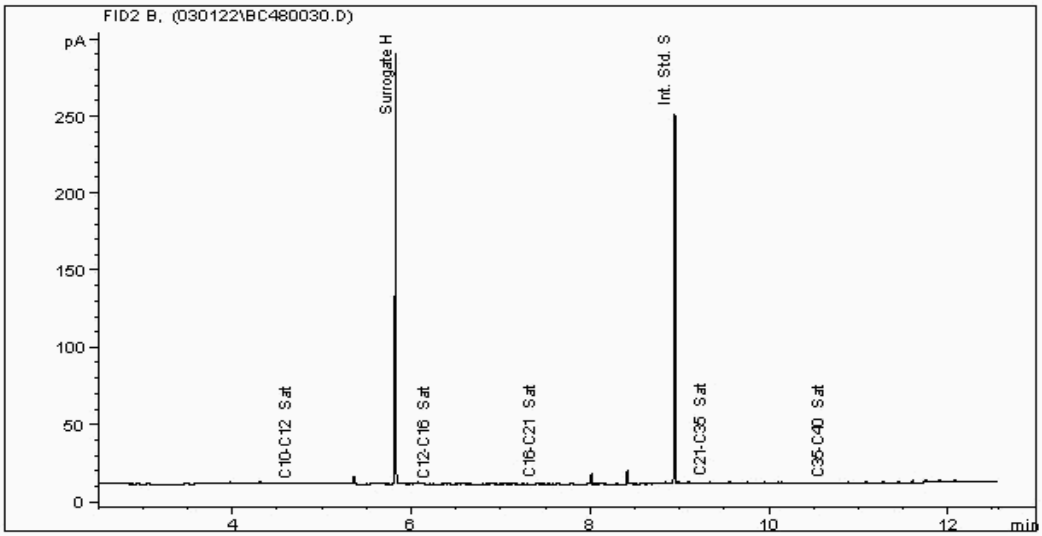
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25865038 **Depth :** 0.00 - 0.00
Sample ID : BH11

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 24144022-
Date Acquired : 01/03/2022 22:46:28 PM
Units : ppb
Dilution : SE BH11[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	180.4	0.208
3	C12-C16 Sat	3.5	0.004
4	C16-C21 Sat	3.8	0.004
5	Int. Std. S	190.3	0.250
6	C21-C35 Sat	24.7	0.032
7	C35-C40 Sat	4.4	0.007
	Total Peak Area	407.1	



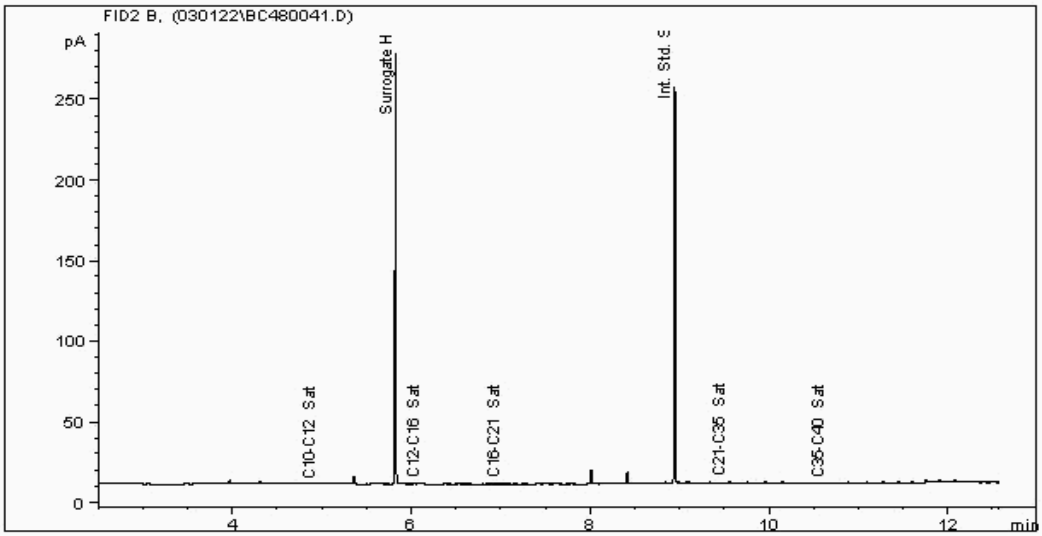
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25865060 **Depth :** 0.00 - 0.00
Sample ID : BH15

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 24144042-
Date Acquired : 02/03/2022 02:46:35 PM
Units : ppb
Dilution : SE BH15[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	176.1	0.207
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	5.9	0.007
5	Int. Std. S	186.7	0.250
6	C21-C35 Sat	59.8	0.079
7	C35-C40 Sat	5.8	0.010
	Total Peak Area	434.3	



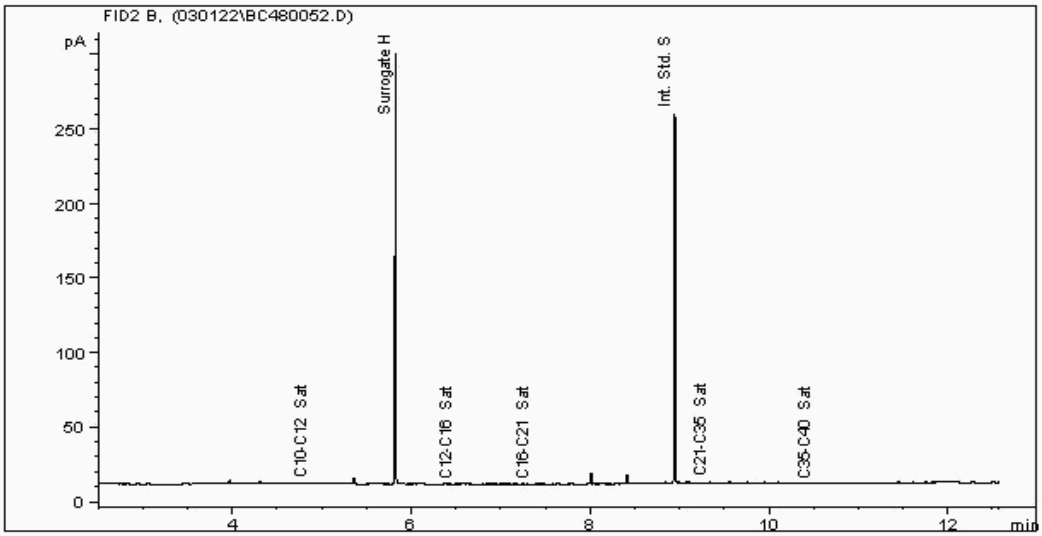
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25865096 **Depth :** 0.00 - 0.00
Sample ID : BH05

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 24144108-
Date Acquired : 02/03/2022 07:02:11 PM
Units : ppb
Dilution : SE BH05[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	182.9	0.207
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	Int. Std. S	194.7	0.250
6	C21-C35 Sat	59.3	0.075
7	C35-C40 Sat	8.1	0.013
	Total Peak Area	445.0	



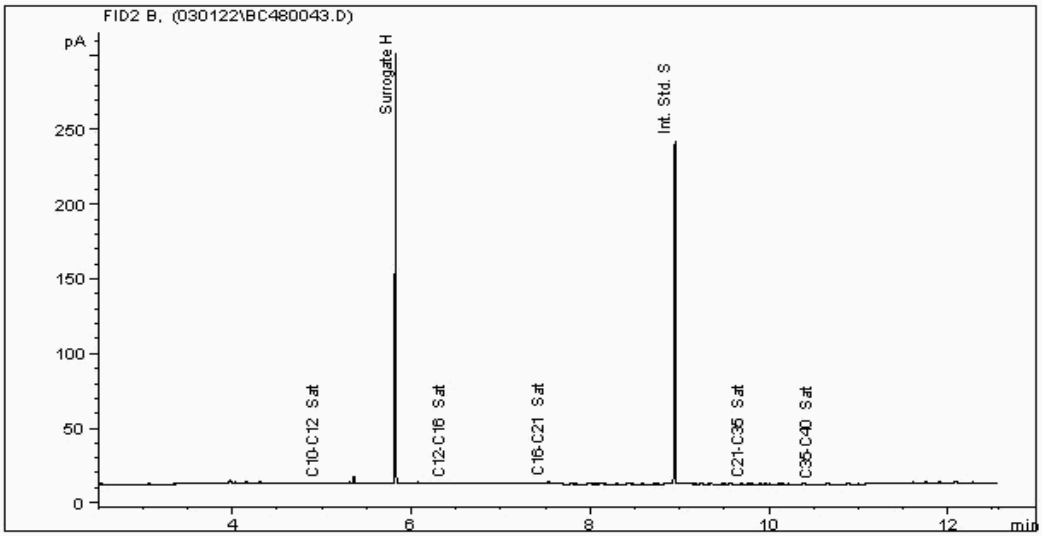
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25865100 **Depth :** 0.00 - 0.00
Sample ID : BH09

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 24143981-
Date Acquired : 02/03/2022 03:33:09 PM
Units : ppb
Dilution : SE BH09[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	184.9	0.208
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	Int. Std. S	195.1	0.250
6	C21-C35 Sat	0.0	0.000
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	380.0	



CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

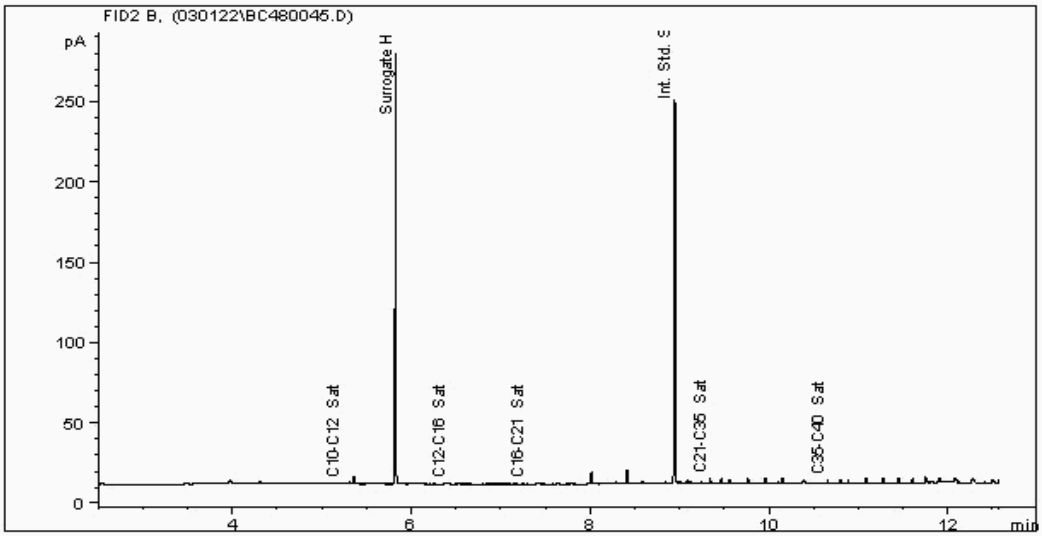
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25865115 **Depth :** 0.00 - 0.00
Sample ID : BH22

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 24144086-
Date Acquired : 02/03/2022 04:19:27 PM
Units : ppb
Dilution : SE BH22[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	175.5	0.202
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	4.9	0.006
5	Int. Std. S	190.6	0.250
6	C21-C35 Sat	95.0	0.123
7	C35-C40 Sat	32.8	0.055
	Total Peak Area	498.8	



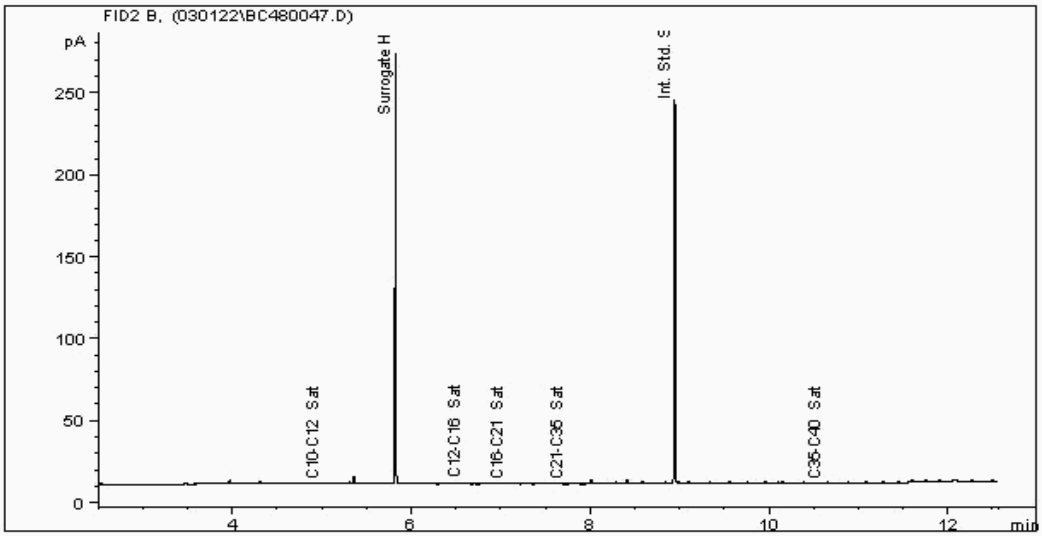
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25865130 **Depth :** 0.00 - 0.00
Sample ID : WS08

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 24144184-
Date Acquired : 02/03/2022 05:06:00 PM
Units : ppb
Dilution : SE WS08[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	173.9	0.203
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	188.7	0.250
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	362.6	



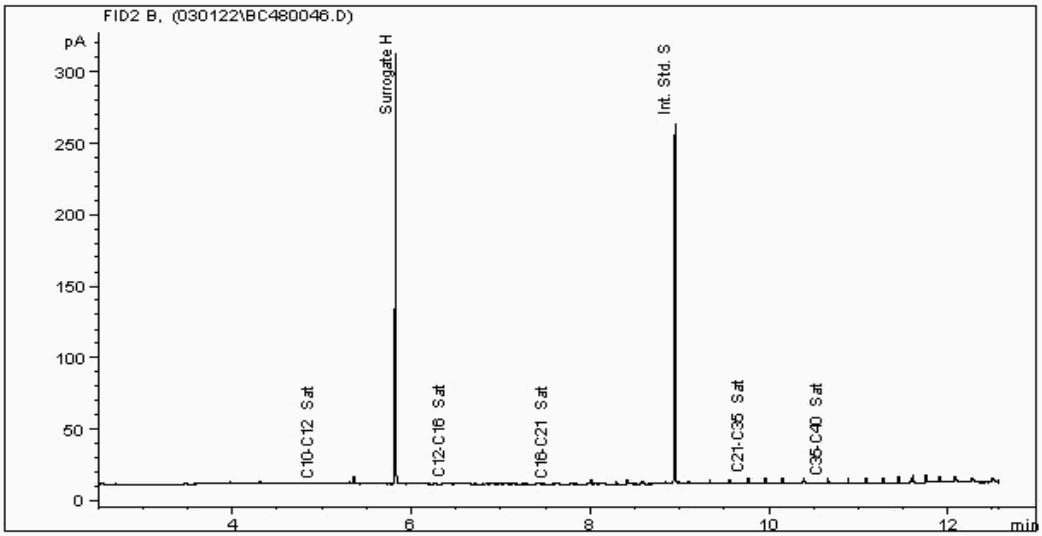
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25865138 **Depth :** 0.00 - 0.00
Sample ID : BH18

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 24144127-
Date Acquired : 02/03/2022 04:42:50 PM
Units : ppb
Dilution : SE BH18[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	190.5	0.213
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	Int. Std. S	196.9	0.250
6	C21-C35 Sat	0.0	0.000
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	387.4	



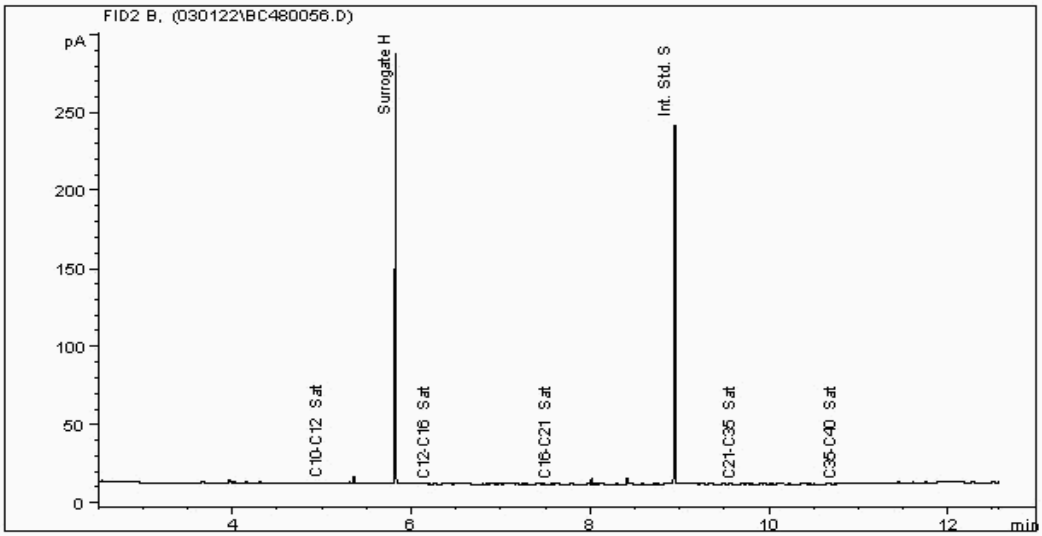
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25865157 **Depth :** 0.00 - 0.00
Sample ID : BH12

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 24143833-
Date Acquired : 02/03/2022 08:35:12 PM
Units : ppb
Dilution : SE BH12[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	185.1	0.219
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	Int. Std. S	186.0	0.250
6	C21-C35 Sat	0.0	0.000
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	371.0	



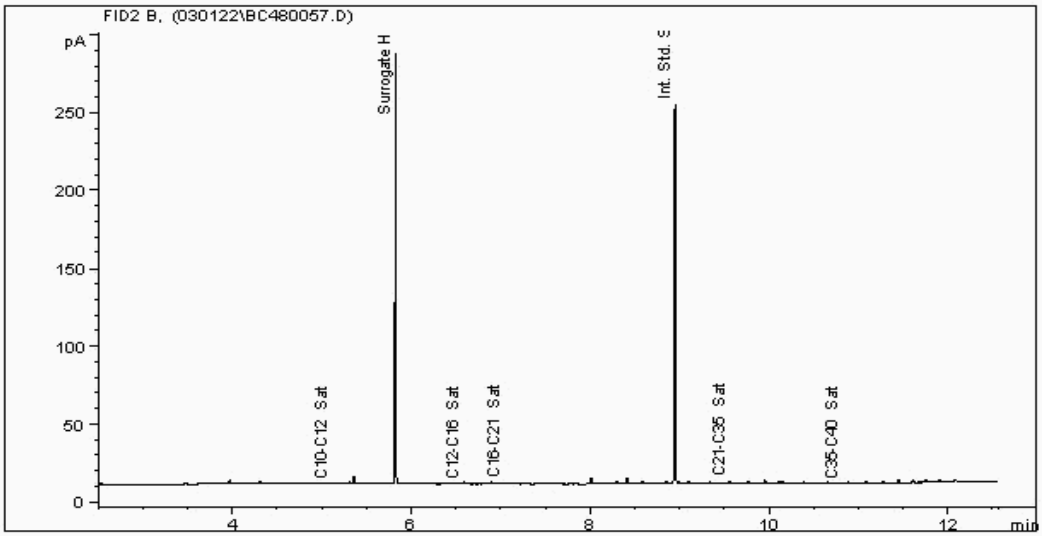
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25865280 **Depth :** 0.00 - 0.00
Sample ID : BH06

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 24143722-
Date Acquired : 02/03/2022 09:07:04 PM
Units : ppb
Dilution : SE BH06[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	178.8	0.196
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	Int. Std. S	200.1	0.250
6	C21-C35 Sat	7.2	0.009
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	386.2	



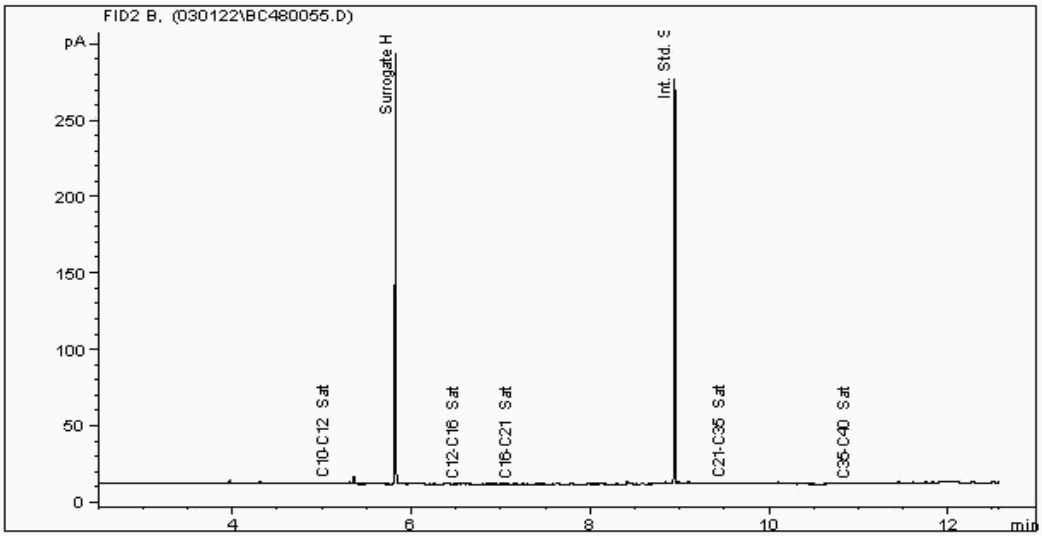
Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 25865308 **Depth :** 0.00 - 0.00
Sample ID : BH19

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 24144063-
Date Acquired : 02/03/2022 08:12:10 PM
Units : ppb
Dilution : SE BH19[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	184.1	0.198
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	Int. Std. S	204.3	0.250
6	C21-C35 Sat	10.7	0.013
7	C35-C40 Sat	0.0	0.000
	Total Peak Area	399.0	



CERTIFICATE OF ANALYSIS

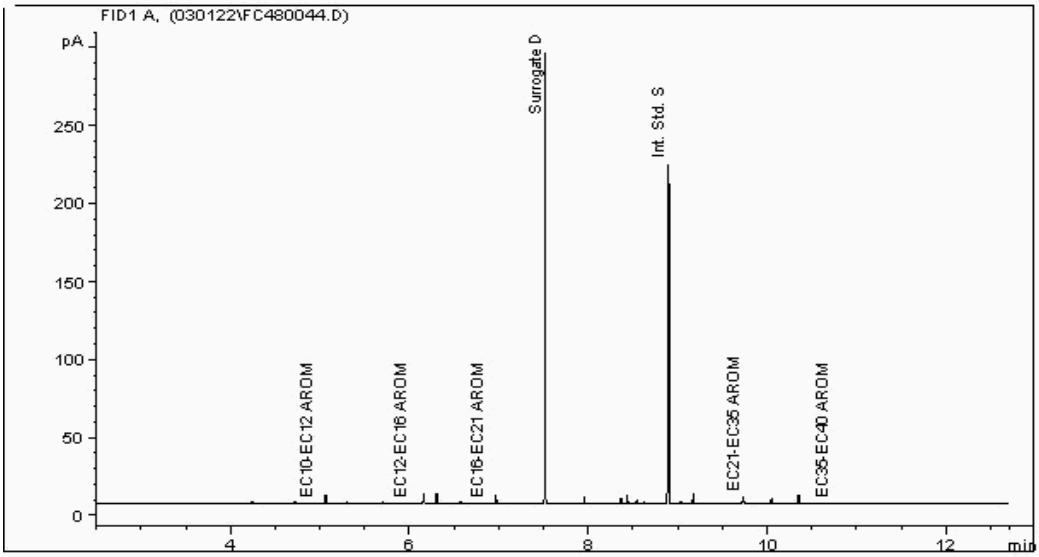
SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25864629 **Depth :** 0.00 - 0.00
Sample ID : BH16

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 24144164-
Date Acquired : 02/03/2022 03:56:17 PM
Units : ppb
Dilution : SE BH16[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

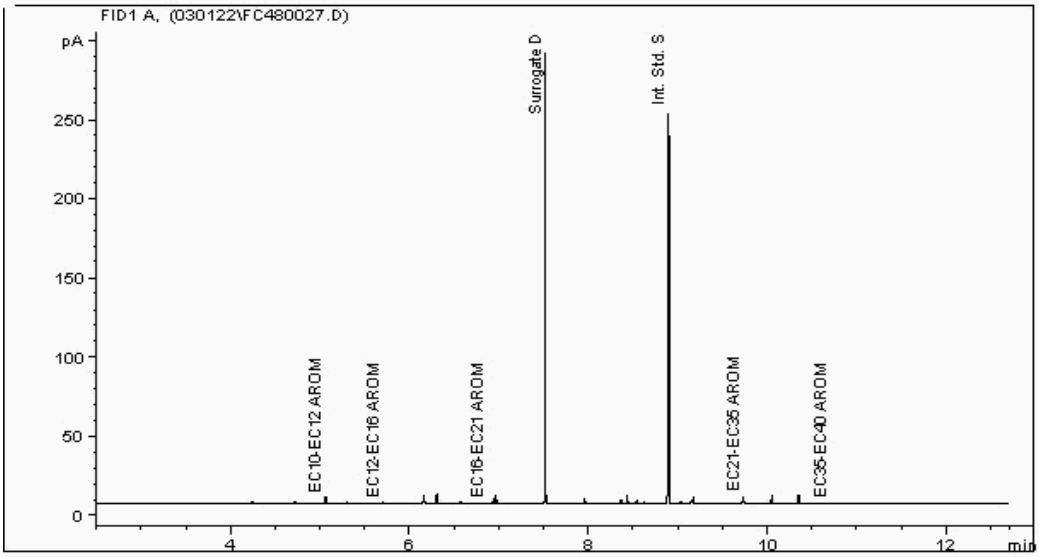
SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25864799 **Depth :** 0.00 - 0.00
Sample ID : BH01

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 24144223-
Date Acquired : 01/03/2022 21:36:45 PM
Units : ppb
Dilution : SE BH01[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

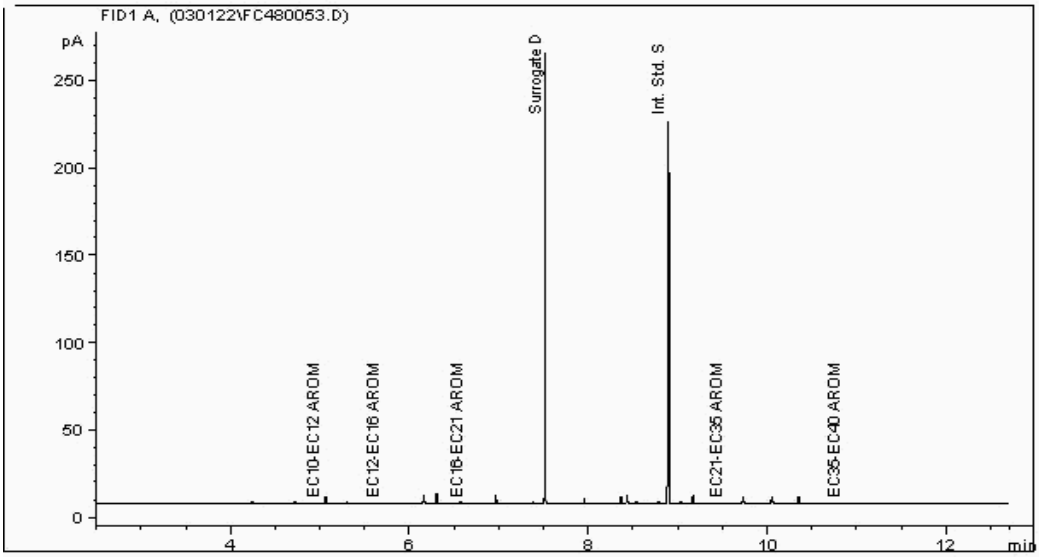
SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25864871 **Depth :** 0.00 - 0.00
Sample ID : BH61

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 24143780-
Date Acquired : 02/03/2022 07:25:20 PM
Units : ppb
Dilution : SE BH61[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

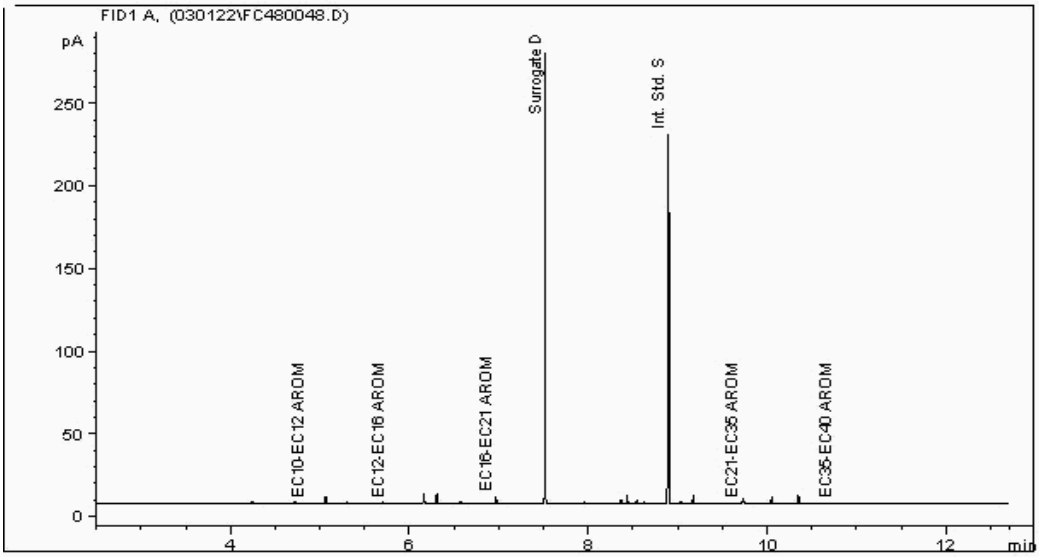
SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25864888 **Depth :** 0.00 - 0.00
Sample ID : WS15

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 24143903-
Date Acquired : 02/03/2022 05:29:06 PM
Units : ppb
Dilution : SE WS15[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

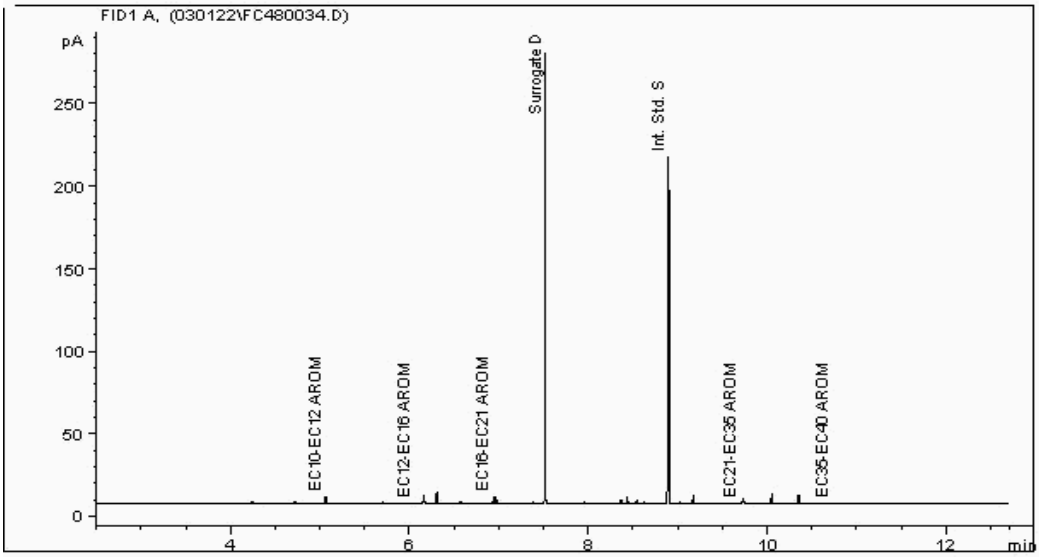
SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25864913 **Depth :** 0.00 - 0.00
Sample ID : BH07

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 24143943-
Date Acquired : 02/03/2022 00:18:51 PM
Units : ppb
Dilution : SE BH07[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

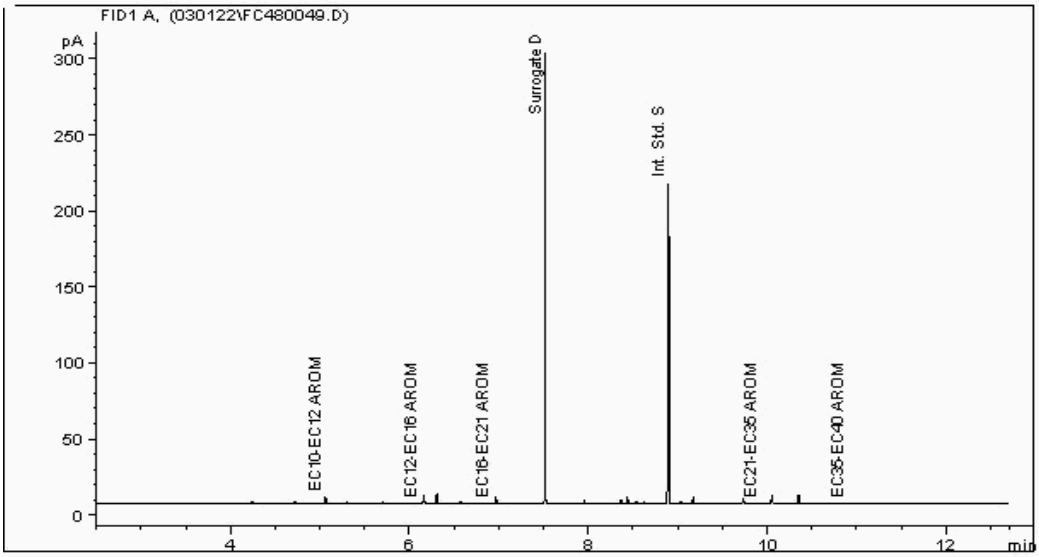
SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25864926 **Depth :** 0.00 - 0.00
Sample ID : BH56

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 24143925-
Date Acquired : 02/03/2022 05:52:24 PM
Units : ppb
Dilution : SE BH56[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

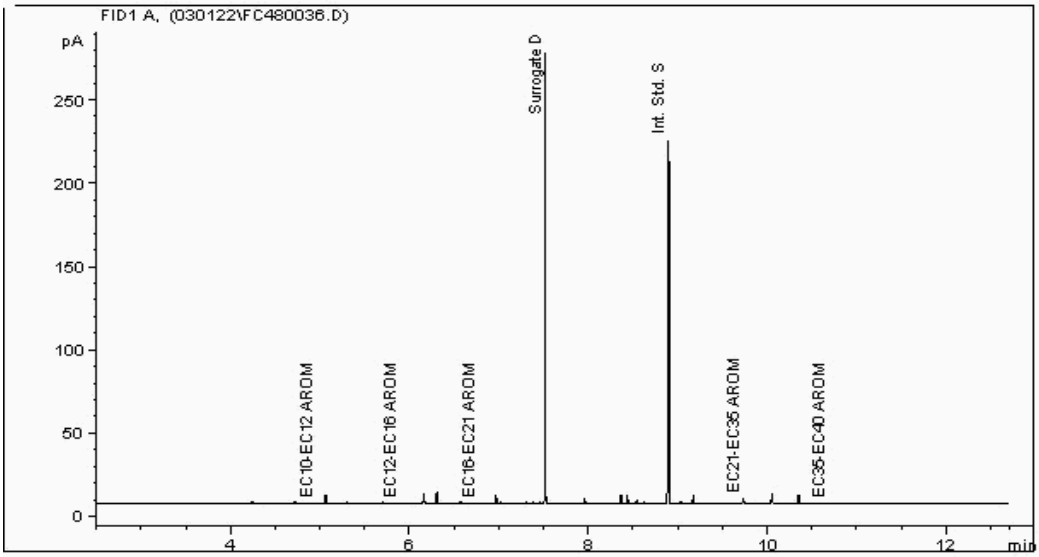
SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25864929 **Depth :** 0.00 - 0.00
Sample ID : BH21

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 24143702-
Date Acquired : 02/03/2022 01:05:16 PM
Units : ppb
Dilution : SE BH21[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

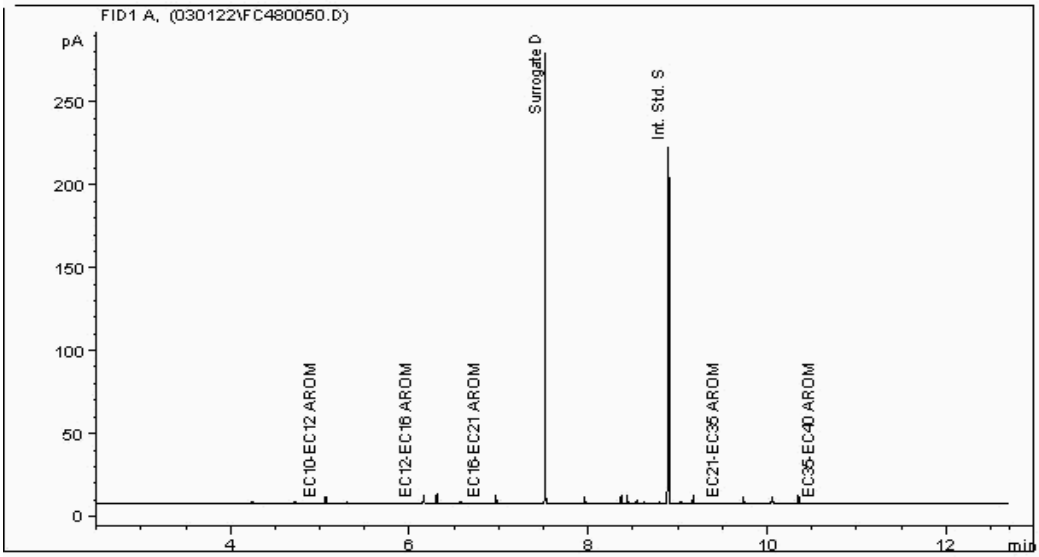
SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25864932 **Depth :** 0.00 - 0.00
Sample ID : BH60

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 24143762-
Date Acquired : 02/03/2022 06:15:29 PM
Units : ppb
Dilution : SE BH60[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

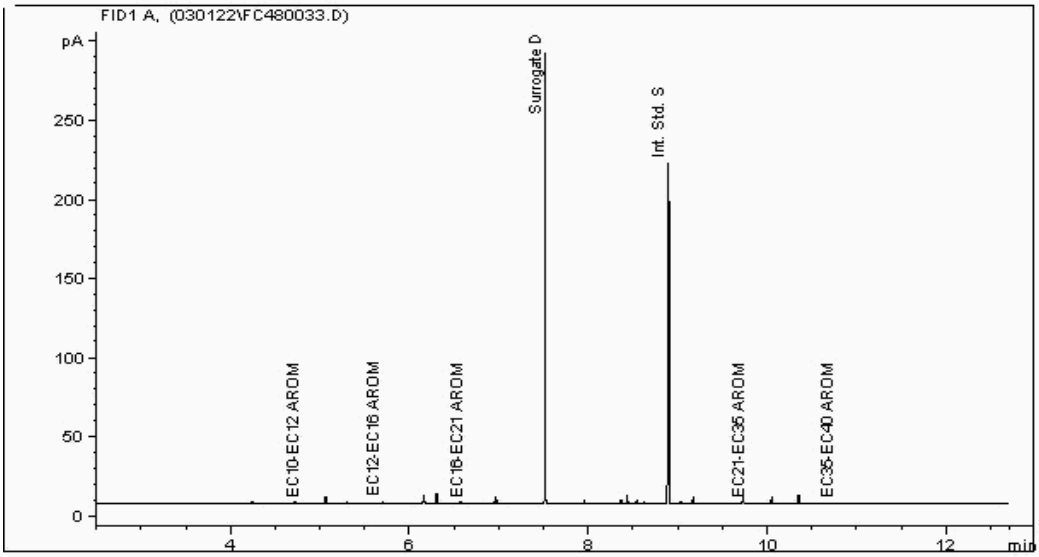
SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25864943 **Depth :** 0.00 - 0.00
Sample ID : WS26

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 24144244-
Date Acquired : 01/03/2022 23:55:48 PM
Units : ppb
Dilution : SE WS26[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

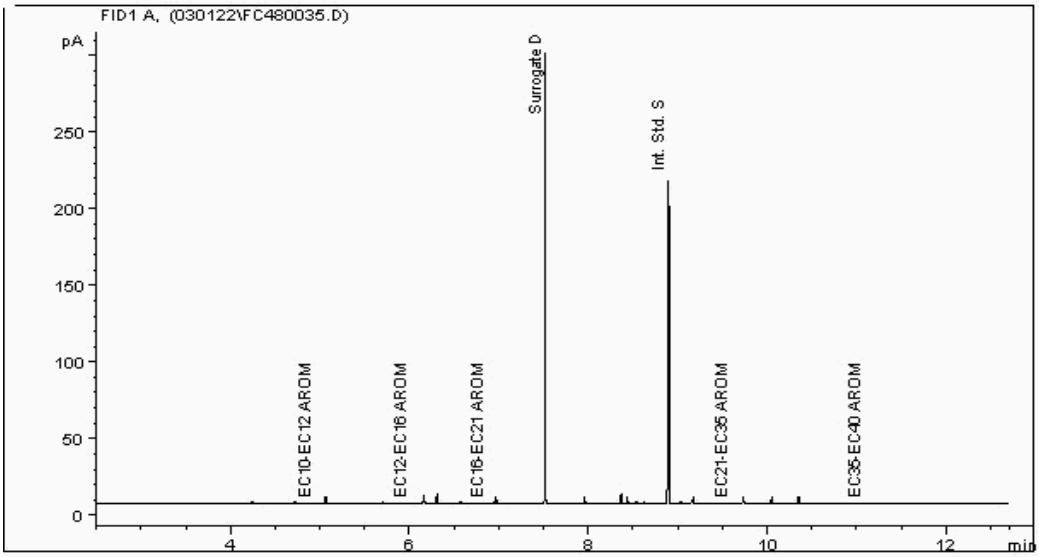
SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25864984 **Depth :** 0.00 - 0.00
Sample ID : BH17

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 24144146-
Date Acquired : 02/03/2022 00:41:56 PM
Units : ppb
Dilution : SE BH17[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

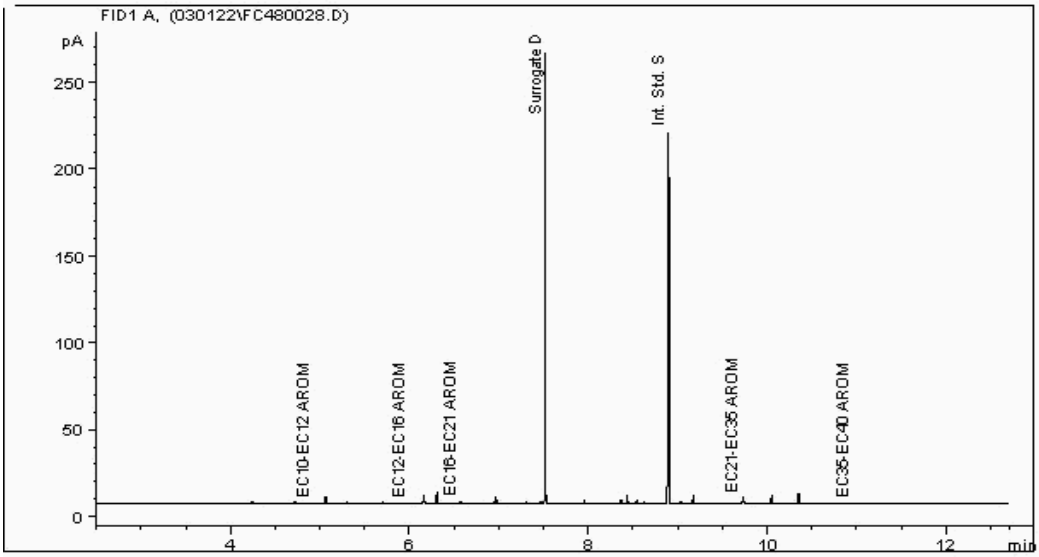
SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25864986 **Depth :** 0.00 - 0.00
Sample ID : WS12

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 24143961-
Date Acquired : 01/03/2022 22:00:02 PM
Units : ppb
Dilution : SE WS12[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

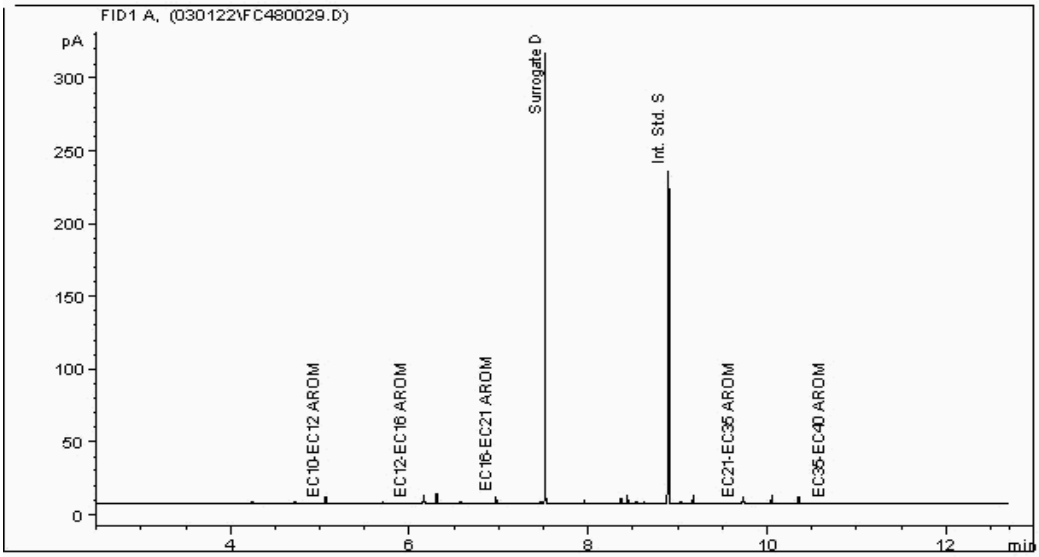
SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25864997 **Depth :** 0.00 - 0.00
Sample ID : BH03

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 24144205-
Date Acquired : 01/03/2022 22:23:21 PM
Units : ppb
Dilution : SE BH03[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

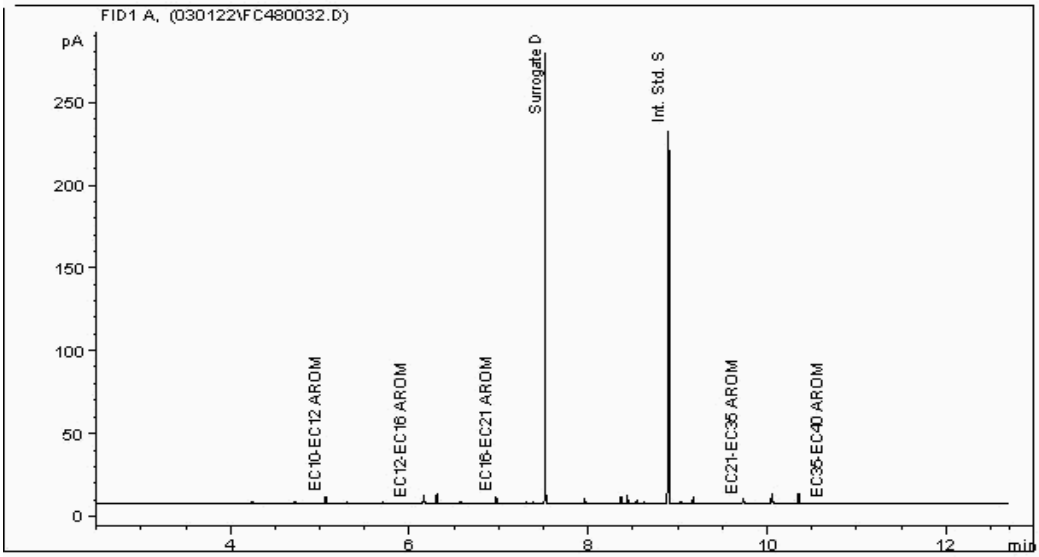
SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25865007 **Depth :** 0.00 - 0.00
Sample ID : WS31

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 24143741-
Date Acquired : 01/03/2022 23:32:29 PM
Units : ppb
Dilution : SE WS31[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

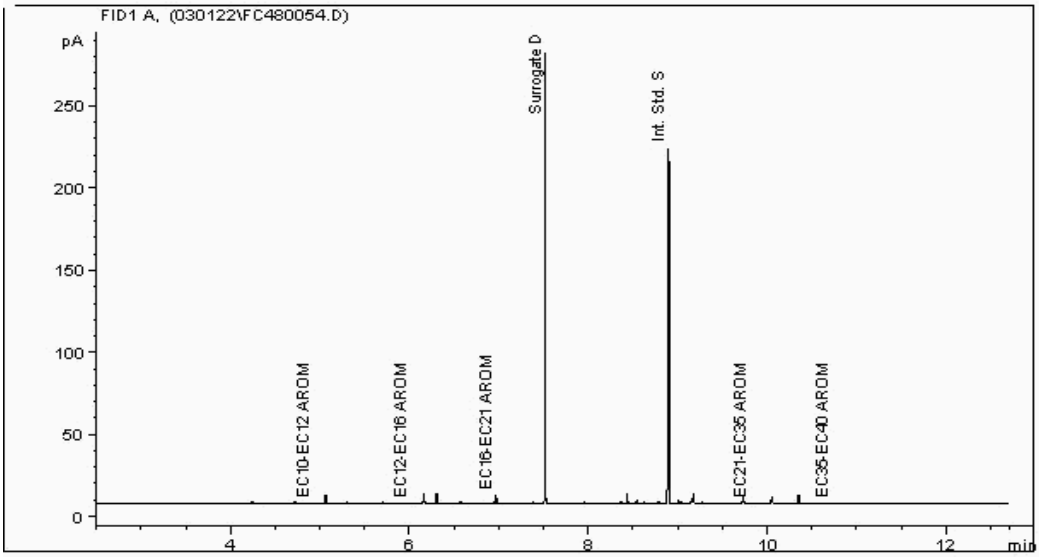
SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25865013 **Depth :** 0.00 - 0.00
Sample ID : WS54

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 24143870-
Date Acquired : 02/03/2022 07:48:29 PM
Units : ppb
Dilution : SE WS54[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

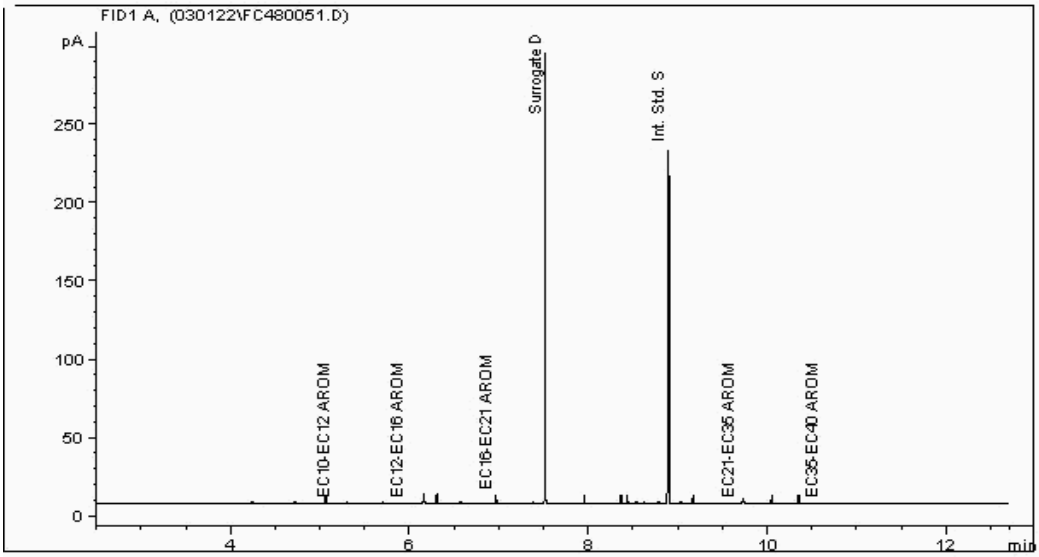
SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25865030 **Depth :** 0.00 - 0.00
Sample ID : BH10

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 24144004-
Date Acquired : 02/03/2022 06:38:50 PM
Units : ppb
Dilution : SE BH10[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

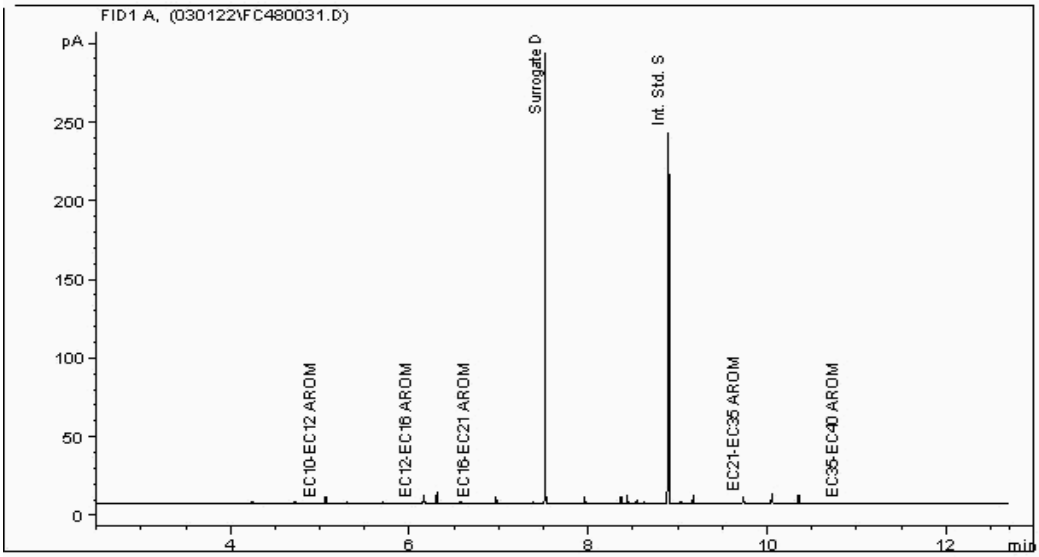
SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25865034 **Depth :** 0.00 - 0.00
Sample ID : BH14

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 24143803-
Date Acquired : 01/03/2022 23:09:27 PM
Units : ppb
Dilution : SE BH14[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

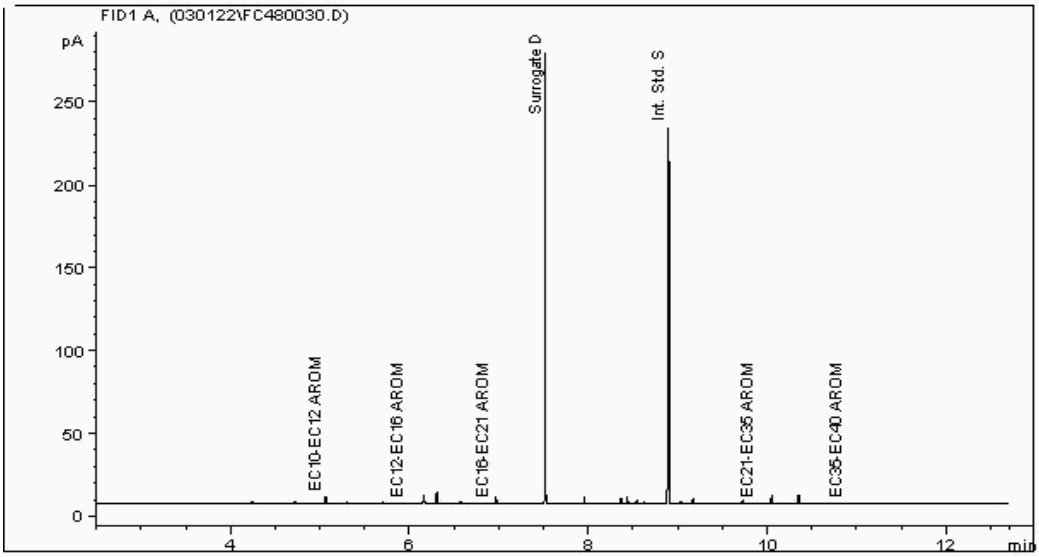
SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25865038 **Depth :** 0.00 - 0.00
Sample ID : BH11

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 24144023-
Date Acquired : 01/03/2022 22:46:28 PM
Units : ppb
Dilution : SE BH11[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

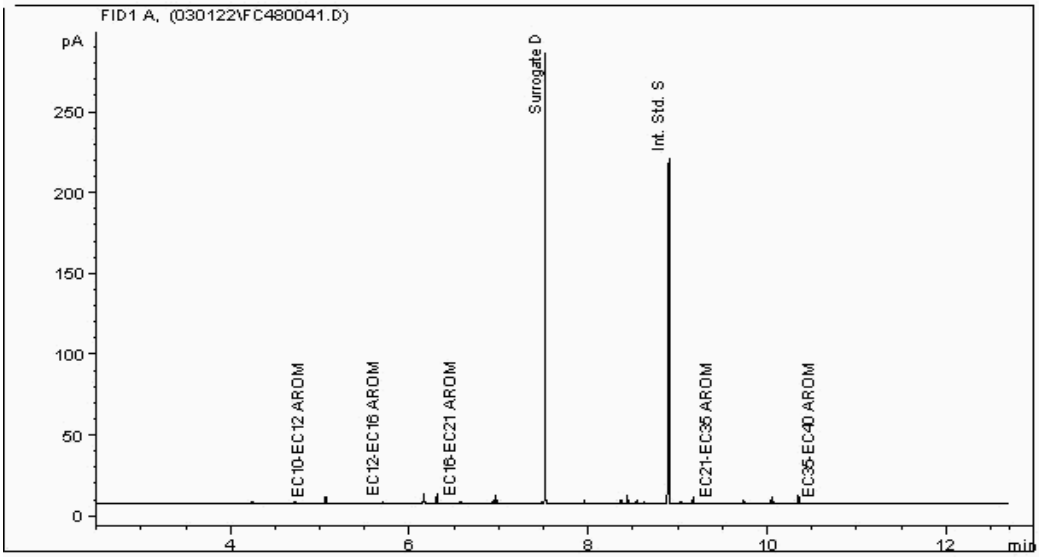
SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25865060 **Depth :** 0.00 - 0.00
Sample ID : BH15

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 24144043-
Date Acquired : 02/03/2022 02:46:35 PM
Units : ppb
Dilution : SE BH15[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

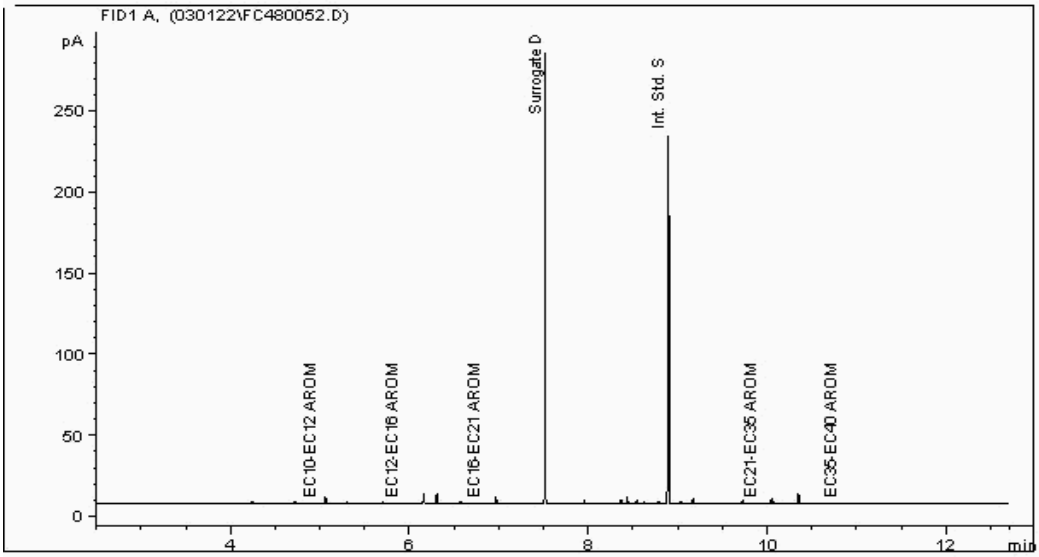
SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25865096 **Depth :** 0.00 - 0.00
Sample ID : BH05

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 24144109-
Date Acquired : 02/03/2022 07:02:11 PM
Units : ppb
Dilution : SE BH05[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

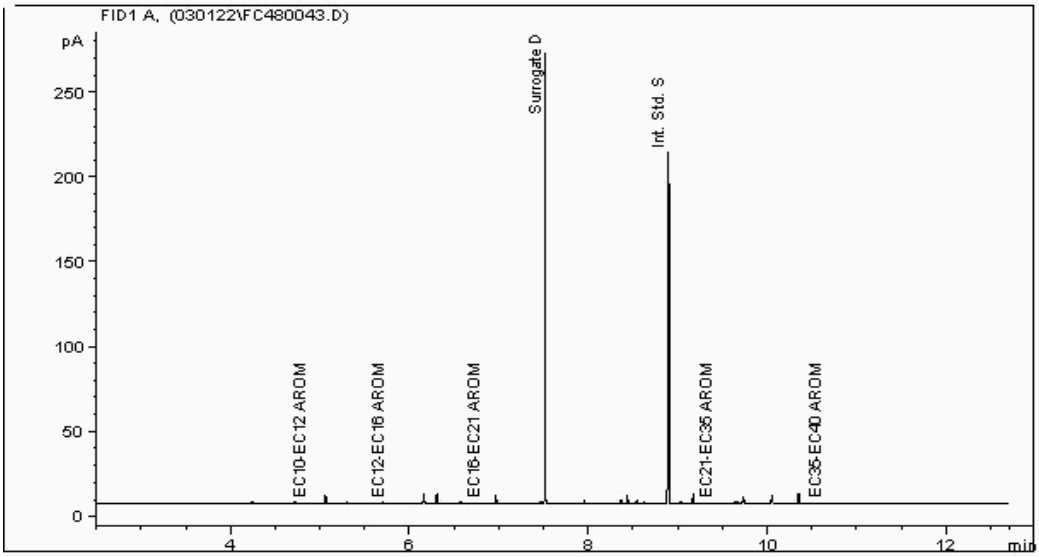
SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25865100 **Depth :** 0.00 - 0.00
Sample ID : BH09

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 24143982-
Date Acquired : 02/03/2022 03:33:09 PM
Units : ppb
Dilution : SE BH09[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

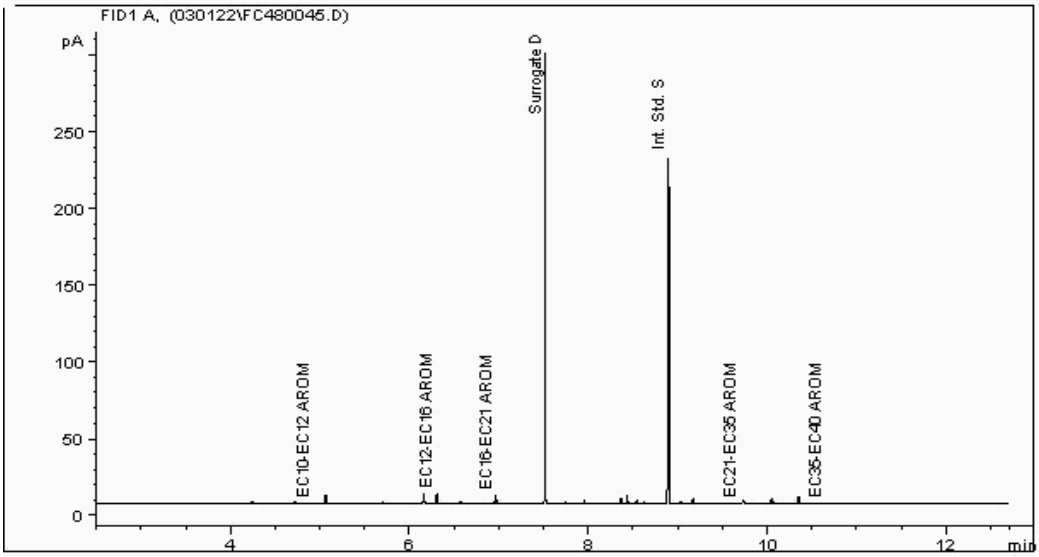
SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25865115 **Depth :** 0.00 - 0.00
Sample ID : BH22

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 24144087-
Date Acquired : 02/03/2022 04:19:27 PM
Units : ppb
Dilution : SE BH22[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

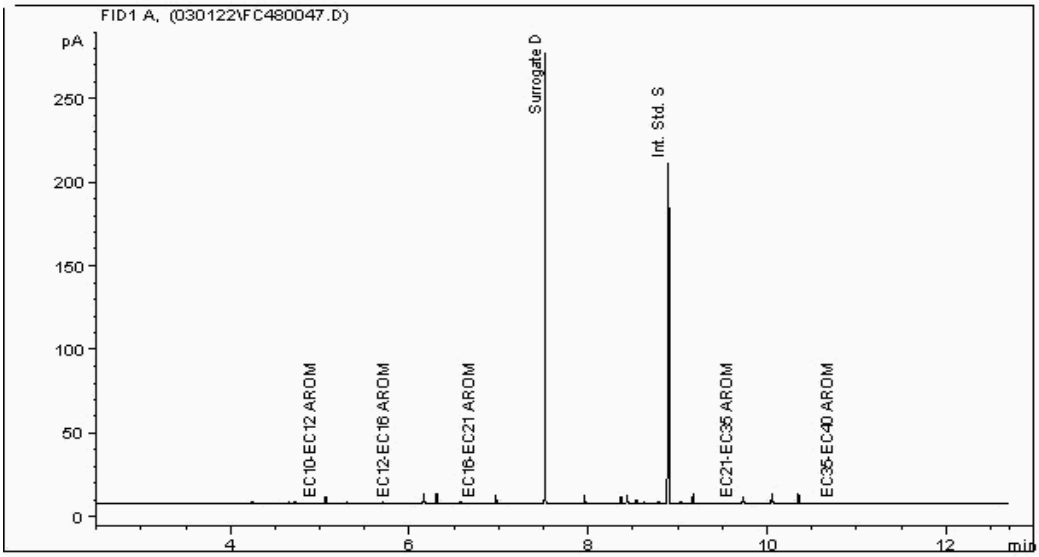
SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25865130 **Depth :** 0.00 - 0.00
Sample ID : WS08

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 24144185-
Date Acquired : 02/03/2022 05:06:00 PM
Units : ppb
Dilution : SE WS08[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

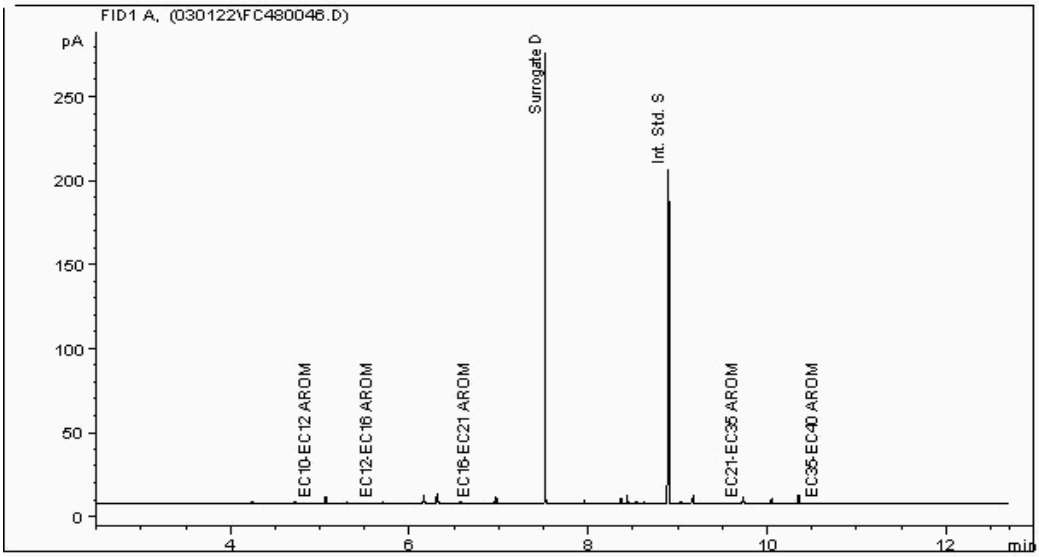
SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25865138 **Depth :** 0.00 - 0.00
Sample ID : BH18

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 24144128-
Date Acquired : 02/03/2022 04:42:50 PM
Units : ppb
Dilution : SE BH18[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

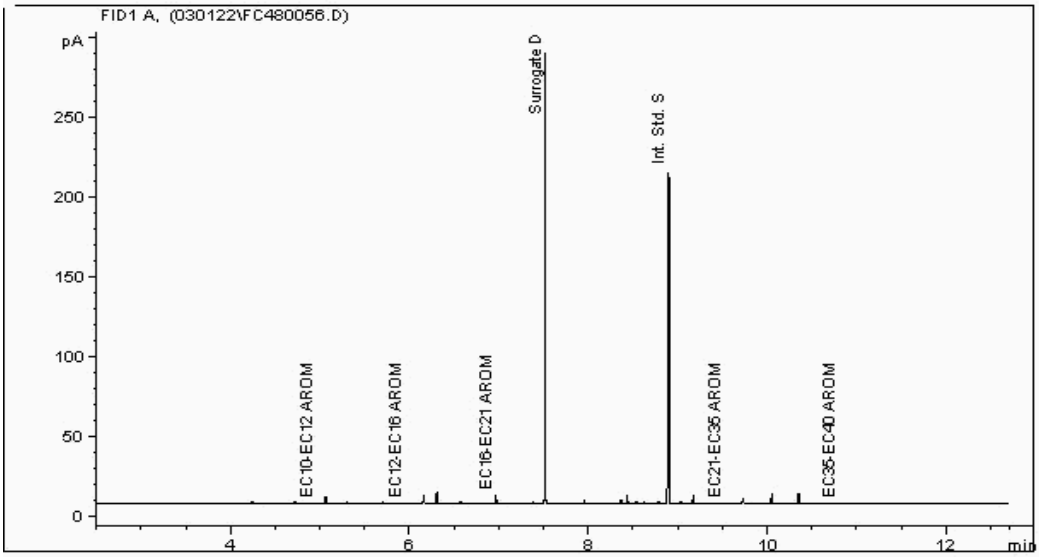
SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25865157 **Depth :** 0.00 - 0.00
Sample ID : BH12

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 24143834-
Date Acquired : 02/03/2022 08:35:12 PM
Units : ppb
Dilution : SE BH12[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

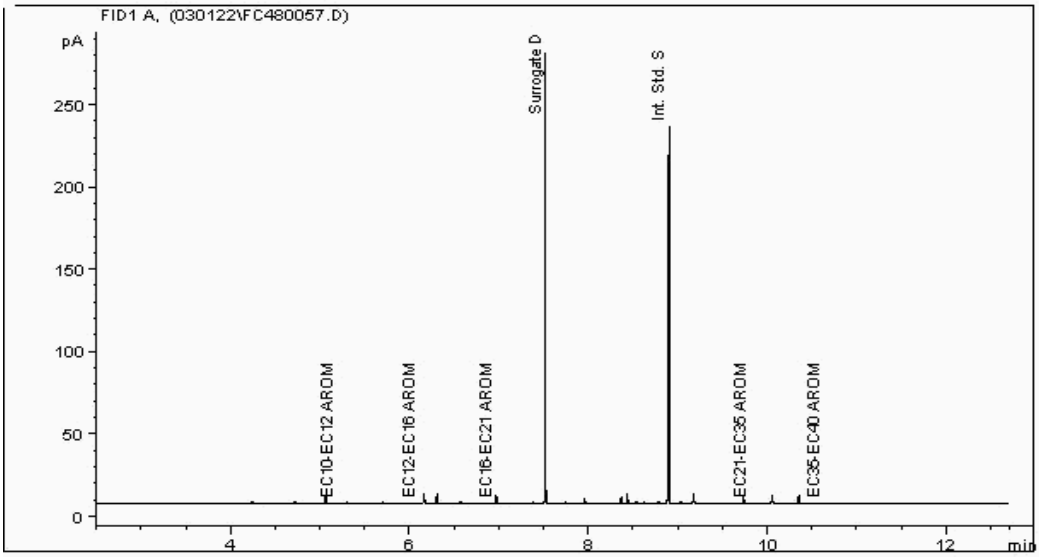
SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25865280 **Depth :** 0.00 - 0.00
Sample ID : BH06

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 24143723-
Date Acquired : 02/03/2022 09:07:04 PM
Units : ppb
Dilution : SE BH06[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025



CERTIFICATE OF ANALYSIS

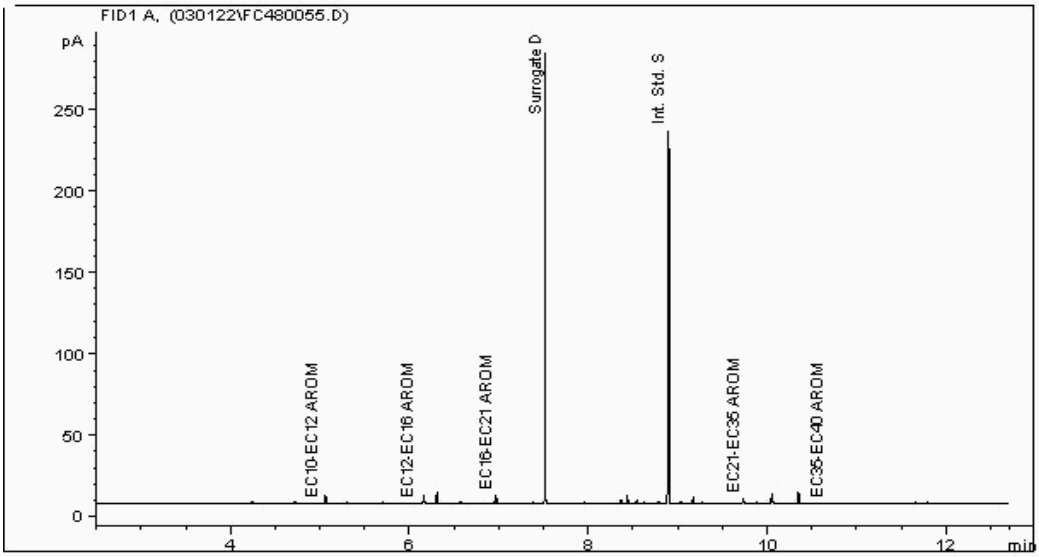
SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 25865308 **Depth :** 0.00 - 0.00
Sample ID : BH19

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 24144064-
Date Acquired : 02/03/2022 08:12:09 PM
Units : ppb
Dilution : SE BH19[0.00 - 0.00] ->
CF : 1
Multiplier : 0.025

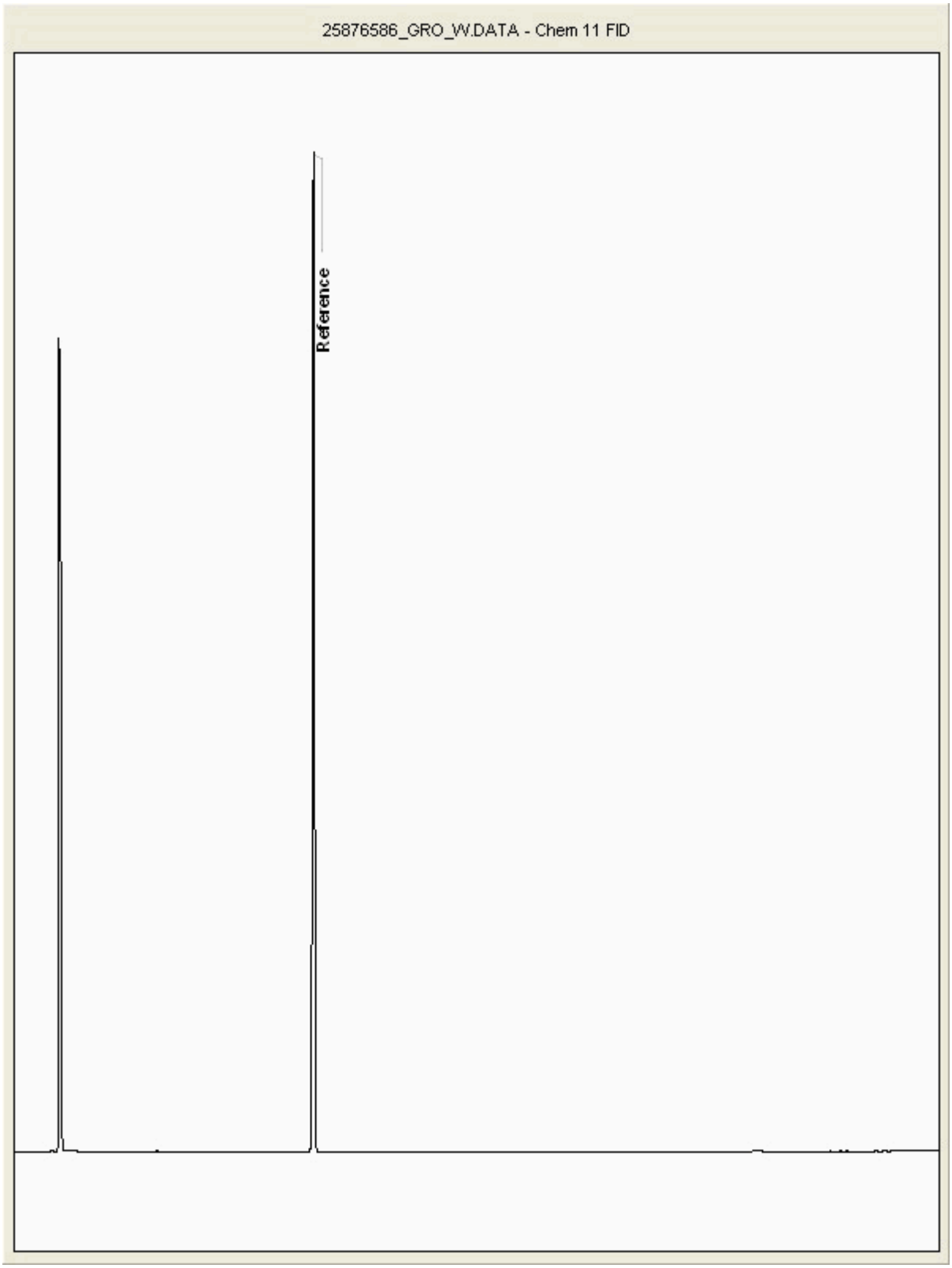


CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25876586 **Depth :** 0.00 - 0.00
Sample ID : BH21

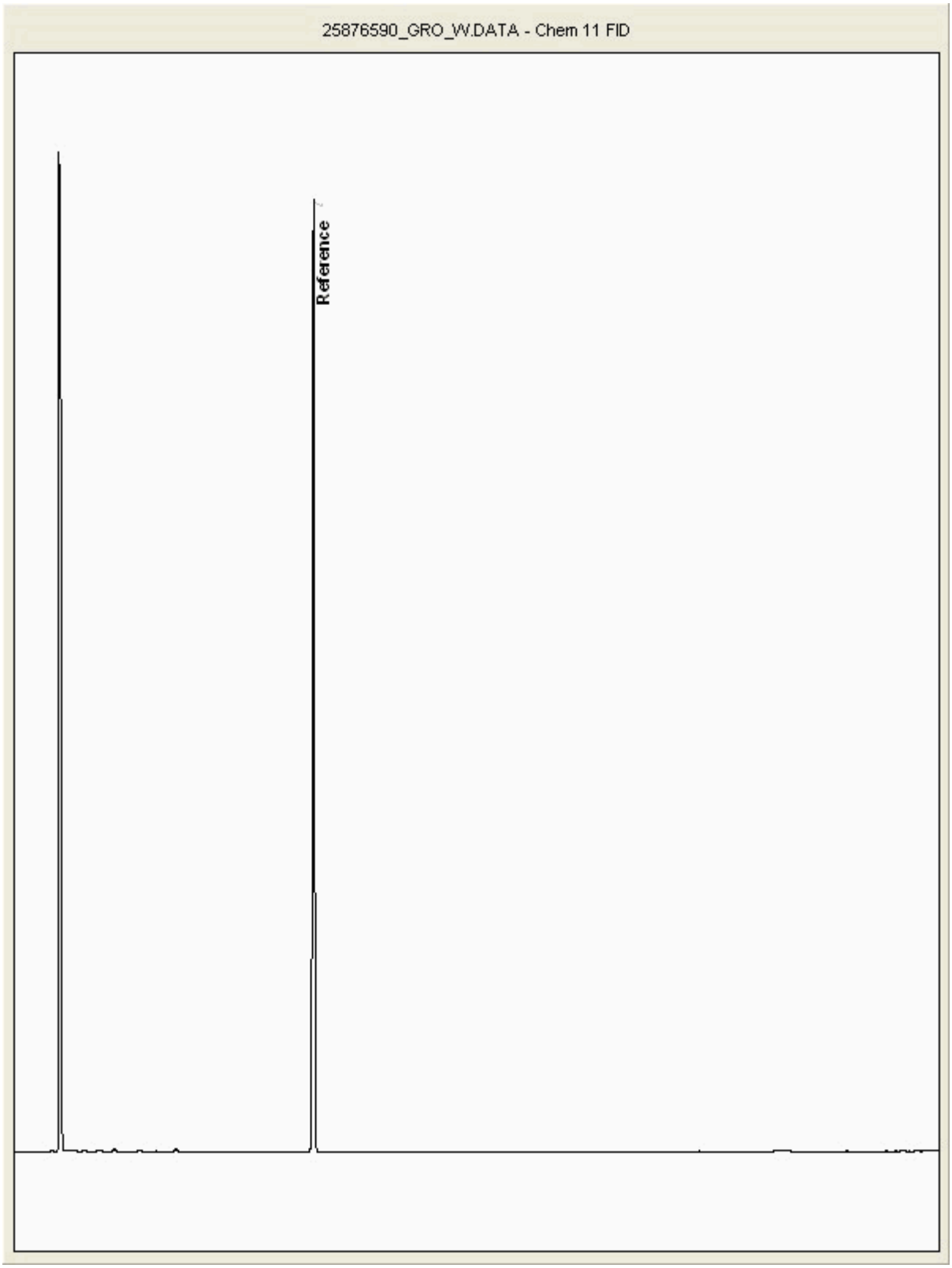


CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25876590 **Depth :** 0.00 - 0.00
Sample ID : BH16

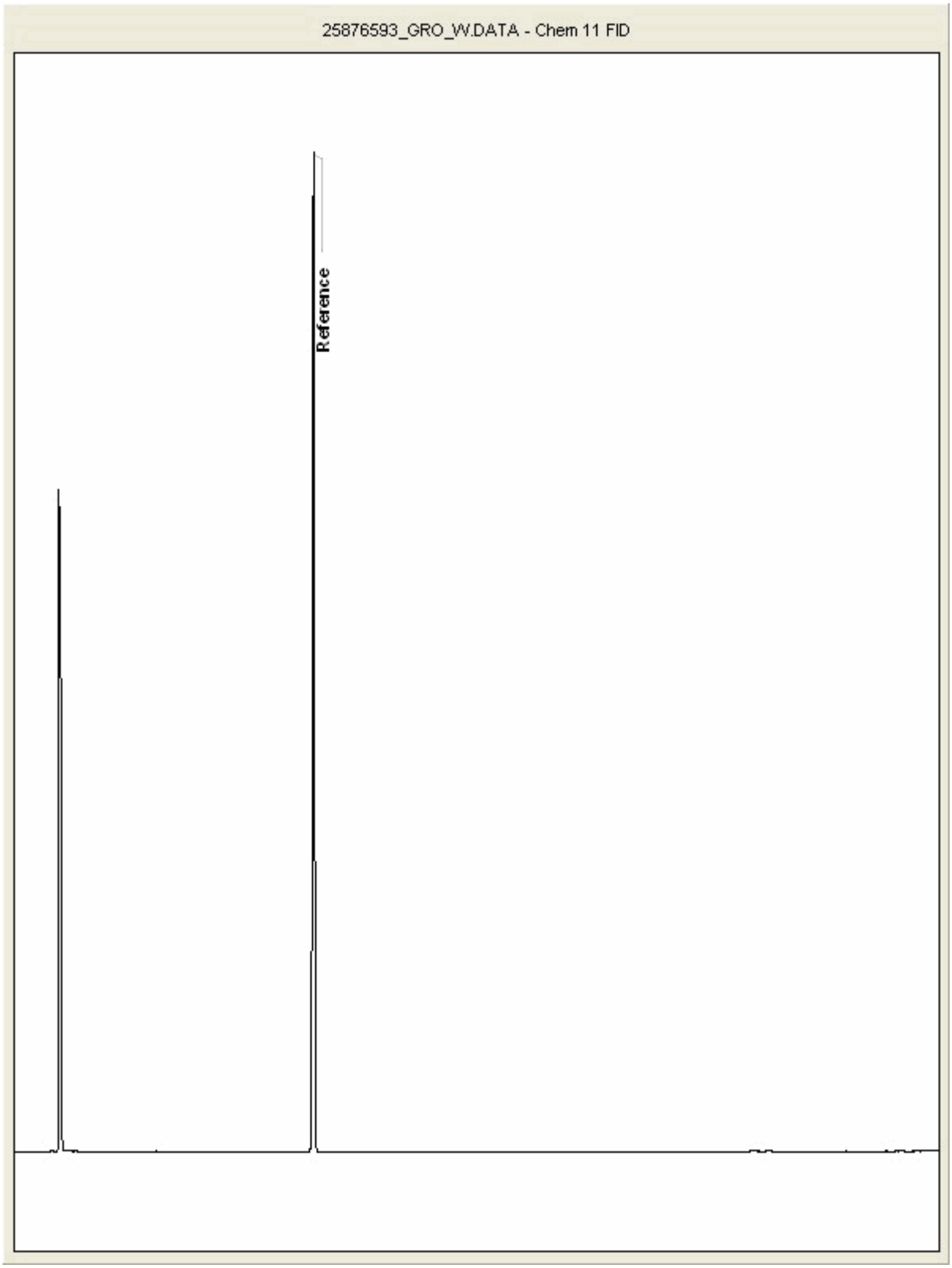


CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25876593 **Depth :** 0.00 - 0.00
Sample ID : BH07

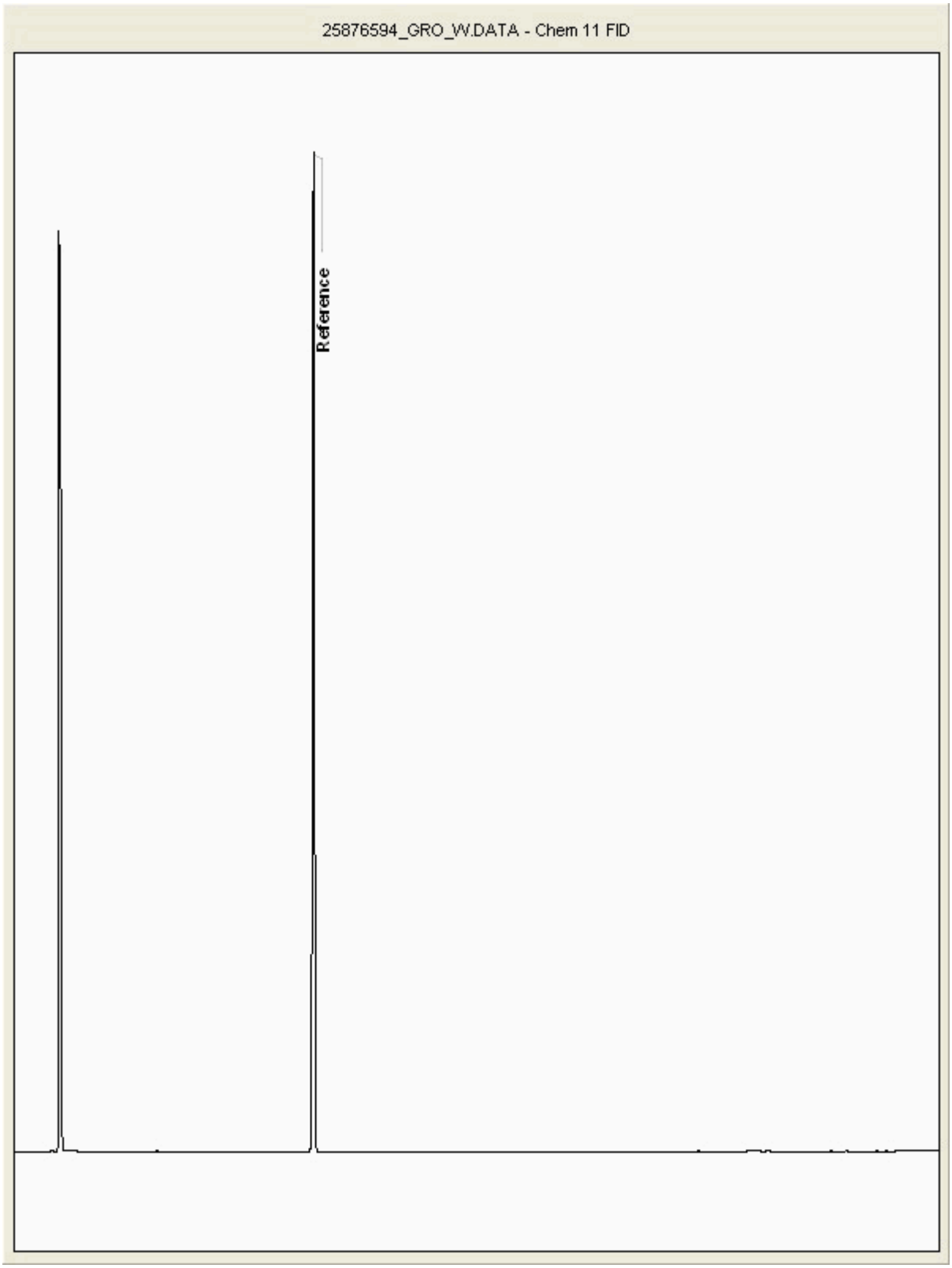


CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25876594 **Depth :** 0.00 - 0.00
Sample ID : BH60

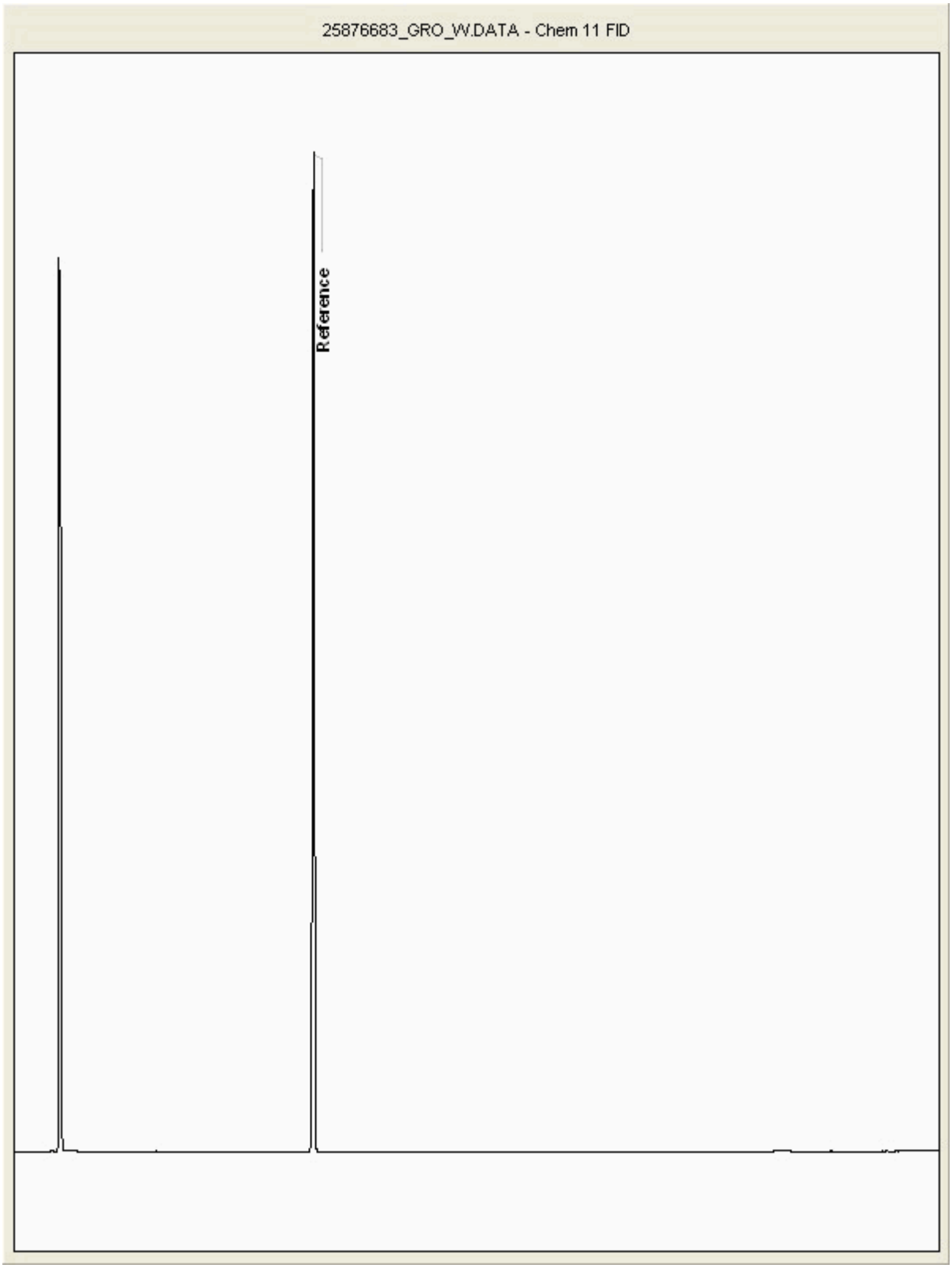


CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25876683 **Depth :** 0.00 - 0.00
Sample ID : BH19

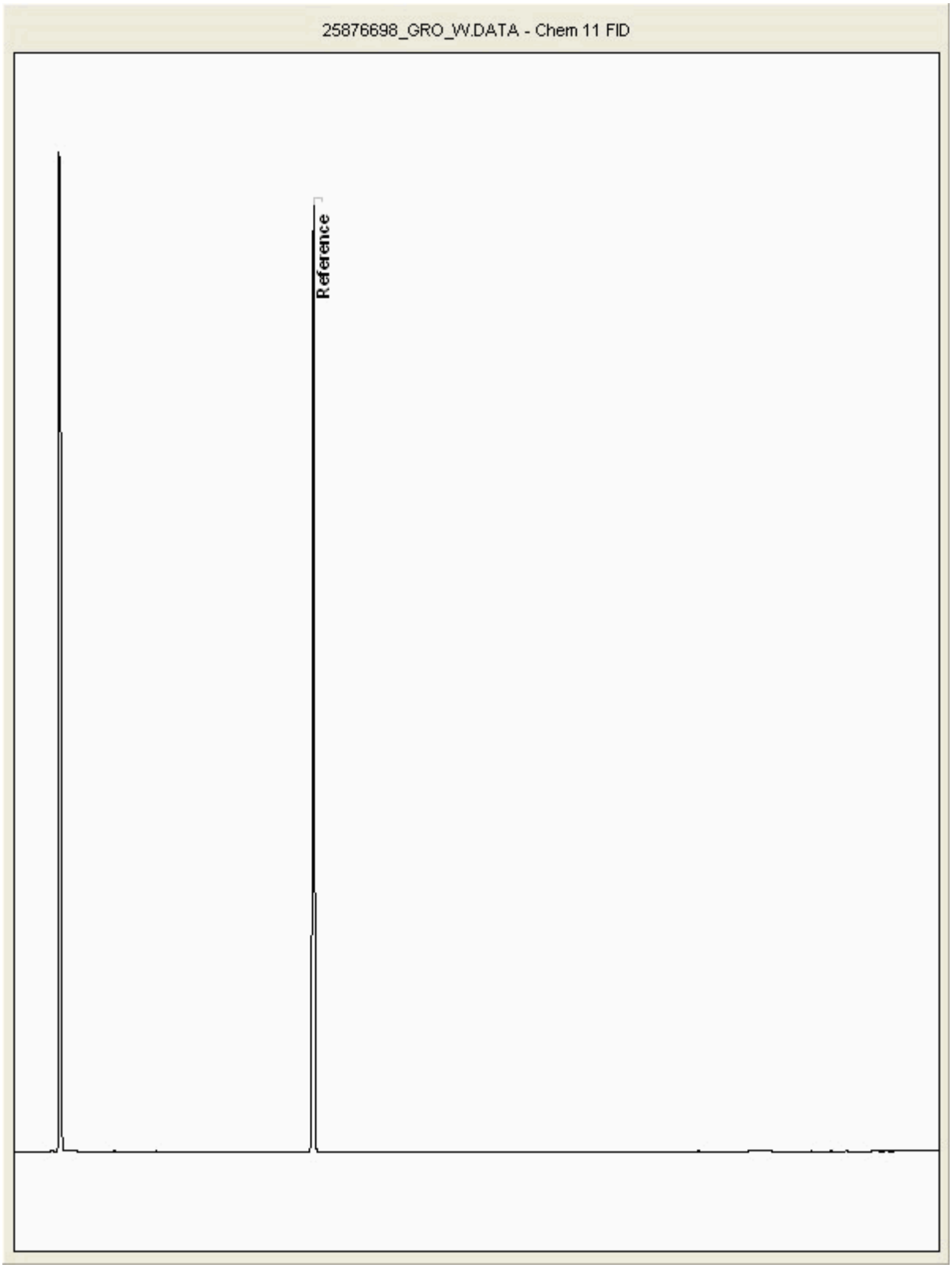


CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25876698 **Depth :** 0.00 - 0.00
Sample ID : BH12

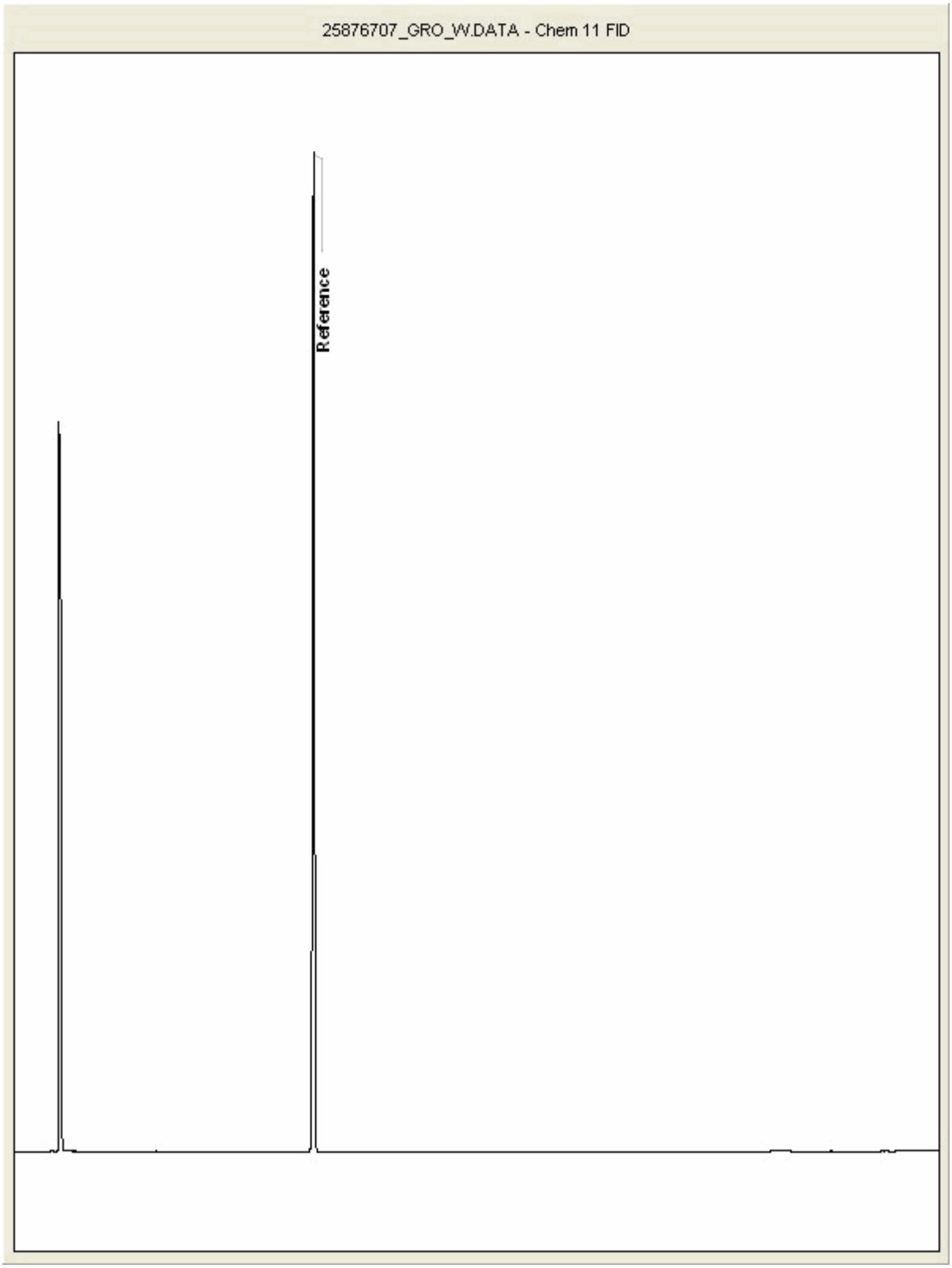


CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25876707 **Depth :** 0.00 - 0.00
Sample ID : BH22

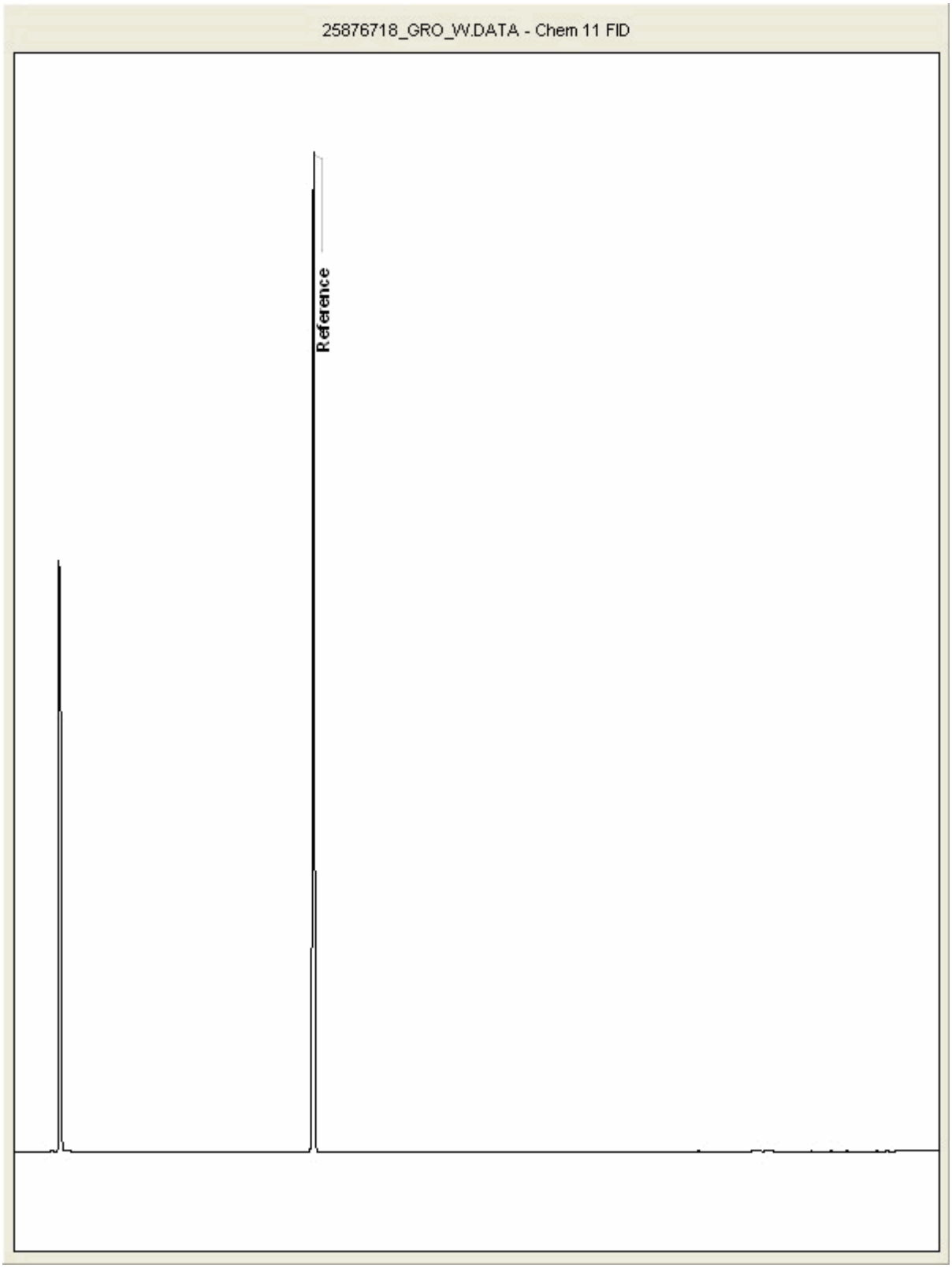


CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25876718 **Depth :** 0.00 - 0.00
Sample ID : BH17

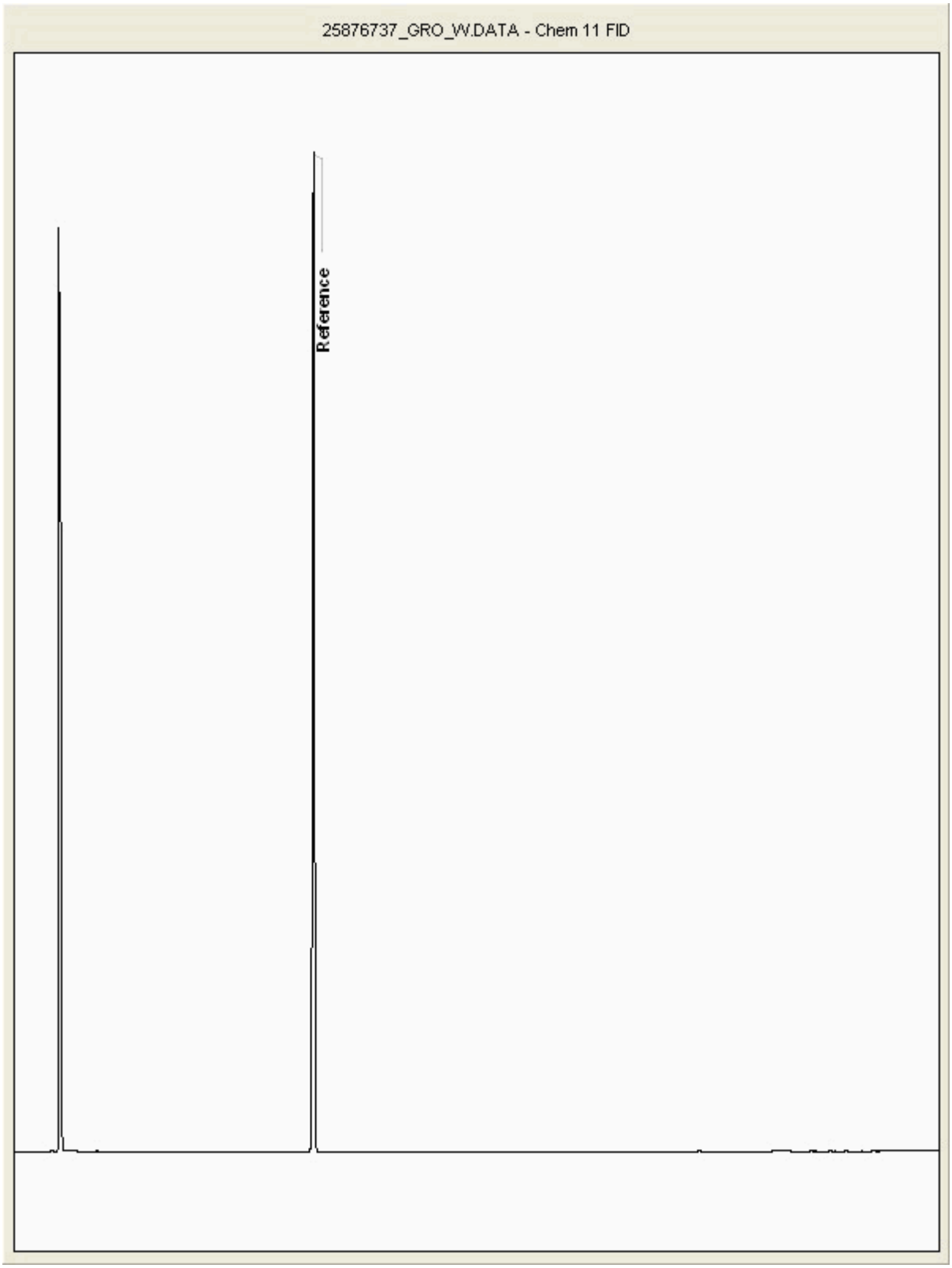


CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25876737 **Depth :** 0.00 - 0.00
Sample ID : BH10

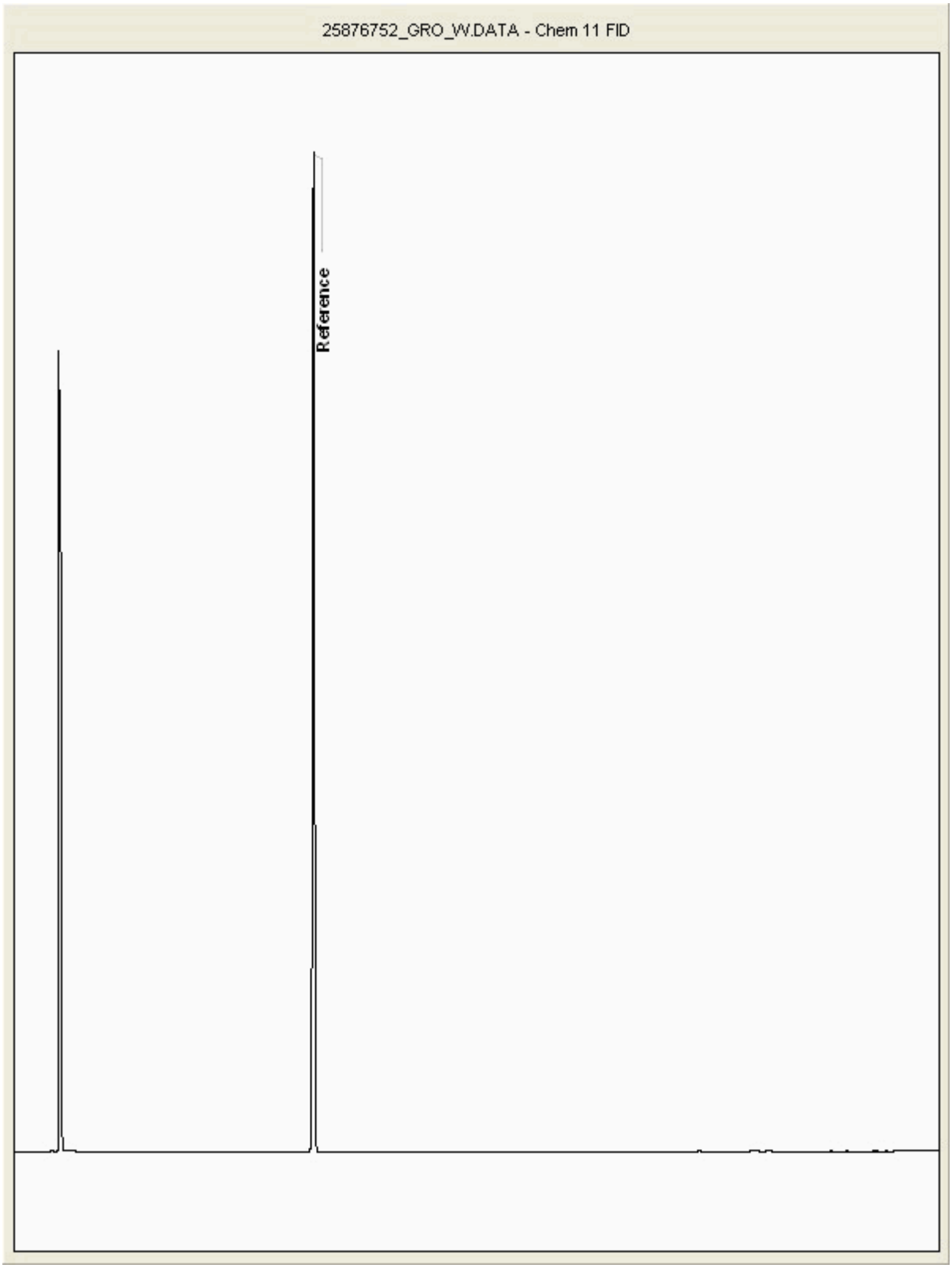


CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25876752 **Depth :** 0.00 - 0.00
Sample ID : BH03

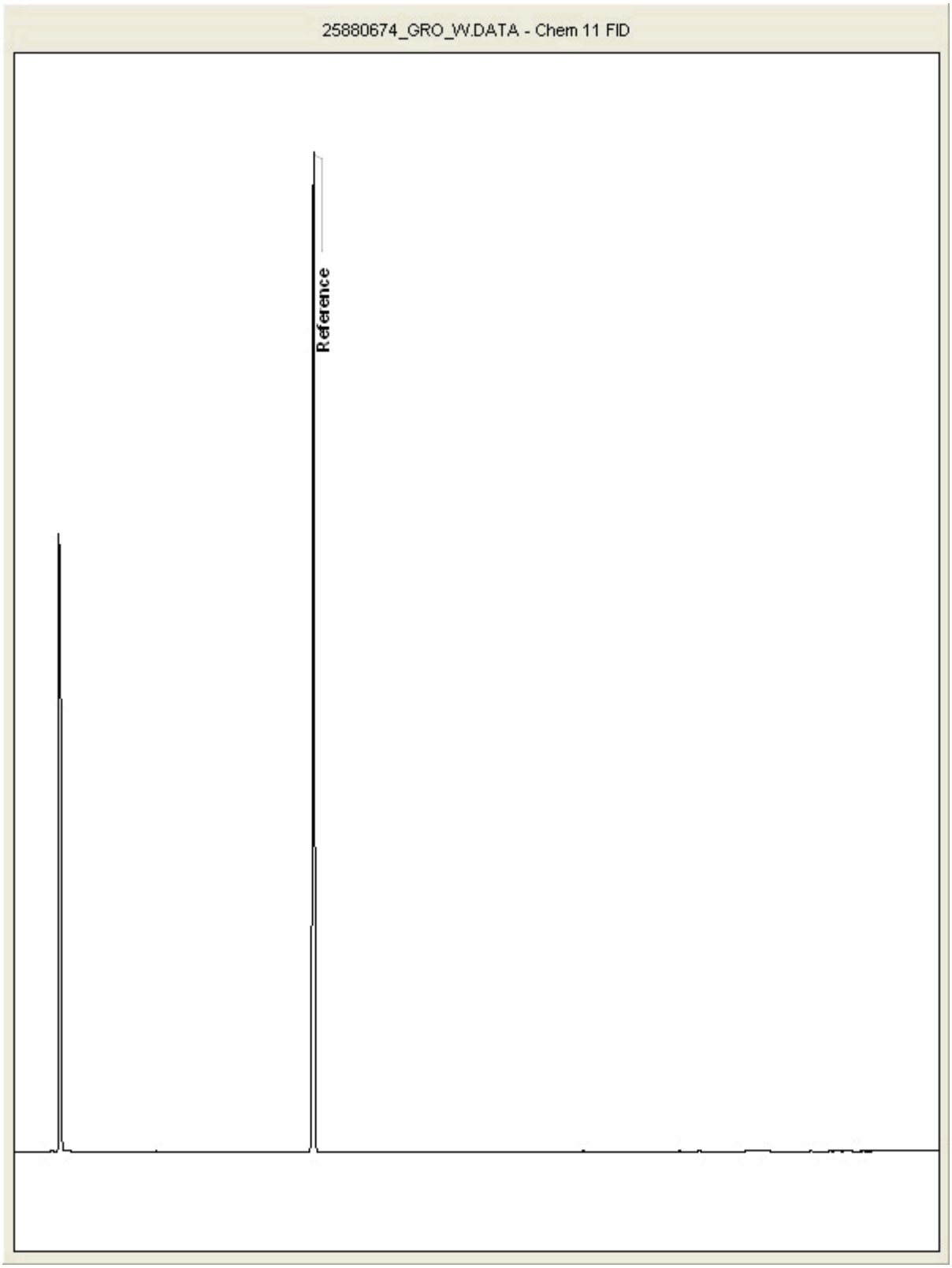


CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25880674 **Depth :** 0.00 - 0.00
Sample ID : WS15

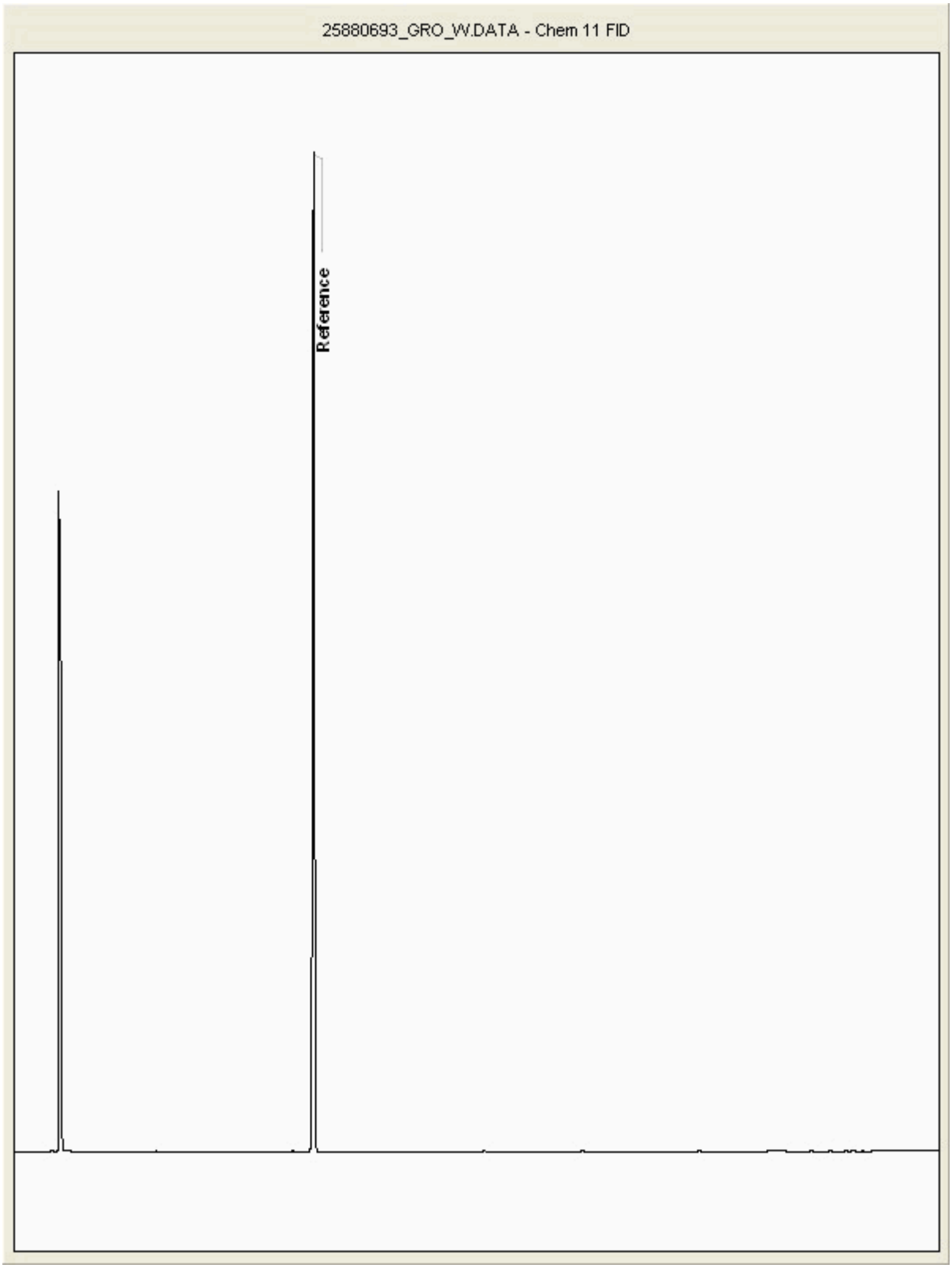


CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25880693 **Depth :** 0.00 - 0.00
Sample ID : BH06

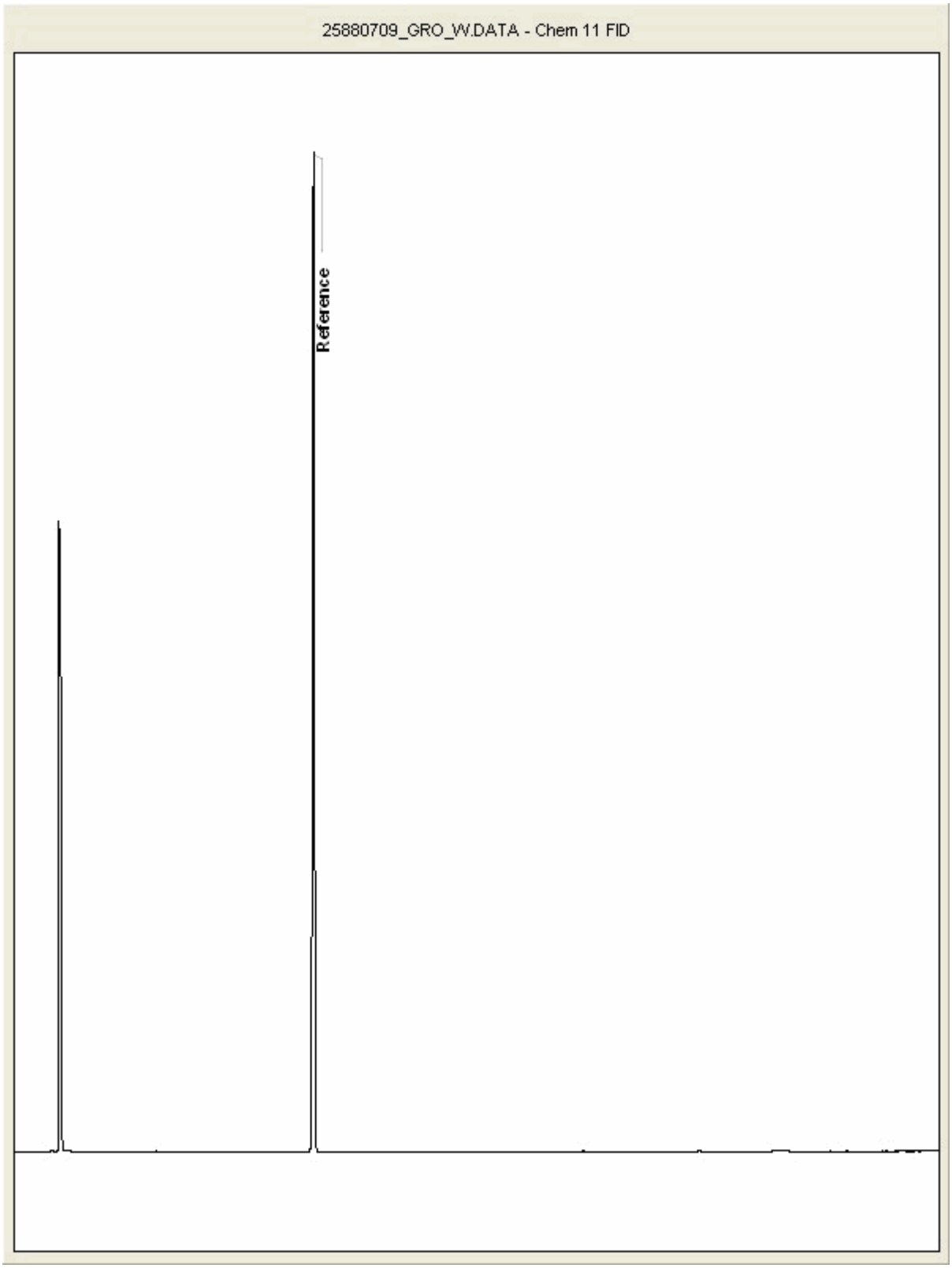


CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25880709 **Depth :** 0.00 - 0.00
Sample ID : WS08

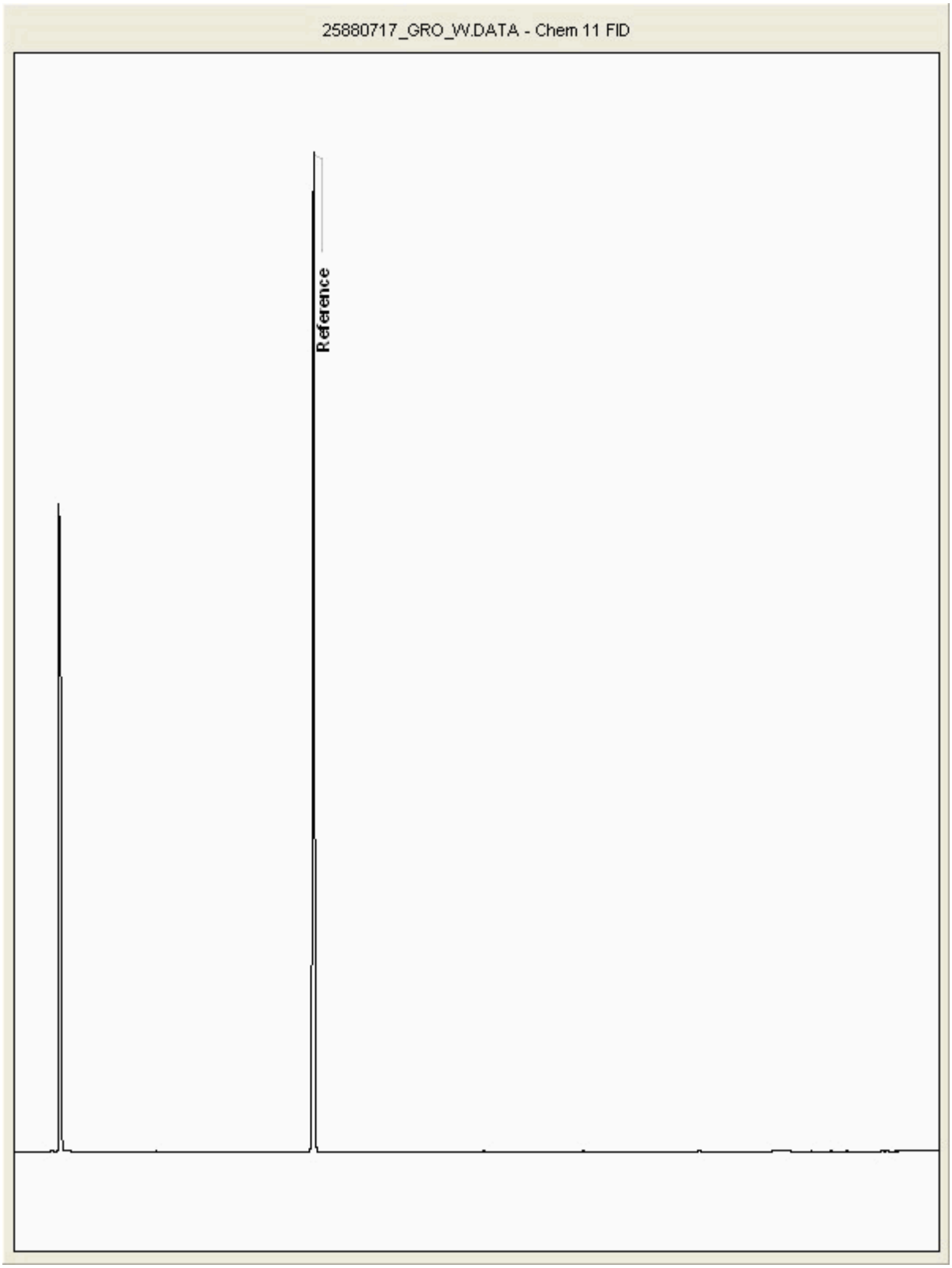


CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25880717 **Depth :** 0.00 - 0.00
Sample ID : BH01

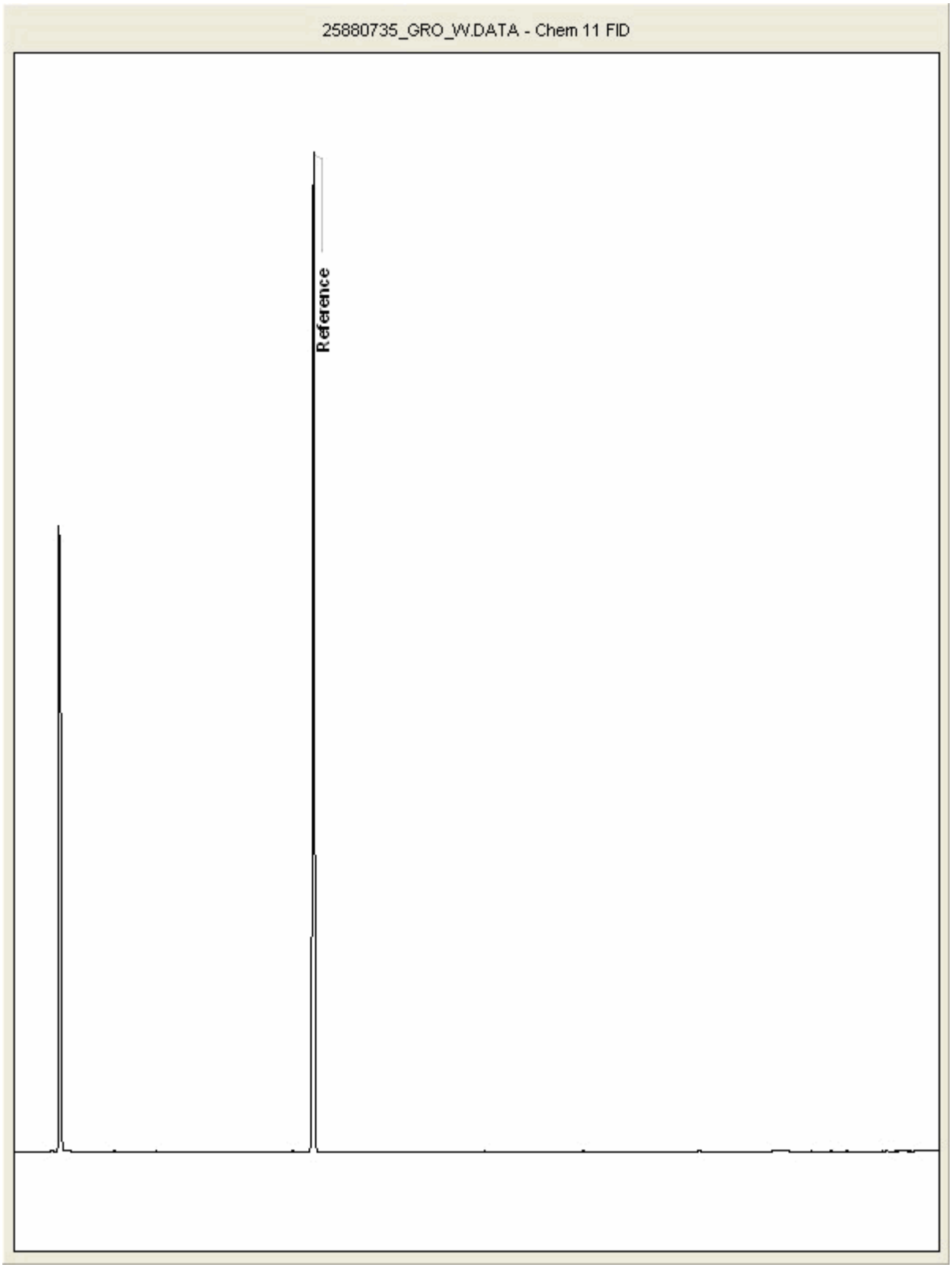


CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25880735 **Depth :** 0.00 - 0.00
Sample ID : WS54

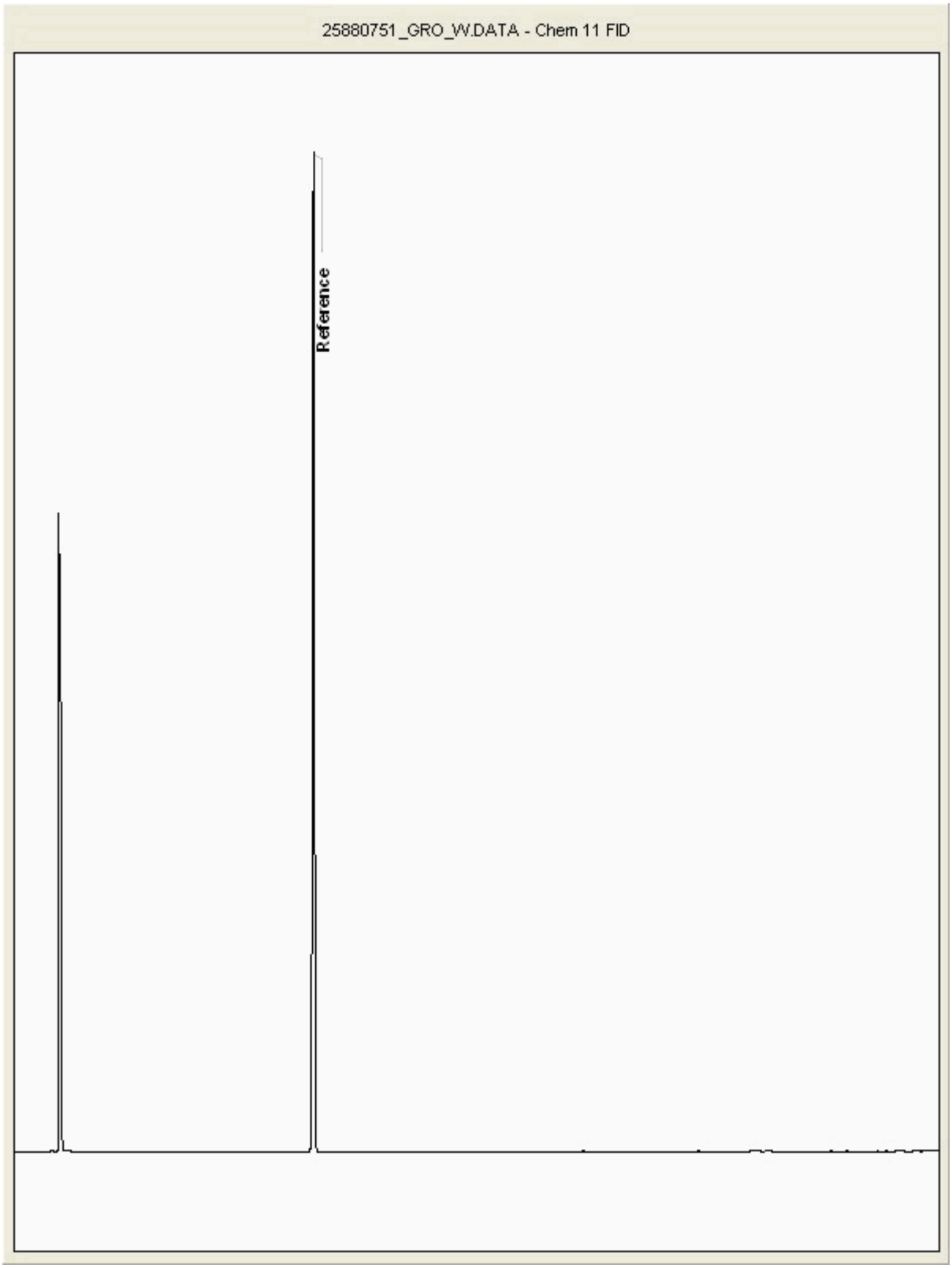


CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25880751 **Depth :** 0.00 - 0.00
Sample ID : WS31

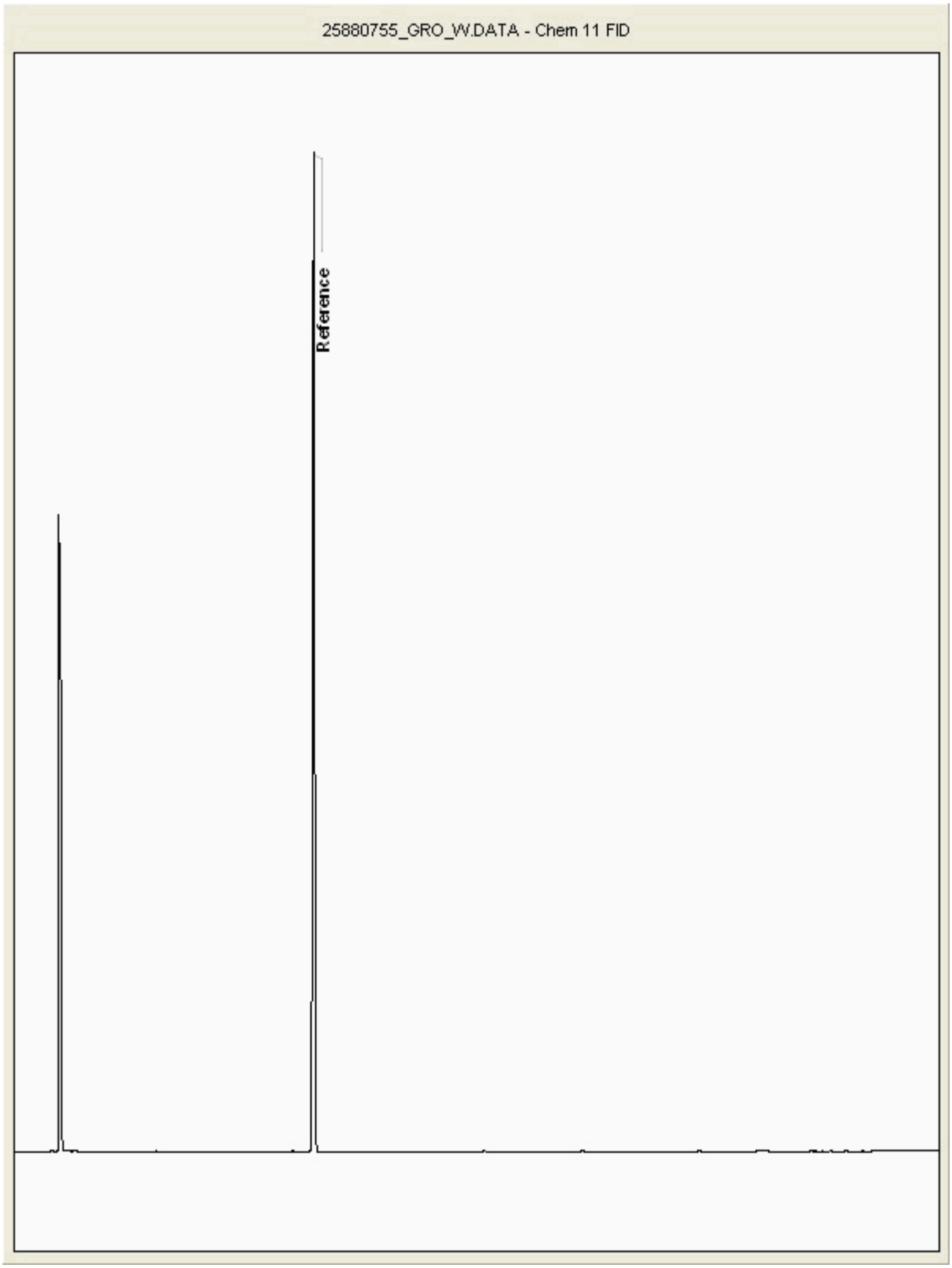


CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25880755 **Depth :** 0.00 - 0.00
Sample ID : WS12

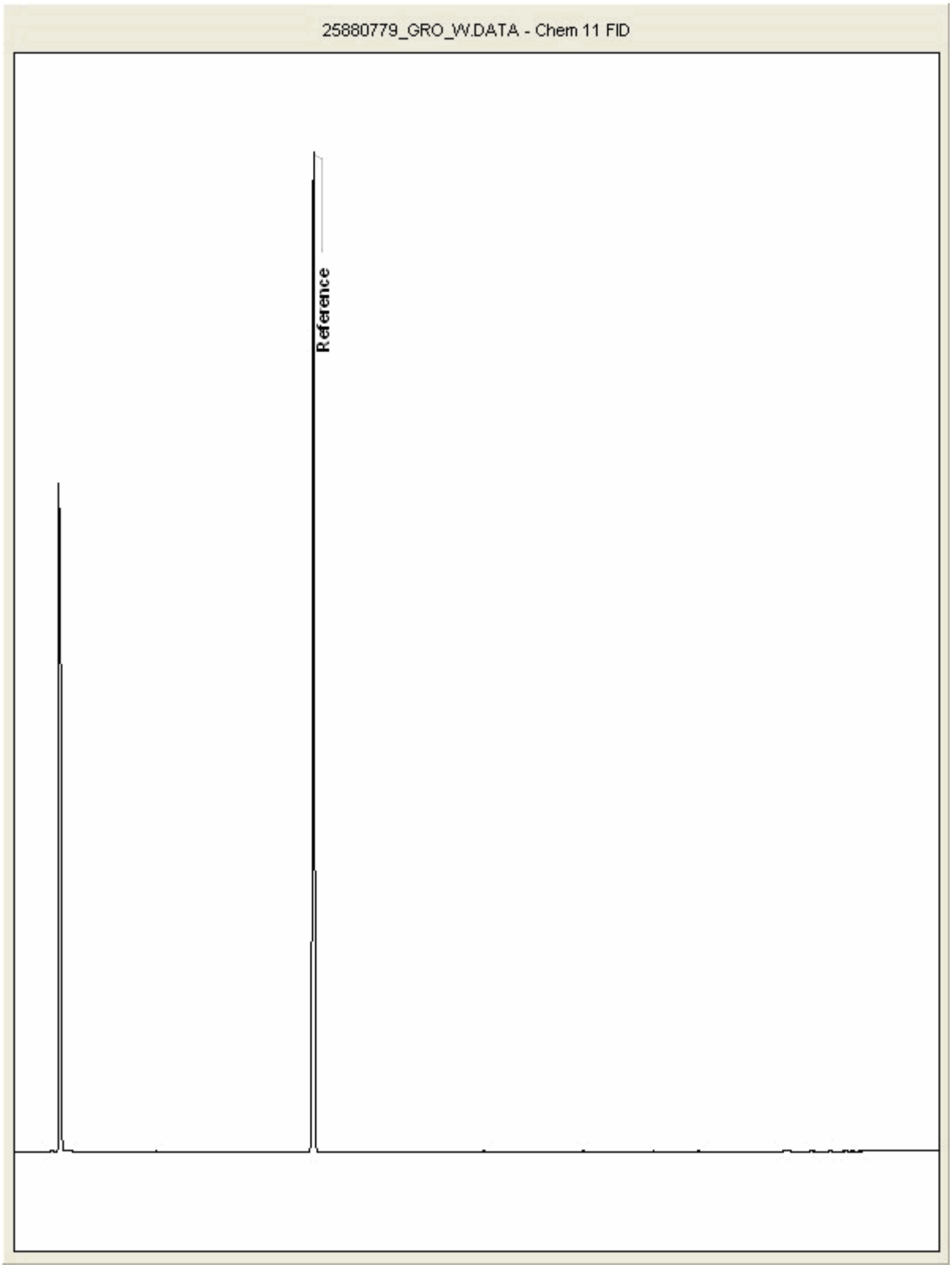


CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25880779 **Depth :** 0.00 - 0.00
Sample ID : BH05

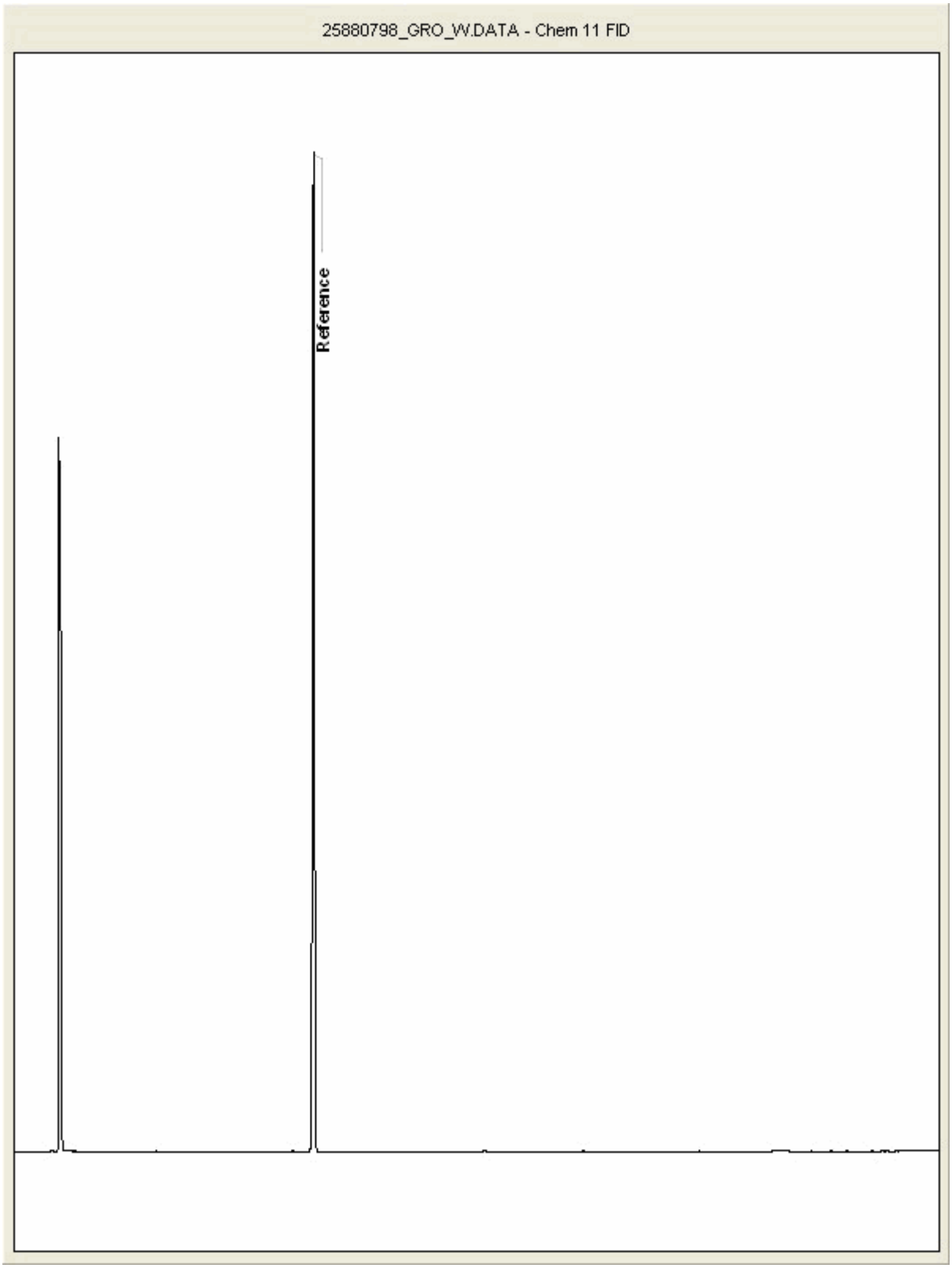


CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25880798 **Depth :** 0.00 - 0.00
Sample ID : BH11

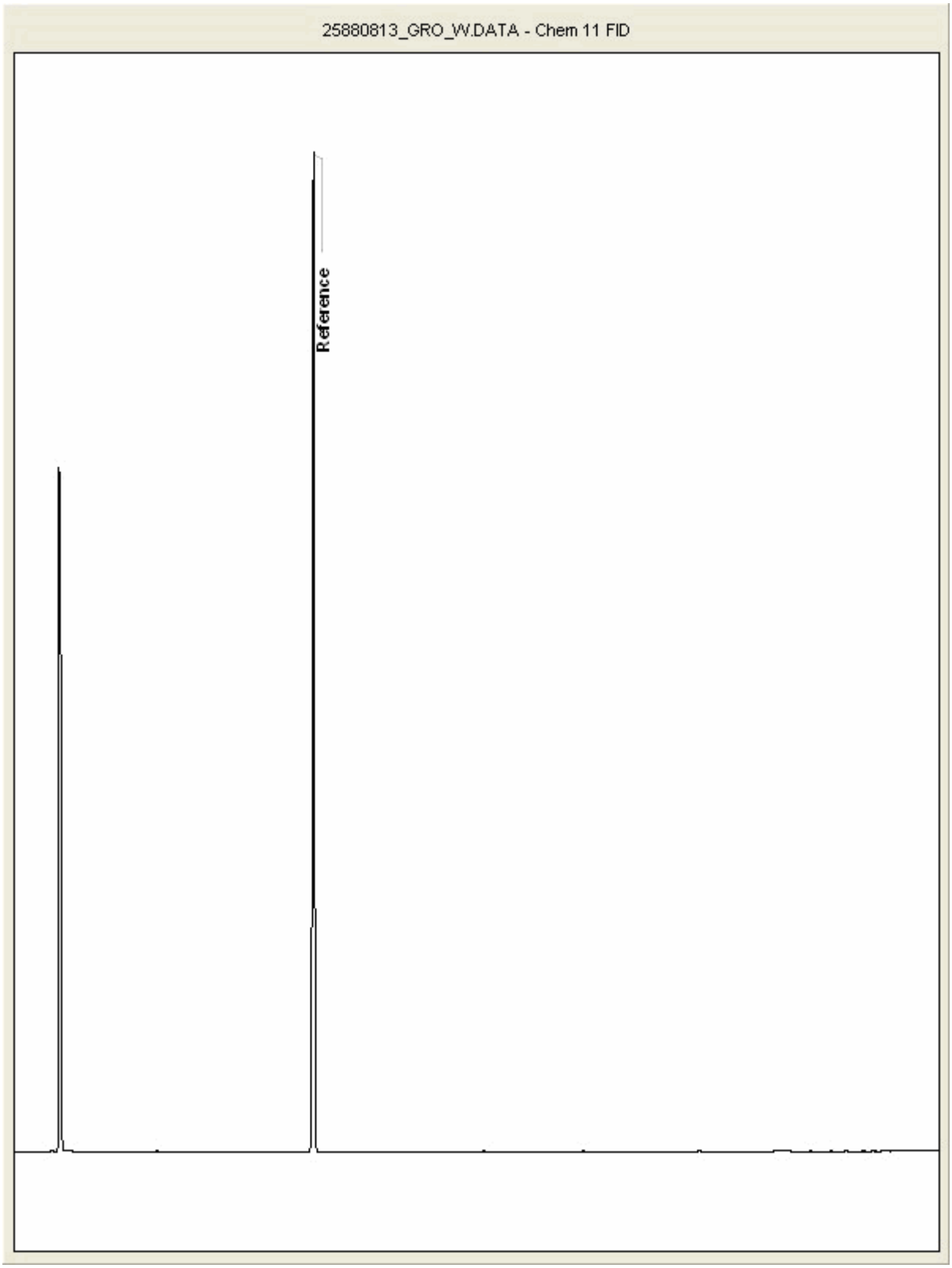


CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25880813 **Depth :** 0.00 - 0.00
Sample ID : BH61

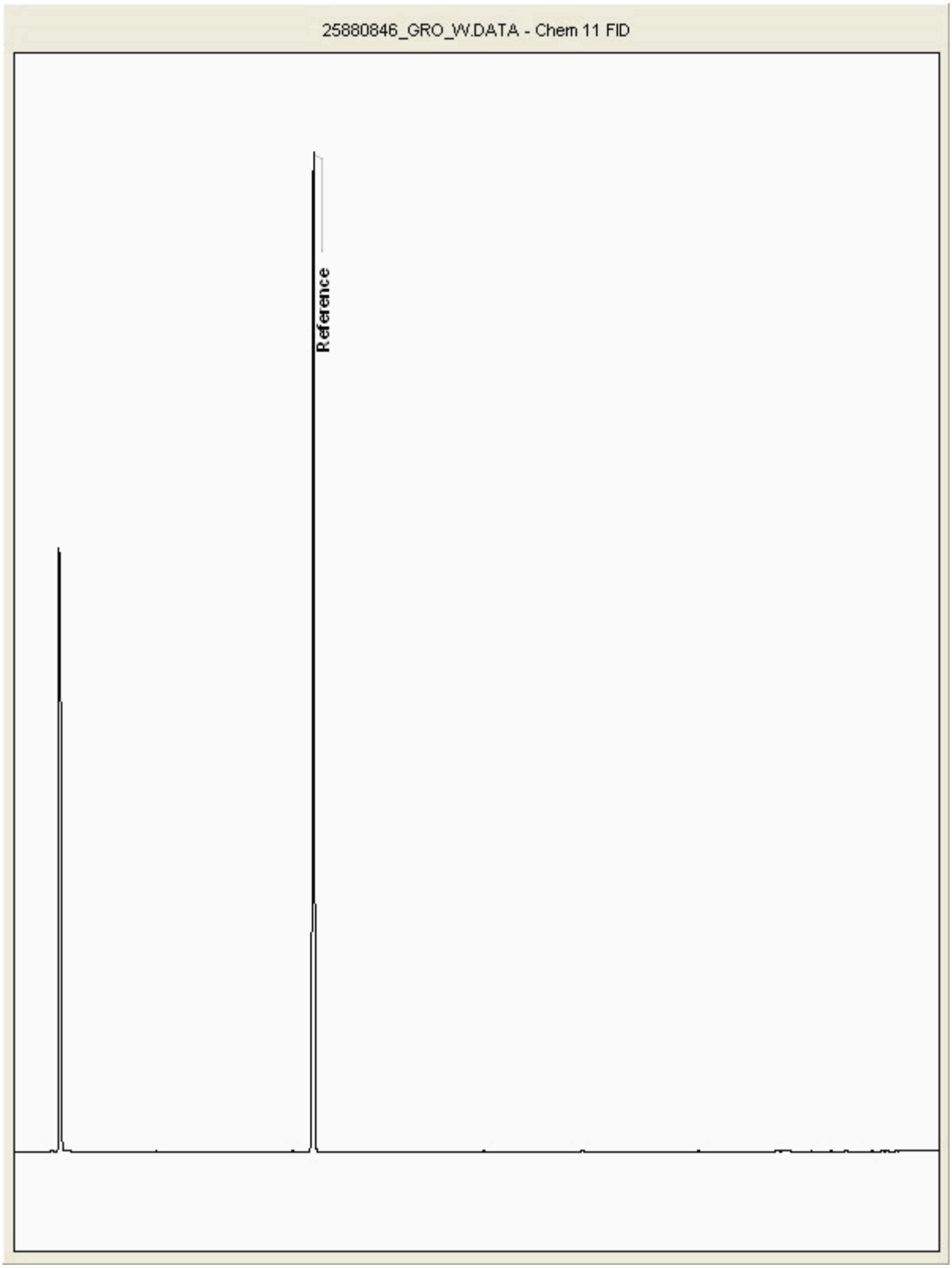


CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25880846 **Depth :** 0.00 - 0.00
Sample ID : BH09

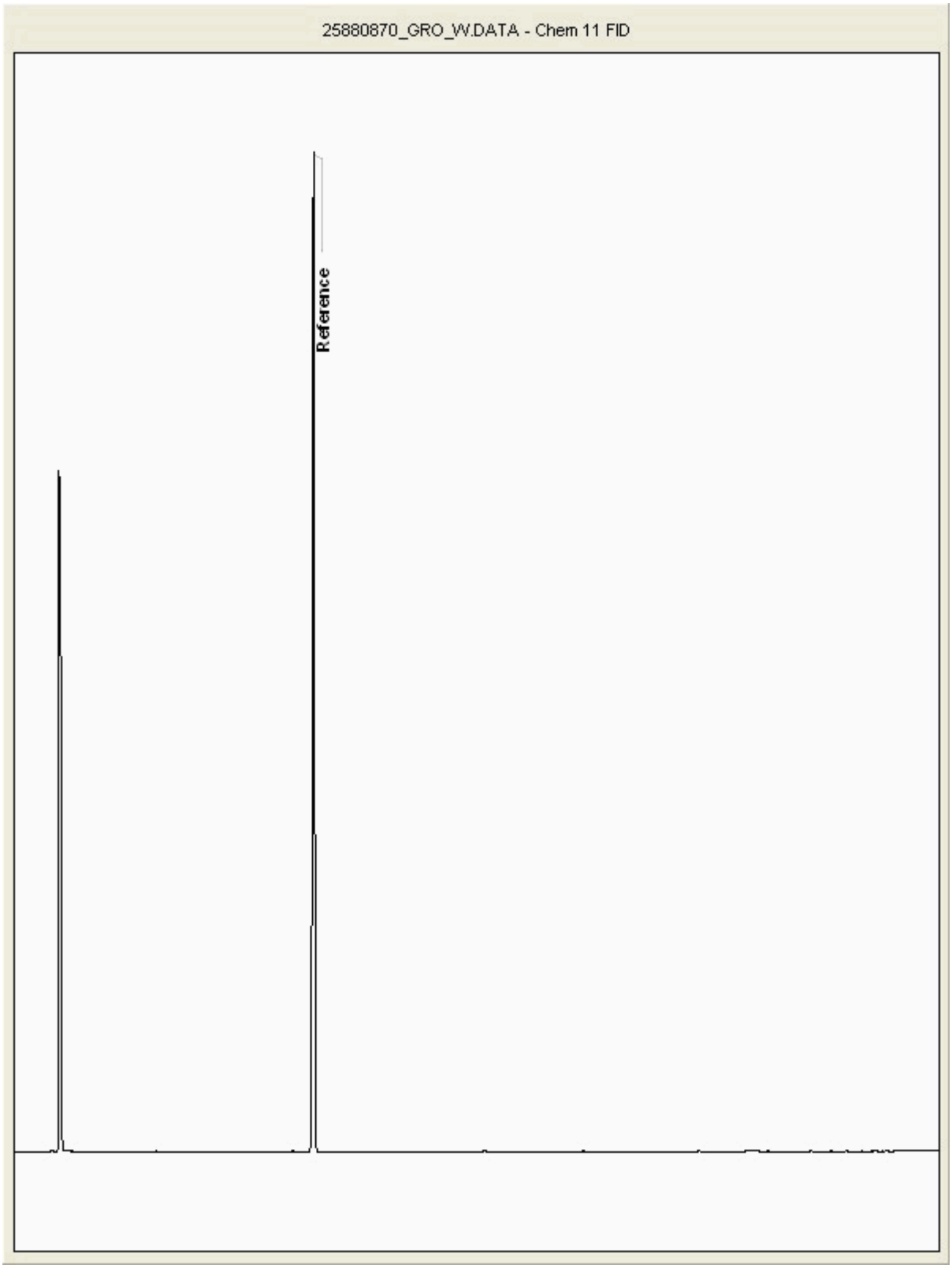


CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25880870 **Depth :** 0.00 - 0.00
Sample ID : WS26

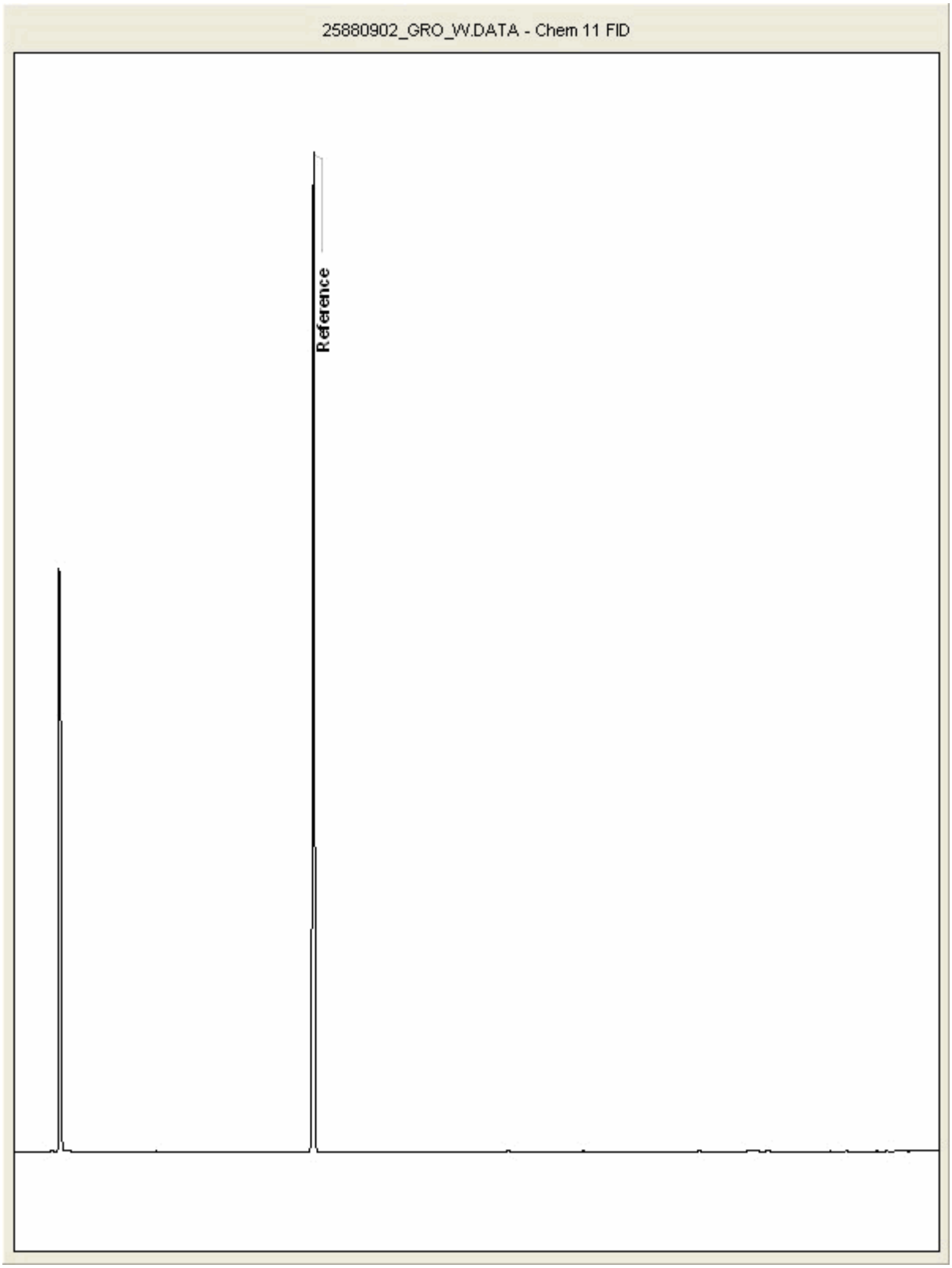


CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25880902 **Depth :** 0.00 - 0.00
Sample ID : BH56

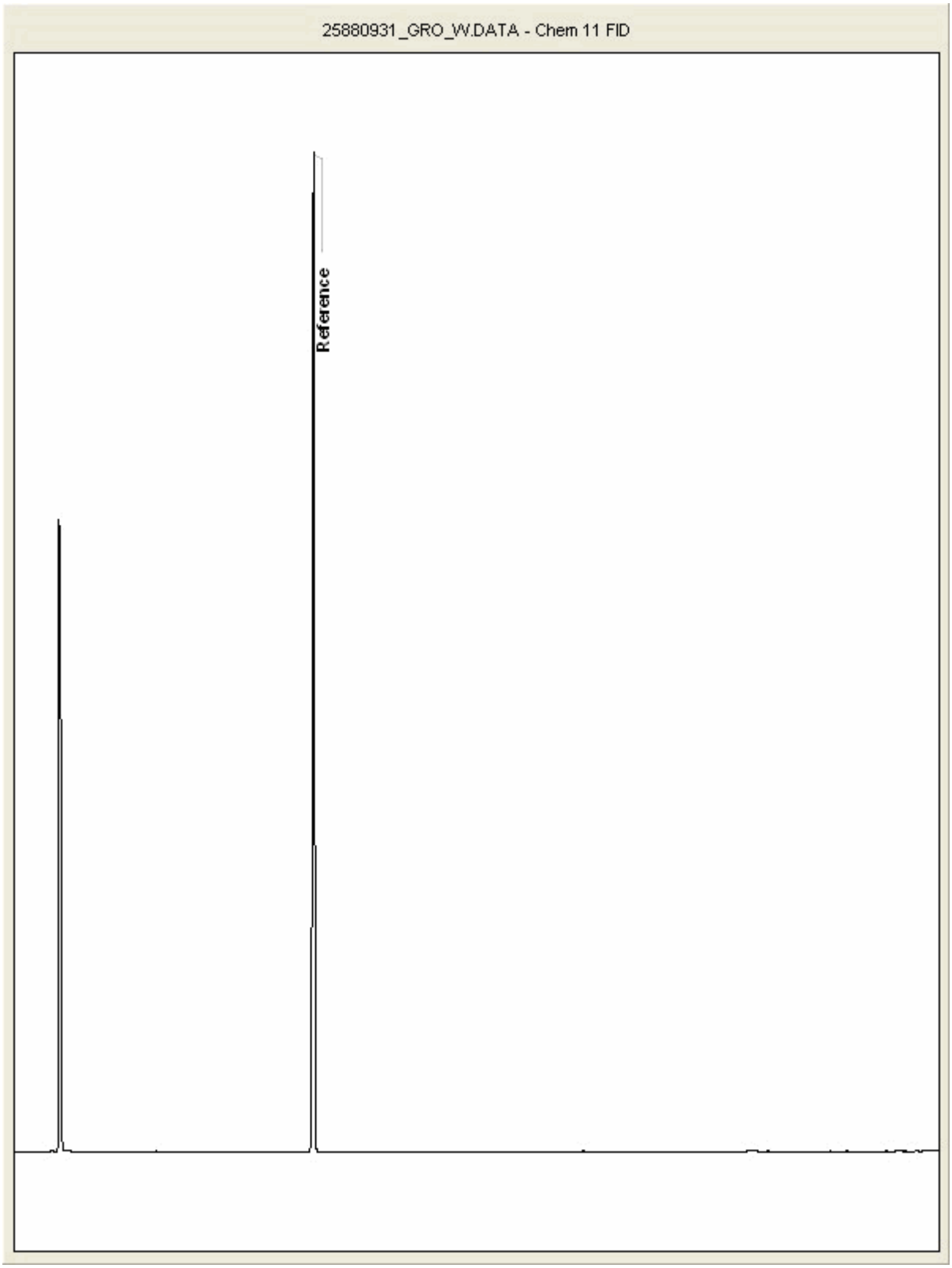


CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25880931 **Depth :** 0.00 - 0.00
Sample ID : BH15

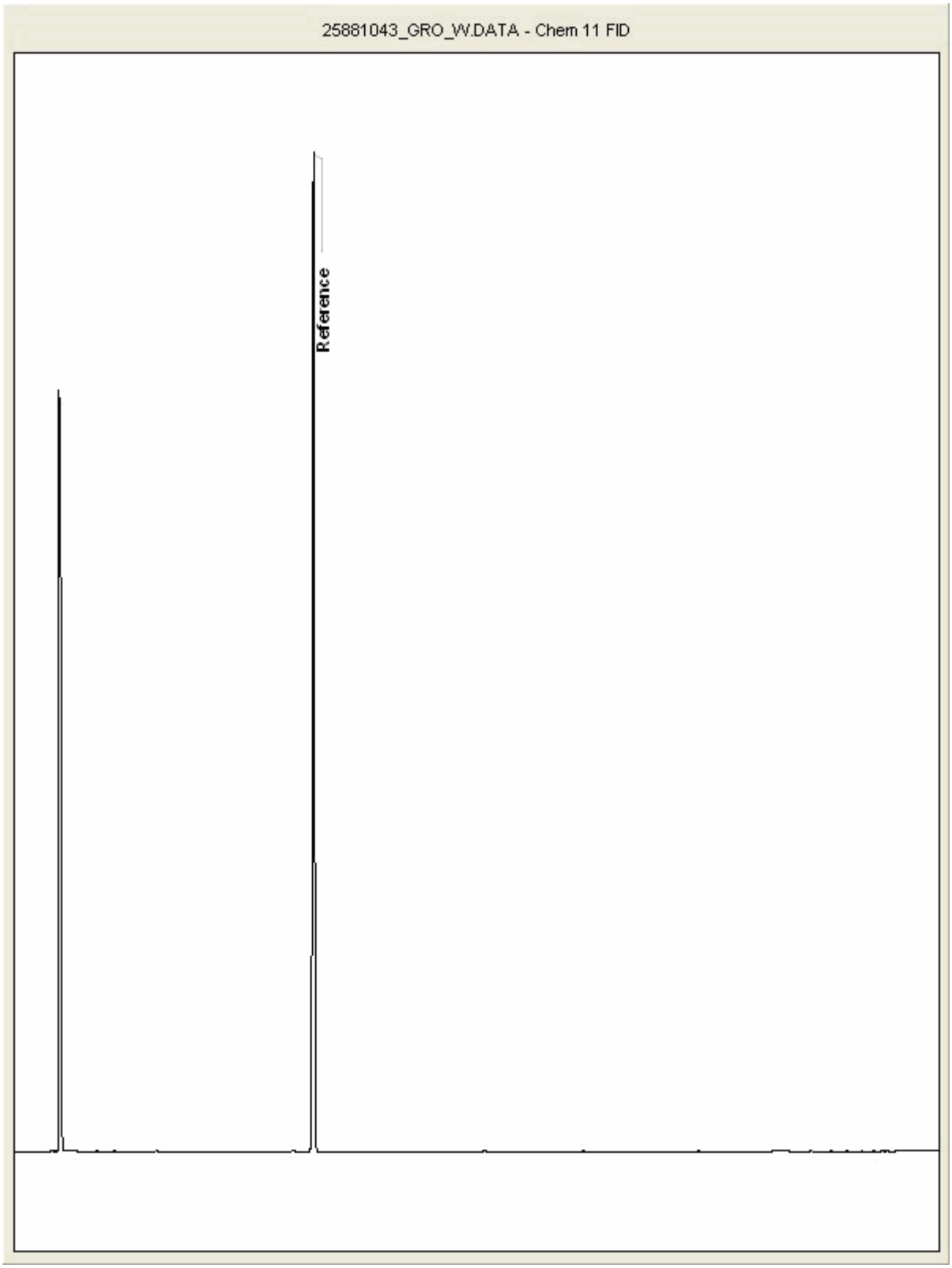


CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25881043 **Depth :** 0.00 - 0.00
Sample ID : BH14

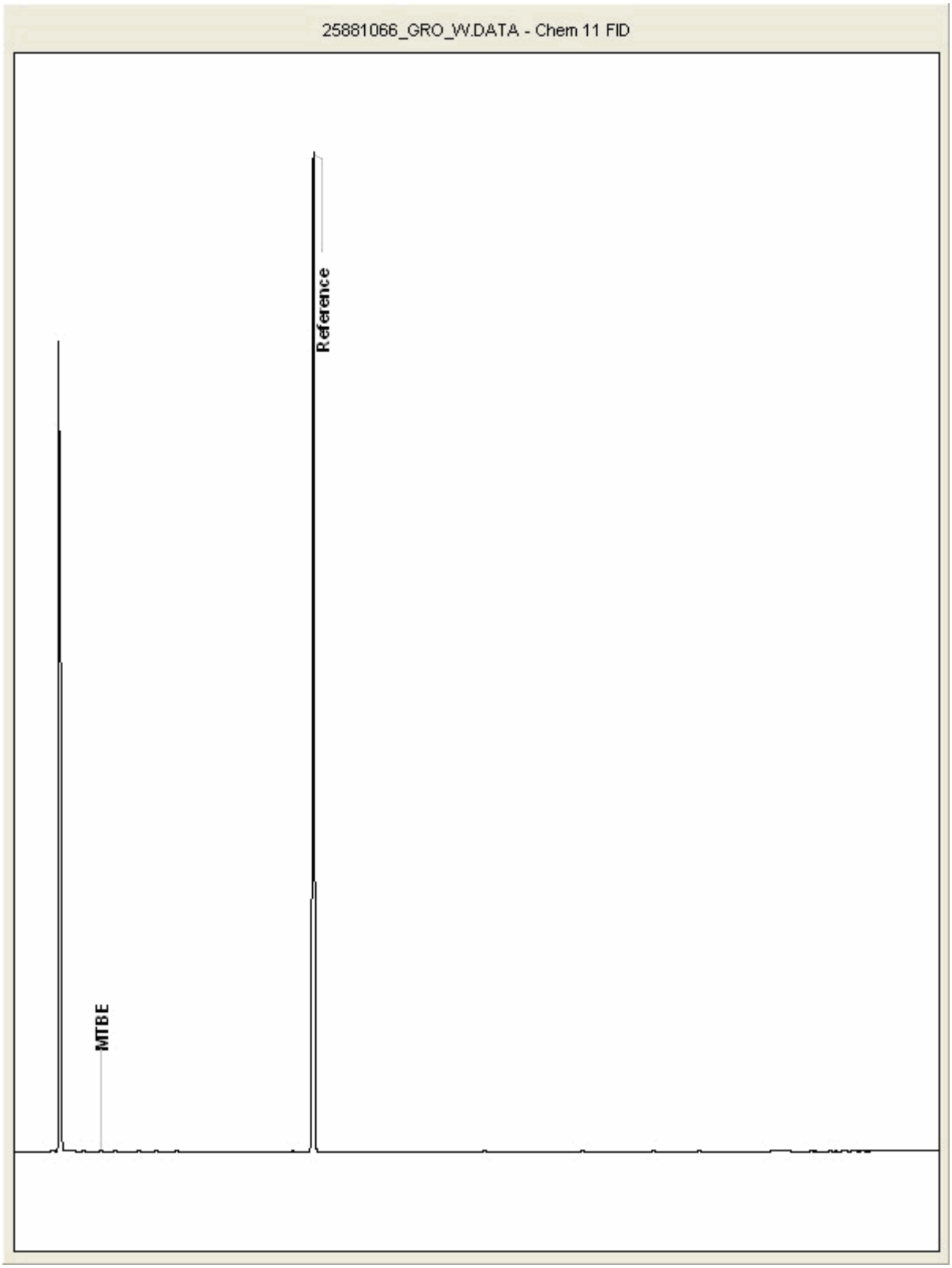


CERTIFICATE OF ANALYSIS

SDG: 220222-78 **Report Number:** 637302 **Superseded Report:** 636197
Client Ref.: 784-B026948 **Location:** A46 Newark Northern Bypass

Chromatogram

Analysis: GRO by GC-FID (W) **Sample No :** 25881066 **Depth :** 0.00 - 0.00
Sample ID : BH18



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Coventry
CV4 9GU

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www.alsenvironmental.co.uk

F.A.O Quotes
ALS Life Sciences Limited
Units 7 & 8 Hawarden Business Park
Manor Road
Hawarden
Deeside CH5 3US

02 March 2022

Test Report: COV/2276340/2022

Dear F.A.O Quotes

Analysis of your sample(s) received on 22 February 2022 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using ALS Environmental Ltd and we look forward to receiving your next samples.

Yours Sincerely,

Signed: Sukaltha Tharmaseelan.

Name: S. Tharmaseelan

Title: Legionella Team Leader

Report Summary

ANALYSED BY

F.A.O Hawarden Quotes
ALS Life Sciences Limited
Units 7 & 8 Hawarden Business Park
Manor Road
Hawarden
Deeside
CH5 3US

Date of Issue: **02 March 2022**

Report Number: **COV/2276340/2022** Issue **1**

This issue replaces all previous issues

Job Description: 2021 Analysis

Job Location: A46 North Newark Bypass 784-B026948

Number of Samples included in this report **3**

Job Received: **22 February 2022**

Number of Test Results included in this report **24**

Analysis Commenced: **22 February 2022**

Signed: Subathra Tharmaseelan

Name: **S. Tharmaseelan** Date: **02 March 2022**

Title: **Legionella Team Leader**

ALS Environmental Ltd was not responsible for sampling unless otherwise stated.

Information on the methods of analysis and performance characteristics are available on request.
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. The results relate only to the items tested and where relevant sampled.
Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.
This test report is not a statement of conformity to any specification or standard.

Certificate of Analysis

ANALYSED BY

Report Number: **COV/2276340/2022** Issue **1**

Laboratory Number: **21372343** Sample **1** of **3**

Sample Source: **ALS Life Sciences Limited**
Sample Point Description:
Sample Description: **BH12**
Sample Matrix: **Not Specified**
Sample Date/Time: **17 February 2022** **11:00**
Sample Received: **22 February 2022**
Analysis Complete: **02 March 2022**

Test Description	Result	Units	Analysis Date	Accreditation		Method
Clostridium Perfringens, Pres	1	cfu/100ml	23/02/2022	N	Cov	W8
Total Coliform presump	5	cfu/100ml	23/02/2022	N	Cov	W10
Total Coliforms confirmed	3	cfu/100ml	23/02/2022	N	Cov	W10
Enterococci presumptive	2	cfu/100ml	24/02/2022	N	Cov	W7
Enterococci confirmed	2	cfu/100ml	24/02/2022	N	Cov	W7
Clostridium Perfringens, Conf	1	cfu/100ml	23/02/2022	N	Cov	W8
Faecal coliforms presumptive	0	cfu/100ml	25/02/2022	N	Cov	W57
Faecal coliforms confirmed	0	cfu/100ml	02/03/2022	N	Cov	W57

Analyst Comments for 21372343: This sample has been analysed for Total Coliforms confirmed, Total Coliform presump, Enterococci confirmed, Enterococci presumptive, Clostridium Perfringens, Conf, Faecal coliforms presumptive, Faecal coliforms confirmed, Clostridium Perfringens, Pres outside recommended stability times. It is therefore possible that the results provided may be compromised. Total coliforms identified as Rahnella Aquatilis, Yersinia Enterocolitica Enterobacter species. Enterococci identified as Enterococcus Faecium and Enterococcus species.

This issue replaces all previous issues
Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: Sabaltharan Tharmaseelan

Name: **S. Tharmaseelan** Date: **02 March 2022**

Title: **Legionella Team Leader**

ALS Environmental Ltd
Torrington Avenue, Coventry, CV4 9GU
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Certificate of Analysis

ANALYSED BY

Report Number: **COV/2276340/2022** Issue **1**

Laboratory Number: **21372344** Sample **2** of **3**

Sample Source: **ALS Life Sciences Limited**
Sample Point Description:
Sample Description: **BH14**
Sample Matrix: **Not Specified**
Sample Date/Time: **17 February 2022** **10:00**
Sample Received: **22 February 2022**
Analysis Complete: **02 March 2022**

Test Description	Result	Units	Analysis Date	Accreditation		Method
Clostridium Perfringens, Pres	32	cfu/100ml	23/02/2022	N	Cov	W8
Total Coliform presump	>100	cfu/100ml	23/02/2022	N	Cov	W10
Total Coliforms confirmed	>100	cfu/100ml	23/02/2022	N	Cov	W10
Enterococci presumptive	10	cfu/100ml	24/02/2022	N	Cov	W7
Enterococci confirmed	3	cfu/100ml	24/02/2022	N	Cov	W7
Clostridium Perfringens, Conf	29	cfu/100ml	23/02/2022	N	Cov	W8
Faecal coliforms presumptive	3	cfu/100ml	25/02/2022	N	Cov	W57
Faecal coliforms confirmed	3	cfu/100ml	02/03/2022	N	Cov	W57

Analyst Comments for 21372344: This sample has been analysed for Total Coliforms confirmed, Total Coliform presump, Enterococci confirmed, Enterococci presumptive, Clostridium Perfringens, Conf, Faecal coliforms presumptive, Faecal coliforms confirmed, Clostridium Perfringens, Pres outside recommended stability times. It is therefore possible that the results provided may be compromised. Confirmation process not been carried out for coliforms due to nature of the sample. Enterococci identified as Enterococcus faecium and Enterococcus species.

This issue replaces all previous issues
Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: Sabaltharan Tharmaseelan

Name: **S. Tharmaseelan** Date: **02 March 2022**

Title: **Legionella Team Leader**

ALS Environmental Ltd
Torrington Avenue, Coventry, CV4 9GU
Tel:+44 (0)24 7642 1213 Fax:+44 (0)24 7685 6575

Certificate of Analysis

ANALYSED BY

Report Number: **COV/2276340/2022** Issue **1**

Laboratory Number: **21372345** Sample **3** of **3**

Sample Source: **ALS Life Sciences Limited**
Sample Point Description:
Sample Description: **WS54**
Sample Matrix: **Not Specified**
Sample Date/Time: **17 February 2022** **12:00**
Sample Received: **22 February 2022**
Analysis Complete: **02 March 2022**

Test Description	Result	Units	Analysis Date	Accreditation		Method
Clostridium Perfringens, Pres	0	cfu/100ml	23/02/2022	N	Cov	W8
Total Coliform presump	0	cfu/100ml	23/02/2022	N	Cov	W10
Total Coliforms confirmed	0	cfu/100ml	23/02/2022	N	Cov	W10
Enterococci presumptive	0	cfu/100ml	24/02/2022	N	Cov	W7
Enterococci confirmed	0	cfu/100ml	24/02/2022	N	Cov	W7
Clostridium Perfringens, Conf	0	cfu/100ml	23/02/2022	N	Cov	W8
Faecal coliforms presumptive	0	cfu/100ml	25/02/2022	N	Cov	W57
Faecal coliforms confirmed	0	cfu/100ml	02/03/2022	N	Cov	W57

Analyst Comments for 21372345: This sample has been analysed for Total Coliforms confirmed, Total Coliform presump, Enterococci confirmed, Enterococci presumptive, Clostridium Perfringens, Conf, Faecal coliforms presumptive, Faecal coliforms confirmed, Clostridium Perfringens, Pres outside recommended stability times. It is therefore possible that the results provided may be compromised.

This issue replaces all previous issues
Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.
Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.
For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.
I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed: Subaskan Tharmaseelan

Name: **S. Tharmaseelan** Date: **02 March 2022**

Title: **Legionella Team Leader**

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ANALYST COMMENTS FOR REPORT COV/2276340/2022 Issue 1

This issue replaces all previous issues

Date of Issue: **02 March 2022**

Sample No	Analysis Comments
21372343	This sample has been analysed for Total Coliforms confirmed, Total Coliform presump, Enterococci confirmed, Enterococci presumptive, Clostridium Perfringens, Conf, Faecal coliforms presumptive, Faecal coliforms confirmed, Clostridium Perfringens, Pres outside recommended stability times. It is therefore possible that the results provided may be compromised. Total coliforms identified as Rahnella Aquatilis, Yersinia Enterocolitica Enterobacter species. Enterococci identified as Enterococcus Faecium and Enterococcus species.
21372344	This sample has been analysed for Total Coliforms confirmed, Total Coliform presump, Enterococci confirmed, Enterococci presumptive, Clostridium Perfringens, Conf, Faecal coliforms presumptive, Faecal coliforms confirmed, Clostridium Perfringens, Pres outside recommended stability times. It is therefore possible that the results provided may be compromised. Confirmation process not been carried out for coliforms due to nature of the sample. Enterococci identified as Enterococcus faecium and Enterococcus species.
21372345	This sample has been analysed for Total Coliforms confirmed, Total Coliform presump, Enterococci confirmed, Enterococci presumptive, Clostridium Perfringens, Conf, Faecal coliforms presumptive, Faecal coliforms confirmed, Clostridium Perfringens, Pres outside recommended stability times. It is therefore possible that the results provided may be compromised.

Signed: Sabaltharan Tharmaseelan

Name: **S. Tharmaseelan** Date: **02 March 2022**

Title: **Legionella Team Leader**

DETERMINAND COMMENTS FOR REPORT COV/2276340/2022

ISSUE 1

This issue replaces all previous issues

Date of Issue: 02 March 2022

Sample No	Description	Determinand	Comments
21372343	BH12	Total Coliforms confirmed	Total coliforms identified as Rahnella Aquatilis, Yersinia Enterocolitica Enterobacter species.
21372343	BH12	Enterococci confirmed	Enterococci identified as Enterococcus Faecium and Enterococcus species.
21372344	BH14	Total Coliform presump	Confirmation process not been carried out for coliforms due to nature of the sample.
21372344	BH14	Enterococci confirmed	Enterococci identified as Enterococcus faecium and Enterococcus species.

Signed: Sabathan Tharmaseelan.

Name: **S. Tharmaseelan** Date: **02 March 2022**

Title: **Legionella Team Leader**

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