

## **Roxhill Developments Limited**

# M1 Junction 15 West – Roade Bypass

Factual Investigation Report

313583-01 (00)



**NOVEMBER 2017** 



## **RSK GENERAL NOTES**

	Pro	ject No	<b>.:</b> 3′	13583-0	)1 (	(00)	)
--	-----	---------	--------------	---------	------	------	---

- Title:Preliminary ground investigation factual report: M1 Junction 15 West Roade<br/>Bypass
- Client: Roxhill Developments Ltd (Roxhill), Lumonics House, Valley Drive, Swift Valley, Rugby, Warwickshire, CV21 1TQ

Date: 14th November 2017

Office: RSK, Abbey Park, Humber Road, Coventry, CV3 4AQ. Tel No: 02476 505600

Status: Final

Author	Romani Salama	Technical reviewer	Darren Bench
Signature	Sellance	Signature	REA.
Date:	14th November 2017	Date:	14th November 2017
Project manager	Michael Lawson	Quality reviewer	Darren Bench
Ciapoturo	Ma-	Signatura	REA.
Signature		Signature	1 - 20
Date:	14th November 2017	Date:	14th November 2017

RSK Environment Limited (RSK) has prepared this report for the sole use of the client, showing reasonable skill and care, for the intended purposes as stated in the agreement under which this work was completed. The report may not be relied upon by any other party without the express agreement of the client and RSK. No other warranty, expressed or implied, is made as to the professional advice included in this report.

Where any data supplied by the client or from other sources have been used, it has been assumed that the information is correct. No responsibility can be accepted by RSK for inaccuracies in the data supplied by any other party. The conclusions and recommendations in this report are based on the assumption that all relevant information has been supplied by those bodies from whom it was requested.

No part of this report may be copied or duplicated without the express permission of RSK and the party for whom it was prepared.

Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

This work has been undertaken in accordance with the quality management system of RSK Environment Ltd.



# CONTENTS

1	INTE		3
	1.1	Introduction	3
	1.2	Terms of reference	3
	1.3	Proposed development	3
	1.4	Objective	4
	1.5	Scope	4
	1.6	Limitations	5
2	SITE	E DETAILS	6
	2.1	Site location	6
	2.2	Local topography, geography and geomorphology	6
	2.3	Site description	7
	2.4	Published geology and expected ground conditions	8
3	GRC	DUND INVESTIGATION	0
	3.1	Introduction10	0
	3.2	Investigation strategy10	0
	3.3	Investigation layout10	0
	3.4	Health and safety10	0
	3.5	Investigation techniques	0
		3.5.1 Rotary core boring	0
		3.5.2 Windowless sampler borehole	0
		3.5.3 Trial pitting	0
		3.5.4 Dynamic Cone Penetrometer	1
	3.6	Investigation scope of works	1
	3.7	In-situ testing	1
	3.8	Sampling and laboratory analysis	2
		3.8.1 Geotechnical testing	2
		3.8.2 Environmental testing	3
	3.9	Instrumentation and monitoring	4
	3.10	Groundwater developing, sampling and analysis	5
BIE	BLIO	GRAPHY	7

#### TABLES

Table 1: Anticipated ground conditions at the site	8
Table 2: Identified constraints and control measures adopted on site	12
Table 3: Summary of soakaway test results	2
Table 4: Summary of geotechnical testing programme	2
Table 5: Summary of chemical testing programme	4
Table 6: Summary of monitoring well response zones	4
Table 7: Summary of groundwater analysis programme	5



#### FIGURES

Figure 1	Site location plan
Figure 2	As-built exploratory hole location plan

#### APPENDICES

- Appendix A Service constraints
- Appendix B Exploratory hole schedule
- Appendix C Site photographs
- Appendix D Trial pit logs
- Appendix E Windowless sample borehole logs
- Appendix F Rotary borehole logs
- Appendix G Insitu Soakaway results
- Appendix H Insitu dynamic cone penetrometer results
- Appendix I Chemical laboratory certificates for soil analysis
- Appendix J Chemical laboratory certificates for groundwater analysis
- Appendix K Geotechnical laboratory testing
- Appendix L Gas and groundwater monitoring results



# **1** INTRODUCTION

## 1.1 Introduction

RSK Environment Limited (RSK) has been commissioned by Roxhill Developments Limited to carry out a Geotechnical and Geoenvironmental Assessment of the site for the proposed alignment of the bypass around the village of Roade, Northamptonshire.

The proposed highway stretches over approximately 2.5km, various land owners and land uses which predominately comprises of agricultural fields intersected from north to south by an active railway line (4 line track) in deep cutting, Blisworth Road, a shallow drainage ditch, a rough track and finally a east west trending dismantled railway line close to the most south westerly extent.

This report is specific to the investigation undertaken on the proposed highway scheme only.

The Factual Ground Investigation Report is presented herein. This report is subject to the RSK service constraints given in Appendix A.

## **1.2** Terms of reference

This report comprises a preliminary ground investigation report in general accordance with the requirements of:

- BS5930:1999+A2:2010 'Code of practice for site investigations':
- Environment Agency CLR 11 2004a 'Model Procedures for the Management of Land Contamination' (Contaminated Land Risk Assessment):
- Highways Agency HD22/08, 'Managing Geotechnical Risk' (Ground Investigation): and
- BS EN 1997-2:2007. Eurocode 7 Geotechnical design Part 2: Ground investigation and testing.

## **1.3 Proposed development**

It is understood that the overall site is being considered for a relief bypass around the western edge of the village of Roade.

The proposed road is shown upon Roxhill Developments Ltd and BWB Masterplan ref: NGW-BWB-GEN-XX-SK-D-SK01, dated April 2016. Proposals are understood to comprise of a single 7.30m wide carriageway plus 1m hardstrips and footway/cycleway provision along the route. The proposed road will start south of the village of Roade and will extend in a northwards direction around the village before branching east and crossing the railway line and reconnecting with the A508 (Northampton Road) north of the village of Roade.



## 1.4 Objective

The purpose of the investigation works undertaken were to confirm the underlying ground conditions present beneath the bypass alignment. The bypass alignment has previously been subject to a Preliminary Sources Study Report 313418-02 (00), dated December 2016. In addition, the information collated will be used to assist in the master planning design and to support the Environmental Statement being developed for the proposed scheme.

The main objectives of the investigation are to:

- Confirm the stratigraphy of the soil across the site;
- Confirm the groundwater and soil gas regime;
- Confirm the contamination status of the the site using a programme of in-situ screening and laboratory analysis; and
- To provide sufficient geotechnical information characterising the strata encountered beneath the alignment.

In line with Eurocode 7, BS5930, BS10175 and CLR 11 further phases of targeted investigation may be required to provide specific data and information for detailed design of individual elements of the scheme, as the design evolves.

#### 1.5 Scope

The project has been carried out to an agreed brief as set out in RSK's proposal ref. M1 Junction 15 West: Roade Bypass, dated June 2017 in order to provide information to enable to site to be redeveloped as a new road, and a new bridge constructed across the existing railway cutting and line.

The project has been carried out to an agreed brief as set out in RSKs proposal (ref. 313583-00 (01) Specification, dated 15<sup>th</sup> June 2017.

The ground investigation fieldwork carried out at the site was undertaken in accordance with a specification developed by RSK in view of the Client's proposed development proposals.

The scope of works for the assessment include:

Inclusive within the Factual Report;

• an intrusive investigation, with associated laboratory analysis and programme of subsequent monitoring events.

#### Inclusive within the Interpretive Report;

- development of a refined conceptual site model followed by generic quantitative risk assessment (GQRA) to assess complete pollutant linkages that may require the implementation of migration measures to facilitate development;
- interpretation of ground conditions and ground model for the site;
- classification of the strata encountered and identification of soil properties;



- an interpretative report to assess both geotechnical and geoenvironmental risks and identify implications that will affect the detailed design of the project; and
- an assessment of the potential waste classification implications of soil arisings.

### 1.6 Limitations

The comments given in this report and the opinions expressed are based on the ground conditions encountered during the site work and on the results of tests made in the field and in the laboratory. However, there may be conditions pertaining to the site that have not been disclosed by the investigation and therefore could not be taken into account. In particular, it should be noted that there may be areas of made ground not detected due to the limited nature of the investigation or the thickness and quality of made ground across the site may be variable. In addition, groundwater levels and ground gas concentrations and flows may vary from those reported due to seasonal, or other, effects.



# 2 SITE DETAILS

## 2.1 Site location

The proposed Roade bypass, referred to hereafter as "the site" is located west of the village of Roade, Northampton and is designed to bypass Roade in an attempt to relieve the village of high traffic congestion. The site currently comprises of a series of agricultural fields, a dismantled railway line alignment, Blisworth Road and an existing 4 track live railway line within deep cutting. The proposed development stretches approximately 2.3 km to the west of Roade, starting south of Roade (off the A508) and extends north for approximately 1.5 km before turning eastwards for approximately 1km for the remainder of the route and reconnecting with the A508, north of Roade.

A location plan for the site is presented as Figure 1.

#### 2.2 Local topography, geography and geomorphology

The site sits within a formerly glaciated area. The land is gently undulating with a general rise from the southern extent to the north eastern corner.

The site sits within a formerly glaciated area. The land is gently undulating with a general fall to the south of the site. At its highest, the site elevation is approximately 122m AOD located where the proposed bypass branches off from the A508 Northampton Road, north of the town of Roade. The proposed bypass crosses over a railway line north-west of the town of Roade, which is located within a deep cutting. The route dips to less than 115m AOD just after it crosses Blisworth Road and the drainage ditch, before rising back to 120m AOD at its most westerly extent. At the time of the walkover the drainage ditch did not contain any water. The route the drops again towards the A508 Stratford Road, rejoining at an elevation of approximately 100m AOD, although the topography is undulating at this end of the site.

The proposed bypass is to meet a modified section of the A508 Stratford Road, at the point at which it crosses an historic, now dismantled, overgrown railway line.

The geological sequence of the majority of the site is understood to comprise Oadby Member Glacial Till (Superficial) overlying solid deposits anticipated to be the Blisworth Limestone Formation, which is principally limestone's with thin bands of fossiliferrous mudstone and marls, underlain by the succession of marine and non-marine mudstones, sandstones and limestones of the Blisworth Clay, Rutland Formation, Stamford Member, Northampton Sand Formation with the Whitby Mudstones at depth. Locally other deposits including Cornbrash limestone's might be encountered at depth at the northern extent.

The geological sequence of the area is understood to be one of fossiliferrous mudstone and siltstone, laminated and bituminous in part, with thin siltstone or silty mudstone beds and rare fine-grained calcareous sandstone beds deposited within sea conditions and eroded by periods of glaciations and later deposition of Oadby Member and Glaciofluvial Deposits.



## 2.3 Site description

A site walkover was undertaken on the 22<sup>nd</sup> July 2016 and 24<sup>th</sup> August 2016. The proposed alignment of the proposed bypass predominately comprises fields, intersected by, from north to south, a 4 track live railway in deep cutting, Blisworth Road, a drainage ditch, a rough track/road and finally a dismantled former railway line.

From its northern extent, the proposed route leaves the A508 Northampton Road heading roughly west and crosses a ditch and hedge before crossing an arable field. Beyond the field the route crosses an existing 4 track live railway line (Roade Cutting SSSI) located within a steep, densely vegetated cutting. Immediately beyond the railway is an additional arable field with hedgerow boundaries. The first field is accessible from the A508 Northampton Road. This field can be accessed via a bridge over the railway line from the first field.

The route then turns south-west and passes through two livestock (sheep/cattle) fields bounded by hedgerows, between which is Blisworth Road. The field to the north of Blisworth Road is accessible via an adjacent field, while the field to the south is not accessible from the Road, and appears to be accessible via Hyde Farm.

From there the route heads south and crosses a drainage ditch between the southern livestock field and into a final livestock field, bounded again by hedgerows and semi mature trees and a shallow ditch, accessible via Hyde Farm. The route then turns southeast and crosses two arable fields separated by a farm track which provides access to the fields, and originates at Dovecote Farm off of Blisworth Road.

The route then terminates at the A508 Stratford Road, at the site of a dismantled railway. The dismantled railway is heavily overgrown by dense shrubs, brambles and semi-mature and mature trees. The end of the former railway immediately adjacent to the A508 is fully overgrown. An area of low growth and grassed verge is present adjacent to the A508, while the point at which the proposed bypass and the modified A508 will meet is accessed via the arable field to its north, mentioned above. The dismantled railway can also be accessed via a gated entrance of an adjacent field, further south along the A508.



## 2.4 Published geology and expected ground conditions

Table 1 provides further details of the anticipated geological succession.

Geological unit	Description	Thickness (m)	
Surfacing and Buried Structures: (source: Envirocheck History Maps, Site Observation, Service records, Site clearance)	Hard standing was identified along roads that cross the route, however the vast majority of the site is open fields anticipated to be underlain by topsoil's from surface to nominal thicknesses. A known gas main was identified on the services drawing records as crossing a small portion of the northern most point where the proposed route joins the A508.	No thickness recorded	
Made Ground / Topsoil: (source: BGS Maps, Available Borehole	The entire site is anticipated to be underlain by a cultivated plough layer or topsoil and turf resulting in a subsoil or growing medium. Given its extensive use for arable crops and livestock grazing, it is anticipated that this layer could extend between 0.2m and 0.6m depth and is anticipated to be derived from the underlying Glacial Till, and would be anticipated to be sandy gravelly clay in nature.	No thickness	
Logs, Envirocheck Geology & History Maps, memoirs)	There is the potential for made ground to be present below and adjacent to any roads or railways that cross the route of the proposed bypass. The thickness of highway constructions are anticipated to be no greater than 0.45m in depth and likely to comprise bound macadam surfacing over granular sub base and perhaps granular hardcore capping.	recorded	
Superficial geology			
Oadby Member (Glacial Till/ Diamicton Till) (source: BGS Maps, Available Borehole Logs, Envirocheck Geology & History	The majority of the site appears to be underlain by a mantle of Oadby Member (Diamicton Till/Glacial Till) which is anticipated to be primarily over consolidated sandy gravelly clay. It may also contain sandy gravel strings, lenses and pockets which may contain perched or confined groundwater. Limited deposits of Glaciofluvial Deposits are anticipated	No thickness recorded	
Maps, memoirs) Solid geology	to be present at the southern end of the route.		

#### Table 1: Anticipated ground conditions at the site



Blisworth Limestone Member/ Rutland Formation	The entirety of the site is indicarted to be underlain by the Blisworth Limestone Formation, likely to be weathered beneath superficial deposits to firm to stiff grey and brown clays tending to off-white or yellowish limestone with thin marl and mudstone bands. Calcareous shell and fossil fragments are common throughout these deposits. Beneath which the Blisworth Clay Formation is likely to be encountered. In the extreme south of the site, the Rutland Formation is present, and is likely to be weathered to grey clays and silts. Below this strata, it is likely that the Stamford Member which is anticipated to comprise sandstone and interbedded siltstone will be present overlying the Northampton Sand Formation, all above the Whitby Mudstone Formation.	>1,350m
Mining (source: Coal Authority web viewer, BGS Maps, Available Borehole Logs, Envirocheck records, Geology & History Maps)	None identified	N/A
Faults (source: BGS Maps, Available Borehole Logs, Envirocheck Geology Maps, memoirs)	None identified	N/A
Opencast Quarrying (source: Coal Authority web viewer, BGS Maps, Envirocheck History Maps)	Some sand and gravel quarries noted within 200m of the site, although none expected on site.	N/A
Mineral Protection (source: Local Authority Plan)	None identified	N/A
Soil Chemistry (source: Envirocheck / BGS)	Available soil chemistry data suggests that the natural soils anticipated to be present at shallow depths across the site are unlikely to contain any significantly elevated concentrations of contaminants that would be considered to represent a risk to Human Health for a commercial development.	N/A
Source: British Geologi 11 <sup>th</sup> October 2017).	cal Survey: http://mapapps.bgs.ac.uk/geologyofbritain/hom	e.html (accessed on



# **3 GROUND INVESTIGATION**

## 3.1 Introduction

Intrusive investigation fieldworks were undertaken between 5<sup>th</sup> September and 20<sup>th</sup> September 2017, and were followed by a series of four, weekly ground gas and groundwater monitoring and sampling events.

## 3.2 Investigation strategy

The techniques adopted for the intrusive investigation were selected on the basis of the investigation objectives and the anticipated geological conditions.

The investigation and sampling strategy was primarily focused on the characterisation of the ground conditions in order to:

- Define the necessary geotechnical parameters and evaluate the likely engineering behaviours of the material to inform the master planning design of the proposed bypass;
- Identify the chemical status of the site and confirm the absence of potential risks to human health and the environment.
- Provide baseline data to confirm the status of the site.

## 3.3 Investigation layout

The layout of the investigation was generally designed to provide a non targeted coverage of the ground conditions pertaining to the site along its entire route with some targeted investigation at points of critical infrastructure such as the railway over bridge and drainage elements. However it should be recognised that the works were constrained by the topography, services and utilities and land ownership. Specific areas of the site were not accessed during this pre-planning phase investigation as access agreements were not in place and these are highlighted on Figure 2. Therefore planned trial pits 6, 8, 9, 10, 11, 19, 21, 24 and 25 were not excavated.

Prior to commencement of the works, the exploratory holes were set out and coordinates and level of each position were recorded using a Leica Viva GPS accurate to +/-5mm in horizontal positioning and +/-10mm in elevation. The coordinates and level data are given on the exploratory hole records presented for each exploratory position, in their respective appendices.

The as-built exploratory hole location plan is presented as Figure 2 with the proposed development plan overlain.

## 3.4 Health and safety

Services data was obtained and overlaid upon plans to aid in the design and safe positioning of exploratory holes.



RSK prepared a Health and Safety Plan (HASP) and Risk Assessments & Method Statements (RAMS) which were submitted to the client's principal designer, health and safety advisor for consideration and comment. These documents were fully developed before works commenced at the site. Prior to commencing RSK's attendance on site, a pre-start meeting was held between RSK, the Client, and the current land owners; in order to identify the potential constraints and agree appropriate exploratory positions and access routes; and obtain all necessary permissions. Where permissions were not forthcoming, lands were not accessed and works not undertaken.

Potential health and safety, ecological and archaeological constraints were identified prior to commencement of intrusive investigation works, and a suite of control measures adopted in order to mitigate any potential constraints and risks. The specialist third party consultants dealing with these individual issues were contacted in advance of the works and constraints and suitable methodology for conducting these works to mitigate any risks were agreed and undertaken in full coordination with these specialist consultants. The constraints identified and the control measures adopted are summarised in Table 2 below.



#### Table 2: Identified constraints and control measures adopted on site

Constraint	Details	Control measures
Underground utility apparatus	A buried gas main is known to cross the northern most field of the proposed route.	RSK met with landowners and stakeholders to confirm suitable access routes and viable exploratory hole locations prior to finalising the ground investigation specification and commencing works. Utility information was obtained and overlaid upon plans to aid in the safe positioning of exploratory holes.
		RSK SafeGround team used a number of non intrusive techniques and equipment to check all exploratory positions and the surrounding areas were free of buried services and utilities, as follows:
		CAT & Genny (Radiodetection RD8000),
		<ul> <li>Ground Penetrating Radar (GPR) - GSSI SIR-3000 console with the GSSI 400MHz antenna (standard frequency, used in high risk clearances)</li> </ul>
		Following issue of a permit to dig from the RSK Safeground team, hand excavated service avoidance inspection pits were excavated to depths of 1.20mbgl prior to commencing all boreholes. Additionally, all boreholes were again scanned with a CAT and Genny at the bottom of the hand excavated inspection pit. Boring was only commenced if no evidence of services was uncovered.
Overhead cables	Overhead cables are known to cross the central portion of the proposed route near Hyde Farm.	Should crossing under overhead cables be required, the preferred route would be to track around the cables, however if that is not possible, RSK engineers acted as banksman and the machine was tracked under the cables by the pole, whilst the cable was at its highest point.
Geology	SSSI	In the vicinity of the proposed bridge over the railway line, the area has been designated as the Roade Cutting SSSI. No works were undertaken on the SSSI only adjacent to it and not impacting upon it.
Ecological	Stewardship land	RSK ensured that no positions were located within the vicinity of the Stewardship land and that no personnel.

## 3.5 Investigation techniques

#### 3.5.1 Rotary core boring

A series of five continual window sample and rotary cored follow on boreholes were drilled as it was considered that this is the most appropriate method of investigating the anticipated ground conditions to depth. Initially these holes were sunk using windowless sampling techniques through shallow superficial deposits; and then were continued through the solid deposits using primarily pwf and 150mm diameter rotary coring techniques utilising air/mist flush. Two boreholes were drilled to 30m, two were drilled to 20m and one was drilled to 15m.

This enabled superficial and solid strata samples and core to be obtained and logged to confirm the strata depths and allow the strata to be accurately described. These techniques were also used to facilitate in-situ strength testing of shallow and deep deposits, and to obtain in-situ representative disturbed and undisturbed samples for laboratory testing and to facilitate the installation of monitoring instrumentation within the superficial and solid deposits to allow long term groundwater and gas monitoring.

The rotary cored borehole logs are presented in Appendix F.

#### 3.5.2 Windowless sampler borehole

A series of twelve windowless sampler boreholes were sunk to depths ranging from 2.5m to 5.45m along the length of the proposed bypass as it was considered that this is the most appropriate method of investigating the shallow ground conditions to depths of around 5m depth whilst facilitating insitu testing and the installation for monitoring of shallow ground gas and groundwater conditions.

This enabled superficial samples to be obtained and logged to confirm strata depths and to allow the strata to be accurately logged. This technique was also used to facilitate insitu strength testing of the shallow deposits and to obtain in-situ representative disturbed samples for laboratory testing and to facilitate the installation of monitoring instrumentation within the superficial deposits to allow long term ground gas and groundwater monitoring.

The window sample borehole logs are presented in Appendix E.

#### 3.5.3 Trial pitting

A series of eighteen trial pit holes were excavated to depths ranging from 0.50m to 4.50m bgl across the proposed route as it was considered that this is the most appropriate method of investigating the shallow ground conditions, examining mass nature of the strata, stability and likely water ingress as well as enabling large bulk disturbed samples to be obtained sufficient to allow laboratory soil classification and earthworks testing.

This enabled superficial samples to be obtained and logged to confirm the strata depths and to allow the strata to be accurately logged. This technique was also used to facilitate in-situ strength testing of cohesive strata and to obtain in-situ representative disturbed samples for laboratory testing.

The trial pit logs are presented in Appendix D.

#### 3.5.4 Dynamic Cone Penetrometer

A series of thirteen dynamic cone penetrometer (DCP) were sunk to depths of 1m at the position of all trial pits. This was considered to be the most appropriate method of determining the change in California Bearing Ratio property with depth along the proposed route. The DCP test results are presented in Appendix H.

#### 3.6 Investigation scope of works

The investigation undertaken at the site comprised the following:

- Setting out and service Clearance (RSK SafeGround);
- Sinking of 5 combined windowless and rotary follow on cored boreholes to depths between 15.00m and 30.00m bgl;
- Sinking of 12 window sample boreholes to depths between 3.00m and 5.45m;
- Excavation of 18 trial pits to depths between 0.50m and 4.50m;
- Sinking of 13 DCP tests to a depth of 1m;
- Installation of 17no combined groundwater/gas monitoring wells to varying depths within superficial deposits and bedrock including provision of lockable vandal proof covers;
- Four return visits to monitor groundwater levels & ground gas concentrations;
- One visit (first visit) to purge the groundwater from all boreholes;
- One visit (second visit) to undertake water sampling from boreholes;
- Surveying in of as built exploratory hole positions using GPS surveying equipment;
- Associated sampling and in-situ testing including SPTs;
- Soil and rock sample geotechnical laboratory testing; and
- Soil and groundwater sample chemical laboratory testing.

## 3.7 In-situ testing

In-situ Standard Penetration Tests (SPTs) were undertaken at regular intervals within the window sampler and rotary cored boreholes. SPTs were undertaken at metre intervals within windowless sample boreholes, and within superficial deposits of rotary boreholes. Upon reaching solid geology, SPTs were undertaken at 3.00m intervals where strata were conducive to testing. The results are presented in full on the borehole logs presented within Appendix E and F.

Additionally, hand vane tests were undertaken in cohesive material where practical and the results are presented on the exploratory hole logs within Appendix D.

Thirteen Dynamic Cone Penetrometer (DCPs) tests were undertaken at positions adjacent to selected trial pits in an attempt to obtain the strength profile of the top 1m of

underlying ground. This will enable a calculation of CBR to facilitate road design. The results are presented in full in Appendix H.

In-situ soakaway testing was undertaken with three trial pits (TP22, 23, 26) where possible storm water attenuation ponds maybe required. The locations of these trial pits are denoted upon the as built exploratory hole location plan presented as Figure 2. Soakaway tests were undertaken in unsupported shallow trial pits (2.45m to 3.00m bgl), and were attempted in general accordance with the recommendation of BRE 365.

The two tests undertaken within TP22 and TP26 did not soakaway sufficiently to allow calculation of infiltration rates. TP23 was extrapolated to obtain the infiltration rate. The strata in which these tests were undertaken were predominantly cohesive and not considered to be conducive to soakaways and the testing has confirmed this. The in-situ soakaway test results are presented in Appendix G and the results are summarised below within Table 3.

Location	Test Zone (depth m bgl)	Calculated infiltration Rate (m/s)	Strata
TP22	1.00 – 2.45	N/A	Oadby Member- slightly gravelly silty CLAY / Possible Made Ground
TP23	1.70 – 3.00	2.13 x 10 <sup>-6</sup>	Oadby Member- slightly gravelly sandy CLAY / Possible Made Ground
TP26	1.75 – 3.00	N/A	Oadby Member- slightly gravelly silty, sandy CLAY

#### Table 3: Summary of soakaway test results

#### 3.8 Sampling and laboratory analysis

A programme of laboratory testing, scheduled by RSK as detailed below, was carried out on selected samples obtained from the materials encountered beneath the site.

Details of the soil samples obtained during the intrusive investigation are recorded on the exploratory hole records presented in Appendix D, E and F.

Details of groundwater samples are included in monitoring reports in Appendix J and L.

#### 3.8.1 Geotechnical testing

A programme of laboratory testing was scheduled by RSK to be carried out on selected suitable samples, in order to provide characteristic geotechnical strata properties. The programme of geotechnical testing undertaken is presented within Table 4 below and the results available at the time of issue are included within Appendix K.

#### Table 4: Summary of geotechnical testing programme

Analysis undertaken	No.	Rationale
Classification testing		
Particle Size Distribution (PSD) Sieve	7	Particle size analysis has been undertaken on representative samples of the superficial deposits in order to determine the mass percentage of individual particle size ranges within the sample, and thus enable the required engineering parameters to be determined for the stratum.
Classification tests (Atterberg Limits) and	5	Classification testing undertaken on representative samples, to enable outline engineering parameters to be determined for the proposed foundation strata. Moisture content testing has been scheduled in order to determine the natural water content of the
Natural Moisture Content	31	underlying geology. Consistency limits have been scheduled in order to characterise the behaviour of the clay soils.
Dry density / moisture content relationship (4.5kg compaction)	2	Laboratory analysis undertaken to determine the relationship between moisture content and dry density of a soil when compacted using a 4.5kg rammer, and examine the optimum moisture content and maximum dry density of each strata.
Concrete		
pH, water soluble sulphate, acid soluble sulphate, total sulphur	7	Chemical testing undertaken on soil samples in order to determine levels of sulphates and thus evaluate the possible impacts on buried concrete structures.
Strength testing		
Unconfined compressive strength	2	Unconfined compressive strength testing has been undertaken on selected core samples in order to provide information relating to the strength of the underlying bedrock.
Point load index	10	Point load index testing has been undertaken on selected samples of the sandstone and mudstone in order to provide details of the strength index of the rock for preliminary design purposes.

#### 3.8.2 Environmental testing

Environmental laboratory testing was undertaken in order to characterise the shallow soils beneath the site, and to assess contaminant concentrations within near surface soils encountered with regard to human health and the environment.

The programme of chemical testing undertaken on the soil samples is presented in Table 5. Samples obtained for laboratory analysis were collected in a variety of containers appropriate to the anticipated testing suite required. Samples were stored in accordance with the RSK quality procedures to maintain sample integrity and preservation and to minimise the chance of cross contamination. The results for environmental testing of soil and groundwater is presented in Appendix I and Appendix J, respectively.

#### Table 5: Summary of chemical testing programme

Analysis undertaken	No.	Rationale
Asbestos screen	20	Suite of geoenvironmental
рН	20	laboratory testing undertaken on
Total Petroleum Hydrocarbons Criteria Working Group (TPHCWG), BTEX, and MBTE	20	shallow soil profile encountered in order to enable a quantitative
Total Organic Carbon (TOC)	20	assessment of risks to human health
Metals (arsenic, cadmium, total chromium, hexavalent chromium, lead, selenium, water soluble boron, mercury, copper, nickel, and zinc)	20	
Phenols	20	
Polycyclic Aromatic Hydrocarbons (PAH)	20	
Pesticides (Pest C combined suite) and triaxine herbicides	4	

## 3.9 Instrumentation and monitoring

Intrusive investigation works were undertaken 5<sup>th</sup> to 25<sup>th</sup> September 2017, and were followed by a series of four, weekly ground gas and groundwater monitoring events. The findings of the monitoring undertaken is presented within Appendix L.

An infrared gas meter was used to measure gas flow, concentrations of carbon dioxide  $(CO_2)$ , methane  $(CH_4)$  and oxygen  $(O_2)$  in percentage by volume, while hydrogen sulphide  $(H_2S)$  and carbon monoxide (CO) were recorded in parts per million.

Well	Response zone (m bgl)	Response zone stratum	Monitoring events	Date
BH01	10.00 – 20.00	BWL	4	28.09.17 – 23.10.17
BH02	20.00 - 30.00	PRF	4	28.09.17 – 23.10.17
BH03	8.00 – 15.00	BWL/RF	4	28.09.17 – 23.10.17

#### Table 6: Summary of monitoring well response zones

Well	Response zone (m bgl)	Response zone stratum	Monitoring events	Date	
BH04	7.00 – 11.00	RF	4	28.09.17 – 23.10.17	
BH05	8.00 – 12.00	RF	4	28.09.17 – 23.10.17	
WS01	1.00 – 2.50	GT	4	28.09.17 – 23.10.17	
WS02	3.00 – 5.00	GT	4	28.09.17 – 23.10.17	
WS03	1.00 – 3.00	GT	4	28.09.17 – 23.10.17	
WS04	1.00 – 2.00	GT/WRF	4	28.09.17 – 23.10.17	
WS05	2.00 - 4.00	WRF	4	28.09.17 – 23.10.17	
WS06	2.00 - 4.00	WRF	4	28.09.17 – 23.10.17	
WS07	1.00 – 2.50	WRF	4	28.09.17 – 23.10.17	
WS08	1.00 – 3.00	WRF	4	28.09.17 – 23.10.17	
WS09	1.00 – 3.00	WRF	4	28.09.17 – 23.10.17	
WS10	2.00 - 4.00	GT	4	28.09.17 – 23.10.17	
WS11	3.00 – 5.00	GT	4	28.09.17 – 23.10.17	
WS12	3.00 - 5.00	GT	4	28.09.17 – 23.10.17	
GT - Classial Till, WPE - Weathered Butland Formation, BPE - Describle Butland Formation					

GT = Glacial Till, WRF = Weathered Rutland Formation, PRF = Possible Rutland Formation, RF = Rutland Formation and BWL = Blisworth Limestone Formation

## 3.10 Groundwater developing, sampling and analysis

Depth to groundwater level was determined at each of the installed monitoring wells, during the monitoring programme.

Where sufficient depths of groundwater were recorded the wells were subsequently purged by 3 well volumes and where they recharged sufficiently they were sampled.

All water samples were collected in containers appropriate to the anticipated testing suite required. The containers were filled to capacity and placed in a cool box to minimise volatilisation. Samples were transported directly to the testing laboratory under chain of custody documentation.

Details of water monitoring and sampling can be found in the instrumentation monitoring records included in Appendix L. Details of the number of tests undertaken are shown below in Table 7.

#### Table 7: Summary of groundwater analysis programme

Analysis undertaken	No	Rationale
Dissolved metals (Std Suite)		Groundwater analysis used in
Speciated Polycyclic Aromatic Hydrocarbons (PAH)		conjunction with the results of

Roxhill Developments Limited

Analysis undertaken	No	Rationale
Total Petroleum Hydrocarbons Criteria Working Group (TPHCWG), BTEX, and MBTE Dissolved Organic Carbon (DOC) Calcium Hardness		the soil analysis and soil Leachate analysis in order to form a Qualitative Tier 2 assessment of potential risks to the identified controlled water
рН		receptors.
Electrical conductivity Total alkalinity		
Chloride		
Volatile Organic Compounds/ Semi-Volatile Organic Compounds	4	

# **BIBLIOGRAPHY**

Boyle, R. A. and Witherington, P. J. (2007), 'Guidance on Evaluation of Development Proposals on Sites where Methane and Carbon Dioxide are Present', National House-Building Council and RSK Group.

British Geological Survey, Sheet Number 202, Solid and Drift Edition, scale 1:50 000. BGS

British Standards Institution (1990), 'BS 1377:1990 Methods of test for soils for civil engineering purposes.

British Standards Institution (1999), 'BS 5930:1999 (+A2:2010). Code of practice for site investigations'.

British Standards Institution (2004), 'BS EN 1997 -1:2004 Eurocode 7: Geotechnical Design – Part 1: General Rules.

British Standards Institution (2007), 'BS EN 1997 -2:2007 Eurocode 7: Geotechnical Design – Part 2: ground Investigation and testing.

British Standards Institution (2009), 'BS 6031:2009. Code of practice for Earthworks.

British Standards Institution (2011), 'BS 10175:2011. Investigation of potentially contaminated sites: Code of practice'.

Building Research Establishment (2005), BRE Special Digest 1: Concrete in aggressive ground (London: BRE).

Building Research Establishment (2007) BRE Digest 365. Soakaway design (London: BRE).

Chartered Institute for Environmental Health and Land Quality Management (2009), 'The LQM/CIEH Generic Assessment Criteria for Human Health', second edition.

Chartered Institute of Environmental Health (CIEH) and CL:AIRE (2008), Guidance on Comparing Soil Contamination Data with a Critical Concentration (London: CIEH).

CL:AIRE (2009), Soil Generic Assessment Criteria for Human Health Risk Assessment (London: CL:AIRE).

CL:AIRE (2011), CL:AIRE Code of Practice. The Definition of Waste: Development Industry Code of Practice, Version 2 (London: CL:AIRE).

Dangerous Substances Directive (76/464.EEC).

Department for Environment, Food and Rural Affairs (2010), The River Basin Districts Typology, Standards and Groundwater Threshold Values (Water Framework Directive) (England and Wales) Directions 2010 (London: HMSO).

Environment Agency (2004a), Model Procedures for the Management of Contaminated Land. Contaminated Land Report Number 11 (CLR11), September (Bristol: Environment Agency).

Environment Agency (2004b), 'Policy Number 199\_04, dated 9 March 2004, Part IIA – Detailed Quantitative Assessment of Chronic Risks to Human Health from Contaminated Soils'.

Environment Agency (2006a), 'Remedial Targets Methodology: Hydrogeological Risk Assessment for Land Contamination'.

Environment Agency (2006b), 'The Knotweed Code of Practice – managing Japanese Knotweed on development sites'.

Environment Agency (2008), Science Report SC050021/SR7. Compilation of Data for Priority Organic Pollutants for Derivation of Soil Guideline Values (Bristol: Environment Agency).

Environment Agency (2009a), Contaminated Land Exposure Assessment (CLEA) software, version 1.06.

Environment Agency (2009b), Human health toxicological assessment of contaminants in soil. Science Report – Final SC050021/SR2, January (Bristol: Environment Agency).

Environment Agency (2009c), 'Science Report SC050021 March 2009, May 2009 and September 2009.

Environment Agency (2009d), Science Report – SC050021/SR3. Updated technical background to the CLEA model (Bristol: Environment Agency).

Environment Agency (2010a), 'GPLC1 – Guiding Principles of Land Contamination', 'GPLC2 – Frequency Asked Questions, Technical Information, Detailed Advice and References', and 'GPLC3 – Reporting Checklists', all March.

Environment Agency (2011) Chemical Standards Database.

Environment Agency (no date) Freshwater environmental quality standards.

Environment Agency www.environment-agency.gov.uk/.

Hartless, R. (1991), 'BRE Report 212: Construction of new buildings on gas-contaminated land', Building Research Establishment.

Highways Agency; Design Manual For Roads and Bridges; Volume 4 Geotechnical And Drainage Section 1 Earthworks Part 2 HD22/08 Managing Geotechnical Risk (August 2008).

Highways Agency; Design Manual For Roads and Bridges

Highways Agency; Manual of Contract Documents For Highway Works, Specification For Highway Works 2008.

Norbury, D. (2010), Soil and Rock Description in Engineering Practice (Caithness: Whittles).

Office of the Deputy Prime Minister (2004), Planning Policy Statement 23: Planning and Pollution Control (London: The Stationery Office).

Part IIA of the Environmental Protection Act (Contaminated Land Regulations (England) 2002 (London: HMSO).

Rudland, D. J., Lancefield, R. M. and Mayell, P. N. (2001), CIRIA C552. Contaminated Land Risk Assessment: A Guide to Good Practice (London: CIRIA).

Stone, K., Murray, A., Cooke, S., Foran, J., Gooderham, L., (2009) CIRIA C681, Unexploded Ordnance (UXO). A guide or the construction industry.

The Surface Waters (Abstraction for Drinking Water) (Classification) Regulations 1996 (London: HMSO).

The Surface Waters (Dangerous Substances) (Classification) Regulations 1998 (London: HMSO).

The Water Supply (Water Quality) Regulations 1989, 2000 and 2001 (London: HMSO).

Transport and Road Research Laboratory (1970), 'TRRL Road Note 29 (Appendix 1). Road pavement design'.

Transport and Road Research Laboratory (1984), 'TRRL Report LR1132 (Table C1)'.

UK Water Industry Research (2010) UKWIR Report 10/WM/03/21. Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites (London: UKWIR).

Water Framework Directive (2000/60/EC).

Wilson, S., Oliver, S., Mallet, H., Hutchings, H. and Card, G. (2007), CIRIA Report C665: Assessing risks posed by hazardous ground gases to buildings (London: CIRIA).

World Health Organization (2004), Guidelines for drinking-water quality, 3rd edn (Geneva: WHO).

WRc plc (2002), 'Polycyclic Aromatic Hydrocarbons (PAH): Priorities for Environmental Quality Standard Development, R and D Technical Report P45'.

# **FIGURES**









Contains Ordnance Survey data © Crown copyright and database right 2017

# APPENDIX A SERVICE CONSTRAINTS

- 1. This report and the site investigation carried out in connection with the report (together the "Services") were compiled and carried out by RSK Environment Limited (RSK) for Roxhill Developments Limited in accordance with the terms of a contract between RSK and the "client", dated July 2014. The Services were performed by RSK with the skill and care ordinarily exercised by a reasonable environmental consultant at the time the Services were performed. Further, and in particular, the Services were performed by RSK taking into account the limits of the scope of works required by the client, the time scale involved and the resources, including financial and manpower resources, agreed between RSK and the client.
- 2. Other than that expressly contained in paragraph 1 above, RSK provides no other representation or warranty whether express or implied, in relation to the Services.
- 3. Unless otherwise agreed the Services were performed by RSK exclusively for the purposes of the client. RSK is not aware of any interest of or reliance by any party other than the client in or on the Services. Unless expressly provided in writing, RSK does not authorise, consent or condone any party other than the client relying upon the Services. Should this report or any part of this report, or otherwise details of the Services or any part of the Services be made known to any such party, and such party relies thereon that party does so wholly at its own and sole risk and RSK disclaims any liability to such parties. Any such party would be well advised to seek independent advice from a competent environmental consultant and/or lawyer.
- 4. It is RSK's understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was a significant factor in determining the scope and level of the Services. Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of or reliance upon the report in those circumstances by the client without RSK 's review and advice shall be at the client's sole and own risk. Should RSK be requested to review the report after the date hereof, RSK shall be entitled to additional payment at the then existing rates or such other terms as agreed between RSK and the client.
- 5. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of RSK. In the absence of such written advice of RSK, reliance on the report in the future shall be at the client's own and sole risk. Should RSK be requested to review the report in the future, RSK shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between RSK and the client.
- 6. The observations and conclusions described in this report are based solely upon the Services which were provided pursuant to the agreement between the client and RSK. RSK has not performed any observations, investigations, studies or testing not specifically set out or required by the contract between the client and RSK. RSK is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the Services. For the avoidance of doubt, unless otherwise expressly referred to in the introduction to this report, RSK did not seek to evaluate the presence on or off the site of asbestos, electromagnetic fields, lead paint, heavy metals, radon gas or other radioactive or hazardous materials.
- 7. The Services are based upon RSK's observations of existing physical conditions at the Site gained from a walk-over survey of the site together with RSK's interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. The Services are also based on information and/or analysis provided by independent testing and information services or laboratories upon which RSK was reasonably entitled to rely. The Services clearly are limited by the accuracy of the information, including documentation, reviewed by RSK and the observations possible at the time of the walk-over survey. Further RSK was not authorised and did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the Services. RSK is not liable for any inaccurate information or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to RSK and including the doing of any independent investigation of the information provided to RSK save as otherwise provided in the terms of the contract between the client and RSK.
- 8. The phase II or intrusive environmental site investigation aspects of the Services is a limited sampling of the site at pre-determined borehole and soil vapour locations based on the operational configuration of the site. The conclusions given in this report are based on information gathered at the specific test locations and can only be extrapolated to an undefined limited area around those locations. The extent of the limited area depends on the soil and groundwater conditions, together with the position of any current structures and underground facilities and natural and other activities on site. In addition chemical analysis was carried out for a limited number of parameters [as stipulated in the contract between the client and RSK] [based on an understanding of the available operational and historical information,] and it should not be inferred that other chemical species are not present.
- 9. Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan, but is (are) used to present the general relative locations of features on, and surrounding, the site.



# APPENDIX B EXPLORATORY HOLE RECORDS

## Schedule of exploratory holes – M1 Junction 15 West, Northampton Roade Bypass – Preliminary Stage Ground Investigation

Proposed Structure	Hole reference	Type/Method	Minimum depth (m)	Instruments	Remarks
Comacchio Combined Window	w Sample and F	Rotary Cored Boreh	oles		
Current/Past: Farmland Purpose/Proposed: New Bypass & Bridge over WCML Current/Past:	BH 1 - 2 BH 3 - 5	Comacchio 205 (window sample with rotary follow on) Comacchio 205	30m	Slotted in solid deposits to monitor any deep water tables and allow water sampling for water quality analysis (assumed to be slotted between 15 - 25 bgl) Slotted in solid deposits to monitor	Comacchio 205 Holes Boreholes will be commenced using percussive window sampling te SPT/SPT-C will be required to be taken at 1m intervals in superficia Soil samples will be obtained for geotechnical and geochemical labor Where rock head is breached or progress has slowed by nature of r (mudstones/sandstones/limestones) then the instruction of the loves
Farmland Purpose/Proposed: New Bypass and associated civil engineering features, underpasses a over bridges and earthworks	d	(window sample with rotary follow on)		any deep water tables and allow water sampling for water quality analysis (assumed to be slotted between 5 - 10m bgl)	Investigation Supervisor may request that the drilling be switched to Rotary boring shall be undertaken using 1.5m long barrel and shall I minimise disturbance to the sample and maximise the quality of reco flush will be required depending upon the geological strata being co The investigation supervision may request SPT/SPT-c tests or UT70 depending upon the strata type, depth and location
					Rotary Core shall be split, photographed, logged and sub sampled of each borehole to confirm the strata thickness and depths. Window samples and core holes shall be cased as necessary to fac contaminations of samples by strata from above. <u>Water</u> Groundwater seepages, perched water and water strikes should be
			15-20m		over a minimum of 20minutes. Instrumentation. At this time it is envisaged that 50mm diameter HDPE slotted standy holes to allow monitoring of groundwater tables and soil gas. Details of the precise response zone to be directed by the Investigat

echniques with 1m long discrete samples taken.
I deposits.
oratory testing.
ock or stiffness of cohesive strata stigation Supervisor should be sought. The rotary boring techniques.
be undertaken using a suitable flush media to overy. It is envisaged that air /mist, foam or polymer red. Rock must be carefully.
0 samples to be taken intermittently between core runs
on site as soon as possible following completion of
cilitate progress and minimise disturbance and cross
carefully recorded and rigs stood to monitor any rise
pipes (including well screen) will be installed in the
tion Supervisor;

313583	M1 Junction	15 West,	Northampton -	Roade Bypass
--------	-------------	----------	---------------	--------------

Proposed Structure	Hole reference	Type/Method	Minimum depth (m)	Instruments	Remarks
Window Sample Boreholes					
Current/Past:	WS1 -12				Boreholes will be commenced using percussive window sampling te
Farmland					SPT/SPT-C will be required to be taken at 1m intervals in superficial
Purpose/Proposed:					Window samples and core holes shall be cased as necessary to fac contaminations of samples by strata from above.
engineering features, underpasses and	ł				Soil samples will be obtained for geotechnical and geochemical labor
over bridges and earthworks.			5 – 6m		Water_
					Groundwater seepages, perched water and water strikes should be over a minimum of 20minutes.
					Instrumentation.
					At this time it is envisaged that 50mm diameter HDPE slotted stand holes to allow monitoring of groundwater tables and soil gas.
					Details of the precise response zone to be directed by the Investigat
Trial Pits		L	1		
Current/Past:				Not Applicable	Mechanically excavated, using a wheeled excavator with a capa upon findings and rock head;
Purpose/Proposed:					Locations designed to provide non-targeted investigation and asses classification and specification and confirm shallow ground model;
New Bypass and associated civil engineering features underpasses and	nd				Samples are required for chemical laboratory analysis;
over bridges and earthworks		Machine Excavated Trial hole	4.5m		Excavate to refusal or 4.5m bgl.
	TP 1-21				Backfill with arisings upon completion and compact, tracking in.
					Engineer to define local shallow groundwater regime and confirm sta
					Engineer to note dig ability of materials and delays and durations.
					Large bulk samples to be obtained at approximately 1m depth earthworks classification, compaction and stabilisation testing
		Machine Excavated			
	TP 22-26	Trial hole	3m		As above depth aimed at specific pond depths to provide data of strata to confirm if ponds need to be lined or will drain
		For Soakaways			

echniques with 1m long discrete samples taken. Il deposits.

cilitate progress and minimise disturbance and cross

oratory testing.

carefully recorded and rigs stood to monitor any rise

pipes (including well screen) will be installed in the

tion Supervisor;+

ability to dig to 4.5m depth or refusal depending

ssment of the shallow soils to inform earthworks

tability.

centres for strata classification and to allow J.

on possible soakway / permeabilities of exisiting



# APPENDIX C SITE PHOTOGRAPHS

# APPENDIX C EXPLORATORY HOLE PHOTOGRAPHS












Photo No.	Date:	
7	11/09/2017	
		A CALLER AND A CAL
Exploratory	/ hole number:	A Start And And
Trial pit 4		
Descriptio	n:	A STANK AND A STANK AND A STANK
Trial pit 4 ex	cavated to a	
maximum d	epth of 3.80m.	
		The second secon



Photo no.	Date:	
9	11/09/2017	
Exploratory	/ hole number:	
Trial pit 5		
Description	n:	
Trial pit 4 ex	cavated to a	
maximum de	epth of 3.20m.	all and the second second



Photo No.	Date:	
11	08/09/2017	
Exploratory	hole number:	and the second of the second o
Trial pit 7		TANK AND
Descriptio	n:	
Trial pit 7 ex	cavated to a	
maximum de	epth of 3.80m.	
		a state to show the second of the
		The Constitution of the Co
		and the state of the second state of the secon



Photo no.	Date:	
13	08/09/2017	
Exploratory	y hole number:	
Trial pit 12		A standard start
Description	n:	
Trial pit 7 ex	cavated to a	
maximum de	epth of 3.60m.	The second s
		the the second



Photo No.	Date:		
15	08/09/2017		
			and a
Exploratory	/ hole number:		12
Trial pit 13			
		A A A A A A A A A A A A A A A A A A A	
Descriptio	n:		-
Trial pit 7 excavated to a maximum depth of 3.60m.			



Photo no.	Date:		A DEC STOR
17	07/09/2017		C MARTINE CONTRACTOR
			and the second
Exploratory	/ hole number:		Carl March 1
Trial pit 14			
Descriptio	n:	98-35 B. A. A.	
Trial pit 14 e	excavated to a		
maximum de	epth of 3.60m.	122 St 4 1	A STATE AND A STAT
		Louis and a second	

Photo No.	Date:	
18	07/09/2017	
Exploratory	y hole number:	
Trial pit 14		A PAR AND A PARA
Descriptio	n:	
Trial pit 14	stockpiled	Contraction of the second
material		
		STARS ALL ALL ALL ALL ALL ALL ALL ALL ALL AL

Photo No.	Date:	
19	07/09/2017	
		a server a fill and the server a server as
Exploratory	/ hole number:	
Trial pit 15		
		and the second sec
Descriptio	n:	
Trial pit 15 e	excavated to a	
maximum d	epth of 2.50m.	



Photo no.	Date:		123 M-	A Carrier		
21	07/09/2017	A CAR	T.B.	1203		
		12-10)	12 3			Alak
Exploratory	/ hole number:				The second	
Trial pit 16		AN WA		A A A	x5 . C .	C Date
					Nr. L.	
		1997 and the				
Description	n:	ALL AVE	Address of			
Trial pit 15 e	excavated to a		and the second			
maximum de	epth of 1.80m.			Harks.		TRAN
		Carls and	Real P			
			A			

Photo No.	Date:	
22	07/09/2017	
Exploratory	/ hole number:	
Trial pit 16		No the state of the second second
		and the second sec
Descriptio	n:	
Trial pit 16	stockpiled	
material		

Photo No.	Date:	
23	07/09/2017	
Exploratory	/ hole number:	
Trial pit 16A	L .	
Descriptio	n:	
Trial pit 16 e	excavated to a	
maximum de	epth of 0.50m.	YAN YELDER THE ST







Photo No.	Date:		a	1. 11	- Store	
27	08/09/2017	FGBA	State of the local diversion of the local div		Salar Heland	
			California (	1		
Exploratory	hole number:		-	E.A.	Martin	
Trial pit 18			Bard	Cialdo	19 the	
				A R		No the second
				S A		AD: 2 P
Description	n:	- Anton	なって行	Star		A Star
Trial pit 18	stockpiled		67	1 States	Ship of	A Contract
material.			PA P		and the second	STE?
			C. Ski	16 The	and and	1. A Barrow
			The a		See. 1	1 Barrison
			The sha			

Photo No.	Date:	The second second second
28	08/09/2017	
Exploratory	/ hole number:	
Trial pit 20		
		and the second states
Description:		A STATE OF A
Trial pit 20 excavated to a		
maximum depth of 3.80m.		
		States and the states of the s
		a ser the service service and the service of the se



Photo No.	Date:	のないないのであるので、「ないない」で、「ないない」で、「ないない」で、「ないない」で、「ないない」で、「ないない」で、「ないないない」で、「ないないない」で、「ないないない」で、「ないないない」で、
30	13/09/2017	
Exploratory	hole number:	
Trial pit 23		Contraction of the second seco
Description	n:	
Trial pit 23 excavated to a		a de la companya de la
and soakav	lepth of 3.00m	
undertaken		

Photo No.	Date:	
31	13/09/2017	A State and Alice and a set of the set of th
Exploratory	y hole number:	
Trial pit 23		- AND AND ALLANCE
Description:		The state of the second s
Trial pit 23 stockpiled		The second s
material.		
		English and the second

Photo No.	Date:	
32	13/09/2017	
Exploratory	v hole number:	
Trial pit 26		
		And the second s
Description	n:	
Trial pit 26	excavated to a	Starting and man
maximum depth of 3.00m		A CARLEN CONTRACTOR OF THE CON

Photo no.	Date:	
33	13/09/2017	
Exploratory	y hole number:	
Trial pit 26		
Description		
Description	n:	
Trial pit 26 stockpiled material		



11
Sta
ALL LAND
AND A
L'and
B Lon
Ser :
A DESCRIPTION OF A DESC







































Photo No.	Date:	
55	15/09/2017	
		TABLE FRAGLE ER
Exploratory	hole number:	
Borehole 02		SITE ROADE BYPASS
		HOLE: BUO 2 DEPTH: SOL TO 11-52
		BOX: 1. OF S' IDATE SUPP
Description:		
Borehole 02, Box 1 of 8,		
8.50m to 11	1.50m.	
		And the second sec

Photo No.	Date:	
56	15/09/2017	
Exploratory	/ hole number:	CLIENT: ROKHKL
Borehole 02		BOX; 2. OF S' IDATE: (SIGID
Description:		2 March I IVA
Borehole 02, Box 2 of 8,		
11.501110	14.5011.	
		State of the second













Photo No.	Date:	And a second sec
63	14/09/20147	TOARD AND AND AND AND AND AND AND AND AND AN
Exploratory hole number:		BOX: OF L. DATE: WR/2017
Borehole 03	3	
Description	n:	
Borehole 03, Box 1 of 4, 4.50m to 7.50m.		

Photo No.	Date:	TRAULE FHAGILE ER
64	14/09/2017	
		SITE COADE BY PASS
Exploratory hole number:		CLIENT: KOKHILC HOLE: BHO3 DEPTH: 750, TOP50,
Borehole 03		Box; 2. OF 4 'IDATE: 149/2017
Description:		A CALL AND
Borehole 03, Box 2 of 4, 7 50m to 10 50m		




































Photo No.	Date:	
83	12/09/2017	
Exploratory	v hole number:	
Borehole 0	5	SITE TCARE EVIPASE SITE TCARE EVIPASE HOLE: BHOS DEPTHURDE. TO REA BOX: 5. OF S. DATE: 12.1900 BOX:
Description	n:	
Borehole 05 17.00m to 2	5, Box 5 of 5, 20.00m.	



#### APPENDIX D TRIAL PIT LOGS



# **TRIAL PIT LOG**

Contract:								Client:					Trial Pi	it:	
		Road	de By	pass						Roxh	ill				<b>TP01</b>
Contract Re	ef:			Start:	11.0	9.17	Groun	nd Level:		National Gr	id Co-ordinate		Sheet:		
	313	583		End:	11.0	9.17		121.28		E:4754	69.5 N:25	2463.3		1	of <b>1</b>
Sam Depth	ples a	ind In-si Type	tu Tests Res	sults	Water	Backfill			Des	scription of S	trata		educed Level	Depth (Thick	Materia Graphic
0.20		ES	0.0				Crop fine coar	o over silty slig to coarse. G se of quartzite PSOIL)	ghtly s ravel s, flint	sandy slightly is subangula and limestone	r gravelly CLA r to subrounc e.	Y. Sand is led fine to	<u>~</u> 120.98	(0.30) 0.30	
0.50		V	c <sub>u</sub> =64	/52/68			Firm grav roun (GL/	orangish bro elly CLAY. Sa ded fine to coa ACIAL TILL)	own li and is arse li	ight grey silt fine to coar mestone, cha	y slightly san se. Gravel is Ik, flint and qu	dy slightly angular to artzite.	-	-	
0.70 0.70 0.80 0.80		D PID B PID	0.0  0.0	opm opm									-	[ (1.10) 	
4.70		6					Firm rare (GL/	stiff light gre to occasional ACIAL TILL)	y and fine ro	brown silty bunded limest	slighty sandy one gravel.	CLAY with	- 119.88 - - -	- 1.40 - -	
1.70 1.70 1.80 1.80	.70 D .70 PID 0.0pp .80 B .80 PID 0.0pp												-	-	
2.80 2.80		D PID	0.0	opm				at 2.60m large at 3.00m pock	e limes	stone boulder gravelly sand.	S.		-	- (2.40) - - -	
3.40 3.40		D PID	0.0	opm				at 3.20m beco	ming	dark grey.			-	-	
							Dark (BLI Trial	grey medium SWORTH LIM pit terminated	stron IESTC I at 3.8	g to strong LI DNE FORMA 3m depth due	MESTONE. TION) to rockbed.		- - - -	3.80	
Plan (Not to	Scal	e)							(	General	Remarks	5	_	-	
0.70		2.5	0•	-	1. L 2. F 3. T 4. ( 5. T	locatio lard d ⊺rial pi Ground Trial pi	on scan igging f t remai dwater t backfi	ned with GPR from 2.50m bg ned stable dur not encounter illed with arisir	t prior gl. ring ex ed. ngs up	to breaking g kcavation. bon completio	round. No sei	vices encou	intered.		
							All di	imensions in n	netres	;	Scale:		1:25		
Method Used:	Maa	bine d	luc	Plan	t d:			2-30-2		Logged Bv:	PSalama	Checke Bv:	ed 🛛	MB	



# **TRIAL PIT LOG**

Contract:		_						Client:					Trial Pi	it:	
		Road	le By	pass			-			Roxh	ill				TP02
Contract R	ef:	-00		Start:	11.0	9.17	Groun	id Level:		National Gr	id Co-ordinate		Sheet:		
	313	583		End:	11.0	9.17	1	120.60		E:4/53	303.7 N:28	2359.8		1	of <b>1</b>
Sam Depth	nples a	and In-si Type	tu Tests Res	sults	Water	Backfill			De	scription of S	trata		Reduced	Depth (Thick ness)	Material Graphic Legend
0.20 0.20		ES PID	0.0p	opm			Crop fine coar (TOI	o over silty slig to coarse. Gr se of quartzite, PSOIL)	htly avel flint	sandy slightly is subangula and limestone	y gravelly CLA ir to subroun e.	AY. Sand is ded fine to	120.30	(0.30) 0.30	<u>x<sup>4</sup></u> 1 <sub>y</sub> <u>x<sup>4</sup></u> 1 <sub>y</sub> <u>x</u> 1 <sub>1</sub> <u>x</u> <u>x</u> 1 <sub>y</sub> <u>x</u> 1 <sub>1</sub> <u>x</u> <u>x</u> 1 <sub>y</sub> <u>x</u> <u>x</u> 1 <sub>1</sub> <u>x</u> <u>x</u> 1 <sub>y</sub> <u>x</u> <u>x</u> 1 <sub>y</sub> <u>x</u> <u>x</u> 1 <sub>y</sub> <u>x</u> <u>x</u> <u>x</u> 1 <sub>y</sub> <u>x</u> <u>x</u> 1 <sub>y</sub> <u>x</u> <u>x</u> 1 <sub>y</sub> <u>x</u> <u>x</u> <u>x</u> 1 <sub>y</sub> <u>x</u> <u>x</u> <u>x</u> <u>x</u> 1 <sub>y</sub> <u>x</u>
0.50 0.50 0.70		D PID V	0.0¢ c,,=48/	opm /62/66			grav roun (GL/	elly CLAY. Sa ded fine to coa ACIAL TILL)	nd is irse l	ine to coar imestone, flini	se. Gravel is and quartzite	angular to	-	-	
1.00 1.00		B PID	0.0p	opm				at 1.00m occas	siona	l angular lime	stone cobbles	3.	-	- (1.30) - -	
1.50 1.50		D PID	0.0p	opm			Firm rare	to stiff light gr	ey ar	nd brown silty	slighty sandy	CLAY with	- 119.00	- 1.60	
2.00 2.00	00 B 00 PID 0.0ppr						(GL/	ACIAL TILL)					-	-	
2.50 2.50	.50 D 50 PID 0.0ppm												-	- - (2.00) -	
3.00 3.00		D PID	0.0r	opm				at 3.00m dark (	grey.				-	-	
3.50 3.50		D PID	0.0p	opm			Stroi (BLI	ng dark grey ar SWORTH LIM	nd gr EST(	ey LIMESTOI DNE FORMA	NE. TION)	[	117.00 116.90	3.60 3.70	
- - - -													-	-	
Plan (Not to	o Scal	e)					1		(	General	Remark	S	L	L	
0.70		2.7	0>		1. L 2. T 3. ( 4. T	∟ocatio Trial pi Groune Trial pi	on scar t remai dwater t backf	ned with GPR ned stable duri not encountere illed with arisin	prior ing e ed. gs up	to breaking g xcavation.	yround. No se n.	rvices encou	intered.		
							All d	imensions in m	etres	3	Scale:		1:25		
Method				Plan	t					Logged		Checke	d T	nR.	
ised:	Mad	chine d	lug	Use	ג:		JCE	B-3CX		ву:	RSalama	ву:	,		AUS



Contract:							Client:					Trial Pi	t:	
<u> </u>	,	Road	de Byp	ass		<u> </u>			Roxh					TP03
Contract Re	et: 2121	502		Start:	11.0	9.17	Ground Level:			Id Co-ordinate:	)57 E	Sheet:	4	. 1
0	513	505	·	Ena:	11.0	9.17	115.00		E.4/3	144.0 11.252	257.5	م تو	•	OT I
Depth	No	Type	tu Tests Resu	ults	Water	Backfill		Des	scription of S	trata		Reduce Level	Depth (Thick ness)	Graphic Legend
0.30		FS					Turf over silty slight fine to coarse. Grav coarse quartzite, flint (POSSIBLE MADE C	tly s vel t and GRC	andy slightly is subangula d limestone. DUND)	gravelly CLAY. ar to subrounded	Sand is fine to	 119.46	0.20	
0.30 0.50		PID	0.0pp	om			Firm to stiff light gr sandy slightly gravel cobbles. Sand is fi	rey ly C ine	and dark gr LAY with rar to coarse.	eyish brown silty e limestone bould Gravel is suban	/ slightly ders and gular to	-	-	
0.50 0.60 0.70 0.70		PID V D PID	0.0pp c <sub>u</sub> =98/11	om 10/102			Boulders are >250 approximately 150mi	) co )mm m ai	arse quartz and are and are and are and are suban	rounded. Cobb gular to subround	nestone. bles are ded.	-	-	
1.00		В	0.00				(GLACIAL TILL/POS	SIB	BLE MADE G	ROUND)		-	-	
1.00		PID	0.0pp	om								-	- (2.00)	
												-	-	
1.70		D										-	-	
1.70 1.80		PID V	0.0pp c <sub>u</sub> =112/10	om 02/108								-	-	
						Firm brown light gro		nd orangish	brown ailty alight	ly condy	117.46	2.20		
							slightly gravelly CL	ey a AY. und	Sand is di ed fine to co	ne to coarse. Coarse limestone,	Gravel is quartzite	-	-	
2.50 2.60 2.60			c <sub>u</sub> =60/7	72/56			Cobbles are 150m subangular. Boulder	m t rs ar	to $250$ mm a re >300mm a	and are subrou and are rounded.	nded to	-	-	
2.00			0.00				(GLACIAL HEL/FOS		DLE MADE G	ROUND)		-	-	
												-	_ - (1.80)	
												-	-	
3.50 3.50		D PID	0.0pp	om								-	-	
												-	-	
4.00		D	0.0pr	- m			Trial pit terminated a	it 4.0	00m depth.			115.66	4.00	
4.00			0.004	5111								-	-	
												-	_	
Plan (Not to	o Scal	e)						0	General	Remarks				
0.70		2.5	0		1. L 2. T 3. C 4. T	ocatio rial pi Ground rial pi	on scanned with GPR p t remained stable durin Jwater not encountered t backfilled with arising	orior ig ex d. s up	to breaking g ccavation.	ground. No servio	ces encol	intered.		
Method				Plant	t t		All dimensions in me	tres	Logged	Scale:	Checke	1:25 ed <b>T</b>	<u>n</u> 2	
Used:	Mad	chine o	lug	Usec	1:		JCB-3CX		By:	RSalama	By:		MD	AGS



# **TRIAL PIT LOG**

Contract:								Client:					Trial Pi	it:	
<u> </u>		Road	le By	pass						Roxh					TP04
Contract Re	1: 2421	502		Start:	11.0	9.17	Ground	d Level:			a Co-ordinate:	DDA A	Sheet:	1	
						9.17		121.42		L.4730	JTU.J N.ZJZZ	224.4	<u>م</u>	Danth	01 I Materi
Depth	No	Type	Res	sults	Water	Backfil			Des	scription of S	trata		Reduce	(Thick ness)	Graph
0.50		FS					Firm slight cobbl subro (GLA	light grey i ly gravelly les. Sand i bunded fine CIAL TILL/F	and da CLAY is fine to coar POSSIE	rk greyish b with rare to coarse. se quartzite, BLE MADE G	rown silty slightl limestone boulde Gravel is suban flint and limestone ROUND)	y sandy ers and gular to e.	-	-	
0.50		PID	0.0	opm									-	-	
1.00		PID B	0.0	ppm									-	- -(2.00)	
1.00		PID	0.0	opm									-	-	
1.70 1.70	B PID 0.0pp												110 42	-	
2.00 2.00	) B PID 0.0ppn						Soft I slight subai and fl (GLA	brown, light ly gravelly ngular to su lint with occa .CIAL TILL)	grey a CLAY. Ibround asional	nd orangish Sand is fir ed fine to co limestone co	brown silty slight ne to coarse. G parse limestone, d bbles and boulde	ly sandy ravel is quartzite ers.	-	-	
2.50 2.50	0 D 0 PID 0.0ppn												-	(1.10) - - - - - 2.10	
							Firm Sand quart (GLA	dark browr is fine to zite and lime CIAL TILL)	n silty s coarse. estone.	slightly sand Gravel is s	y slightly gravelly ubangular fine to	/ CLAY. coarse	-	- - -	
													-	(0.90)	
							Trial	pit terminate	ed at 4.	00m depth.			117.42	4.00	<u></u>
										·			-	-	
Plan (Not to	Scal	e)					·		(	General	Remarks		L	L	
0.70		2.50	)		1. L 2. T 3. ( 4. T	Locatio Frial pi Ground Frial pi	on scanı t remair dwater r t backfil	ned with GP ned stable d not encounte led with aris	PR prior uring e: ered. sings up	to breaking ( xcavation. oon completic	ground. No servio on.	ces encou	intered.		
							All dir	mensions in	metres	;	Scale:		1:25		
Method	Mac	shino d	ua	Plan Use	nt d:			-3CY		Logged By:	RSalama	Checke Bv:	d J	MB	



Contract:							Client:				Trial Pi	it:	
		Road	le Byp	bass				Roxh	ill				TP05
Contract R	ef:		:	Start:	11.09	9.17	Ground Level:	National G	rid Co-ordinate:		Sheet:		
	313	583		End:	11.09	9.17	120.61	E:4749	984.3 N:2521	33.6		1	of <b>1</b>
Sam	ples a	and In-si	tu Tests	ulto	Vater	ackfill	De	scription of S	Strata		evel	Depth (Thick	Material Graphic
		Type	Rest	JILS	>		Crop over silty slightly	sandy slight	y gravelly CLAY.	Sand is		ness)	
0.20 0.20		ES PID	0.0pp	om			fine to coarse. Gravel coarse of quartzite, flint (TOPSOIL) Firm orangish brown	is subangula and limeston	ar to subrounded le. ty slightly sandy	fine to	120.31	(0.30) 0.30	
0.50 0.50 0.50		D V PID	c <sub>u</sub> =38/4 0.0pp	46/50 om			(GLACIAL TILL)	limestone, flir	it and quartzite.	guiar to	-	-	
1.00 1.00		B PID	0.0pp	om							-	-	
1.50 1.50		D PID	0.0pp	om							-	(2.90)	
2.00 2.00	B PID 0.0pp PID 0.0pp										-	-	
2.50 2.50		D PID	0.0pp	om							-	-	
3.00 3.00		D PID	0.0pp	om			Very strong grey LIMES				117.41	3.20	
- - -							(BLISWORTH LIMEST Trial pit terminated at 3	ONE FORMA 20m depth.	TION)		-	-	
											-	-	
-											-	-	
-											-	-	
												-	
Plan (Not to	o Scal	e)						General	Remarks				
0.70		2.50	)		1. Lo 2. Ti 3. G 5. Ti	ocatic rial pi rounc rial pi	on scanned with GPR prio t remained stable during e dwater not encountered. t backfilled with arisings u	r to breaking excavation. pon completio	ground. No servic	es encou	intered.		
							All dimensions in metre	s	Scale <sup>.</sup>		1:25		
Method				Plant	t			Logged		Checke	id <b>T</b>	nR	
Used:	Mad	chine d	lug	Used	1:		JCB-3CX	By:	RSalama	By:	,	ŝ	AGS



# **TRIAL PIT LOG**

Contract:							Client:				Trial Pi	t:	
		Road	le By	pass				Roxh	ill				<b>TP07</b>
Contract Re	ef:			Start:	08.09	.17	Ground Level:	National G	rid Co-ordinate:		Sheet:		
	313	583		End:	08.09	.17	119.86	E:474	875.3 N:2519	916.9		1	of <b>1</b>
Sam	ples a	and In-si	tu Tests	;	ter	kfill					iced /el	Depth	Materia
Depth	No	Туре	Res	ults	Wa	Bac	De	scription of S	strata		Redu	(Thick ness)	Legend
0.10 0.10		ES PID	0.0p	opm			Brown silty slightly san to coarse. Gravel is su quartzite and flint. Firm brown and light gr sandy slightly gravelly	dy slightly gra bangular to s ey mottled or CLAY. Sand i	avelly CLAY. San ubrounded fine to angish brown silty s fine to coarse. (	d is fine coarse y slightly Gravel is	119.66	0.20	
0.50 0.50		D PID	0.0p	opm			subangular to subround (GLACIAL TILL)	led fine to coa	arse limestone.		-	-	
0.80		V	c <sub>u</sub> =48	/56/52							-	-	
1.50 1.50		D PID	0.0p	opm			at 1.40m large lime	stone boulde	r.		-	- - -	
-							at 1.80m grey in cc	lour.			-	- - -(3.60) - -	
2.50 2.50	i0 D 90 PID 0.0pp						at 2.30m dark grey				-	-	
3.50 3.50		D PID	0.0	opm							- - - - 116.06		
-							Trial pit terminated at 3	80m depth di	ue to machine liftii	ng.	-	- - - -	
Plan (Not to	o Scal	e)						General	Remarks		-	-	
0.70		2.50	0•		1. Lc 2. Ha 3. Tr 4. Gi 5. Tr	ocatic ard d ial pi ounc ial pi	on scanned with GPR prio igging from 3.40m bgl. t remained stable during e dwater not encountered. t backfilled with arisings u	r to breaking excavation. pon completio	ground. No servio on.	ces encou	intered.		
							All dimensions in metre	S	Scale:		1:25		
Method				Plan	t			Logged		Checke	d T	nR	
ised:	Mac	chine d	lug	Use	a:		JCB-3CX	ву:	RSalama	Ву:		n D	AG



Contract:								Client:					Trial Pi	it:	
		Road	le By	pass						Roxh	ill				<b>TP12</b>
Contract R	ef:			Start:	08.0	9.17	Groun	d Level:		National G	rid Co-ordinate:		Sheet:		
	313	583		End:	08.0	9.17		115.32	2	E:4747	783.5 N:2512	216.1		1	of <b>1</b>
Sam	ples a	and In-si	tu Tests		/ater	ackfill			Des	scription of S	Strata		duced evel	Depth (Thick	Material Graphic
Depth	No	Туре	Res	ults	5	iii XXXX	Brov	vn silty slig	htly sand	ly slightly gra	avelly CLAY. San	id is fine	Re	ness)	
0.20 0.20		ES PID	0.0	opm			flint, <u>(TOI</u>	oarse. Grav quartzite a PSOIL)	vel is sub ind chalk	bangular to s	ubrounded fine to	o coarse	115.02	(0.30) 0.30	
			1	r			Firm CLA subr	to stiff ora Y. Sand ounded fin	ingish bro is fine f e to coar	own silty sligh to coarse. ( se quartzite,	ntly sandy slightly Gravel is suban limestone and ch	gravelly gular to alk.	-	-	
							(GL/	ACIOFLUV	IAL DEP	OSITS)			-	(0.70)	
0.90		D	0.0r	nm			×						114.32	1.00	
1.00 1.00 1.10		B PID D	0.0p	opm			Orar SAN subr	ngish brow D. SAnd ounded fin	n slightly is fine e to coar	y silty slightl to coarse. se of quartzit	y clayey slightly Gravel is suban e and flint.	gravelly gular to		(0.30)	
1.10		PID	0.0p	opm			(GLA Orar Grav	ACIOFLUV ngish brow vel is suba	IAL DEP n sandy	OSITS) GRAVEL.	Sand is fine to	coarse.	-	- 1.30	
							and (GL/	flint. ACIOFLUV	IAL DEP	OSITS)					
													-	-	
2.00 2.00		D PID	opm									-	-	000	
													-	(2.00)	0. <u>0</u> . 0
														-	
													-	-	
3.00		В											-	-	
3.00		PID	0.0p	opm				at 2 20m la	rao limo	stono bouldo	ra > 200mm				
						*****	Trial	pit termina	ated at 3.	30m depth or	n assumed rockhe	ead.	112.02	3.30	<u> </u>
													-	-	
-													-	-	
													-	-	
														-	
Plan (Not to	o Scal	e)							(	General	Remarks				
20	<ul><li></li><li></li></ul>	2.50	0•	-	1. L 2. T 3. C 4. T	ocatio rial p Groun rial p	on scar it remai dwater it backf	ned with G ned stable not encour illed with a	PR prior during entered. risings un	to breaking xcavation.	ground. No servio	ces encou	intered.		
Ö	♥														
							All d	imensions	in metres	8	Scale:		1:25		
Method Used:	Mar	shine d	luc	Plan	t d:			2-3CY		Logged By:	RSalama	Checke Bv:	d	MB	AGS
	ivia	mile a	uy				C	-304		,	Noalailla		-		



Contract:								Client:					Trial Pi	t:	
		Road	le By	pass			-			Roxh	hill				TP13
Contract Rei	f: • • • • •	-00		Start:	08.0	9.17	Groun	d Level:	<b>.</b>	National G	rid Co-ordinate:		Sheet:		
3	513:	083		End:	08.0	9.17	1	115.9	3	E:4/4	641.1 N:251	141.4	σ	1	of 1
Samp Depth	les a	nd In-sit	u Tests Res	sults	Water	Backfill			De	scription of S	Strata		Reduce	Depth (Thick ness)	Material Graphic Legend
							Brow to co flint a (TOF	n silty sli barse. Gra and quart PSOIL)	ghtly san avel is su zite.	dy slightly gra bangular to s	avelly CLAY. Sa subrounded fine	nd is fine to coarse	115.73	0.20	
0.70		П					CLA Subr (GLA	Y. Sand ounded fin CIAL TIL	is fine ne to coar L)	to coarse. ( se quartzite,	Gravel is subal limestone and cl	ngular to nalk.	-	-	
0.70 0.80 _0.80		PID B PID	0.0  0.0	opm opm									-	- - -(1.60) -	
								between <sup>2</sup>	1.40m and	1.70m grave	elly clay.		-	-	
							Verv	soft oran	aish brow	n silty CLAY			114.13	1.80	
1.90 1.90	B PID 0.0ppm					(GLA	ACIAL TIL	L)				-	- - - (0.70)	 	
						Firm	brown s	silty slight	ly sandy slid	ghtly gravelly C	LAY with	113.43	2.50		
2.80 2.80 -2.90 2.90		B PID D PID	0.0j 0.0j	opm			occa is su limes (GLA	sional lim ubangular stone. Bou ACIAL TIL	lestone be to subro ulders are L)	oulders. Sand ounded fine of 20x15x20	d is fine to coars to coarse irons cm limestone.	e. Gravel tone and	-	- - - - - (0.90)	
3.40		D					Extre	emely wea	ak light gr	eyish brown s	silty LIMESTONE		112.53	3.40	
3.40		PID	0.0	opm			(BLI	SWORTH	LIMEST	ONE FORMA	(TION)		-	- - (0.60) -	
							Trial	pit termin	ated at 4.	00m depth.			_ 111.93 -	4.00	
													-	-	
Plan (Not to	Scal	e)							(	General	Remarks				
0.70							on scan igging f t remai dwater t backfi	ned with from 3.40 ned stable not encou lled with a	GPR prior m bgl. e during e intered. arisings u	to breaking xcavation.	ground. No serv	ices encou	untered.		
							All di	mensions	in metre	3	Scale:		1:25		
Method Used:	Machine dug						JCP	-3CX		Logged By:	RSalama	Checke By:	ed <b>J</b>	MB	AGS



Contract:								Client:					Trial Pi	it:	
		Road	le By	pass			-			Roxh					TP14
Contract Re	ef: 2421	-02		Start:	07.0	9.17	Grour			National Gr	id Co-ordinate:		Sheet:	4	
•	515	000		End:	07.0	9.17	1	114.70		E:4/48	022.9 N.251	J44.0	σ		
Sam Depth	ples a	nd In-sit	u Tests Res	ults	Water	Backfill			De	scription of S	trata		Reduce Level	Depth (Thick ness)	Material Graphic Legend
0.20 0.20		ES PID	0.0p	pm			Brov to co of q cobt (TOI Frim	vn silty slightly barse. Gravel uartzite and fli bles. Cobbles a PSOIL) orangish brow d is fine to co	/ sand is sub int wi are 6> wn silf	dy slightly gra bangular to su th occasional (4x6cm. cy slightly san	avelly CLAY. San ubrounded fine to I quartzite and li dy slightly gravell	d is fine coarse mestone y CLAY.	- 114.48 - -	(0.30) 0.30	
0.50 0.60 0.60		PID D PID	0.0¢ 0.0¢	ıpm ıpm			fine (GL/  30x2	ACIAL TILL) ACIAL TILL) . at 0.30m fi 20x20cm.	ineque	ent limestone	boulders. Bould	ders are	-	-	
1.50 1.50 1.60 1.60	50 B 50 PID 0.0pp 60 D 60 PID 0.0pp 50 B 50 PID 0.0pp 60 D 60 D													- (2.40) - - - - - - - - - - -	
2.50 2.50 2.60 2.60	50 B 50 PID 0.0pp 60 D 60 PID 0.0pp						Very grav roun (WE Med reco (BLI	stiff dark g elly CLAY. Sa ded fine to coa ATHERED BL ium strong to vered as cobb SWORTH LIM	reyisl nd is arse c .ISW( b) stro bles an IEST(	n brown silty fine to coarse of limestone a DRTH LIMES ng dark grey nd gravel. DNE FORMA	y slightly sandy e. Gravel is subai nd mudstone lith TONE FORMAT ⁄ish brown LIME TION)	slightly ngular to orelicts. ION) STONE	- - - - - - - - -	2.70 (0.30) 3.00 -(0.60)	
3.50 3.50 3.60 3.60		B PID D PID	0.0p 0.0p	ipm ipm			Trial	pit terminated	l at 3.	60m depth.			 111.18 - -	3.60	
													- - -	- - -	
Plan (Not to		e)					1		(	General	Romarke		L	L	l
		2.50	)	• ]	1. L 2. T 3. C 4. T	.ocatic ⊺rial pi 3rounc ſrial pi	on scar t remai dwater t backf	ned with GPR ned stable dur not encounter illed with arisin	R prior ring e red. ngs up	to breaking c xcavation.	rround. No servio	ces encou	intered.		
							All d	imensions in m	netres	3	Scale:	1	1:25		
Method Used:	Mac	hine d	ua	Plan   User	t d:		JCF	3-3CX		Logged By:	RSalama	Checke By:	d J	MВ	AGS



Contract:							Client:					Trial Pi	it:	
		Road	de Bypas	s					Roxh	ill				TP15
Contract R	ef:		Star	t: <b>07.0</b>	9.17	Grour	nd Level:		National Gr	id Co-ordinate:		Sheet:		
	313	583	End	07.0	9.17		110.97		E:4750	)25.6 N:250	920.1		1	of <b>1</b>
Sam	ples a	Ind In-si	tu Tests	Vater	Backfill			Des	cription of S	itrata		evel -	Depth (Thick	Material Graphic
Deptil		туре	Tresuits			Brov	vn silty slightly :	sand	v slightly gra	welly CLAY, Sar	nd is fine	<u> </u>	ness)	Legenu
- 0.20 0.20	1	ES PID	0.0ppm			to co of co lime	parse. Gravel is quartzite and f stone cobbles. ( PSOIL)	s sub lint Cobb	angular to s with occasion oles are 6x4x	ubrounded fine t onal quartzite, 6cm.	o coarse flint and	110.67	(0.30) 0.30	<u>17.317</u> <u>4</u> <u>16.16</u>
0.50		V	c <sub>u</sub> =42/50/58			Firm San fine	orangish brown d is fine to coa to coarse of qua	n silty arse. artzit	y slightly san Gravel is si e with occasi	dy slightly grave ubangular to sub ional limestone c	ly CLAY. prounded obbles.	-	-	
0.70 0.70	4	D PID	0.0ppm			(WE	ATHERED BLI	SWC	ORTH LIMES	TONE FORMAT	ION)	-	(0.90)	
1.00 1.00	3	B PID	0.0ppm									109.77	- 1.20	
- - - 1.50	5	D				Firm sligh (WE	to stiff yellow tly gravelly CLA ATHERED BLIS	vish \Y wi SWC	brown and th frequent li DRTH LIMES	grey silty sligh mestone cobbles TONE FORMAT	ty sandy s. TON)	-	-	
- 1.50 - 1.50 -	6 B PID 0.0ppm											-	- [(1.10) - -	
2.00 - 2.00 -	6	B PID	0.0ppm									- - 108.67	- - 2.30	
2.40 2.40 2.50		D PID B	0.0ppm			Extr LIMI (BLI	emely weak yel ESTONE. SWORTH LIME	Iowis ESTC	sh brown slig	htly clayey sligh TION)	lly sandy	-	-	
-												-	 [(1.70) 	
-												-	-	
-												106.97	4.00	
-						Trial	pit terminated a	at 4.(	00m depth.			-	-	
										Deres		_	-	
Plan (Not t	o Scal	e)						Ċ	eneral	Remarks				
0.70		2.5	0	1. 2. 3. 4. 5.	Locatio Hard c Trial p Groun Trial p	on scar ligging it remai dwater it backf	nned with GPR p from 1.50m bgl. ned stable durir not encountered illed with arising	orior ng ex d. js up	to breaking o cavation. on completic	ground. No servi on.	ces encou	untered.		
			T			All d	imensions in me	etres		Scale:		1:25		
Method Used:	Mac	:hine c	Pla Us	nt ed:		JCE	3-3CX		Logged By:	RSalama	Checke By:	ed J	мB	AGS



	Contract:							Client:				Trial Pi	t:	
			Road	le Byp	bass				Roxh	hill				TP16
	Contract Re	ef:			Start:	07.09	9.17	Ground Level:	National G	rid Co-ordinate:		Sheet:		
		313	583		End:	07.09	9.17	104.51	E:475	082.9 N:2508	808.0		1	of <b>1</b>
	Sam Depth	ples a	Ind In-sit	tu Tests Resi	ults	Water	Backfill	De	scription of S	Strata		educed Level	Depth (Thick	Material Graphic Legend
	- 0.10 - 0.10 10 		ES PID	0.0pj	pm			Brown silty slightly sar to coarse. Gravel is su of quartzite, flint, chalk (TOPSOIL) Light brown creamy s frequent limestone col limestone. Gravel is su	dy slightly gra bangular to s and limestone ilty slightly s obles. Cobble bangular to s	avelly CLAY. San subrounded fine to e. andy gravelly CL es are 7x6x6cm subrounded fine to	d is fine coarse AY with and are coarse		(0.30) 0.30 - (0.40)	
	0.60 0.60 - - - - - - - - - - - - - - - - - - -		B PID	0.0pj	pm			of limestone. (WEATHERED BLISW Very stiff dark grey mo desicated CLAY. (RUTLAND FORMATIC	ORTH LIMES ttled orangish DN)	STONE FORMATI	ION) ly sandy	- 103.81 - - - - - - -	0.70 - - - - - - - - - - - - - - - - - - -	
	1.60		PID	0.0pj	pm						-	102 71	1 80	
о глуевкии. vo_uo - сигет-годз - иис пилад ти дов - хитт разово - килард вати дово - килард в ти 200. Soventry, CV3 4AQ. Tel: 02476 505600, Fax: 02476 501417, Web: www.rsk.co.uk.   10/11/17 - 14:48   DM1														
iment Ltd, Abbey Park, Humber Road,	Plan (Not to	Scal	e) — 2.50	) — ►		1. Lu 2. H 3. T 4. G 5. T	ocatic ard d rial pi iround rial pi	on scanned with GPR prio igging from 0.70m bgl. t remained stable during e dwater not encountered. t backfilled with arisings u	General r to breaking excavation. pon completio	Remarks ground. No servic	ces encou	ntered.		
invirol	Method				Plan	+		All dimensions in metre	S	Scale:	Chacker	1:25		
RSKE	Used:	Mac	hine d	ug	Usec	d:		JCB-3CX	By:	RSalama	By:	J	MВ	AGS



Contract:								Client:					Trial Pi	it:	
		Road	le By	pass	i					Roxh	ill			Т	P16A
Contract Ref	:			Start:	08.0	9.17	Groun	d Level:		National Gr	id Co-ordinate:		Sheet:		
3	135	583		End:	08.0	9.17		104.51		E:4750	)82.9 N:250	808.0		1	of <b>1</b>
Sampl Depth	les a No	nd In-sit	tu Tests Res	ults	Water	Backfill			De	scription of S	trata		educed Level	Depth (Thick	Material Graphic Legend
0.20		FS					MAE (MA	DE GROUND: DE GROUND	Gras: /RAIL	s over LIMES WAY BALLAS	TONE COBBLE ST)	S.	 - -	-(0.40)	
0.20		PID	0.0p	opm			Orar	igish brown si	ilty slig	ghtly sandy sli	ightly gravelly CL	AY.	104.11 104.01	0.40	ו••ו•
· · · · · · · · · · · · · · · · · · ·													- - - - - - - - - - -	- - - - - - - - - - -	
- - -													- - - - - - -	- - - - - - -	
													-	-	
-													- - - -	- - - -	
Plan (Not to S	Scale	e) — 2.50	) —•	•	1. L 2. T 3. G 4. T	ocatic rial pi Ground rial pi	n scar t remai dwater t backf	ned with GPR ned stable du not encounter illed with arisir	( R prior ring e red. ngs up	General to breaking g xcavation.	Remarks ground. No servi m.	ces encou	ntered.	L	
Method Used:	Mac	hine d	ug	Plan Use	nt d:		All di	mensions in r B-3CX	netres	S Logged By:	Scale: RSalama	Checke By:	1:25 <sup>d</sup> ]	MB	AGS



Contract:								Client:					Trial Pi	t:	
		Road	le By	pass						Roxh	ill				<b>TP17</b>
Contract Re	ef:			Start:	07.0	9.17	Groun	d Level:		National Gr	id Co-ordinate:		Sheet:		
	313	583		End:	07.0	9.17	1	102.16		E:4751	21.9 N:2507	10.3		1	of <b>1</b>
Sam Depth	nples a	and In-si Type	tu Tests Res	ults	Water	Backfill			De	scription of S	itrata		Reduced	Depth (Thick ness)	Material Graphic Legend
0.20 0.20		ES PID	0.0p	opm			Brov to co of qu (TOP	vn silty sligh barse. Grave uartzite, flint, PSOIL)	tly san el is su chalk a	dy slightly gra bangular to s and limestone	avelly CLAY. San ubrounded fine to	d is fine coarse	- 101.86	- 0.30	
0.50 0.50 0.60 0.60 0.70		B PID D PID V	0.0¢ 0.0¢ c <sub>u</sub> =48/	opm opm (54/56			Ligh frequ limes of lin (WE	t brown cre uent limesto stone. Grave nestone. ATHERED I	amy si one cot el is su BLISW	Ity slightly sa obles. Cobble bangular to s ORTH LIMES	andy gravelly CL s are 7x6x6cm ubrounded fine to TONE FORMATI	AY with and are coarse ON)	- - - 101.16	(0.70) - - 1.00	
1.30		V	c <sub>u</sub> =98/	110/86			Very Sand (WE	stiff grey n d is fine to co ATHERED I	nottled oarse. BLISW	orangish bro ORTH LIMES	wn slightly sandy TONE FORMATI	ON)	-	-	
1.50 1.50 1.60 1.60		в PID PID PID	0.0¢ 0.0¢	opm opm			i. lime:	. at 1.70m stone gravel	white s.	subangular to	o angular fine to	coarse	- - - -	- - - -	
2.50 2.50 2.60 2.60		B PID D PID	0.0¢ 0.0¢	opm				at 2.90m bee	coming	light grey.			-	- (3.20) 	
3.50 3.50 3.60 3.60		B PID D PID	0.0¢ 0.0¢	opm				at 3.70m be	coming	grey in colou	r.		- - - - -	- - - - -	
4.40 4.40 4.50		D PID B	0.0p	opm			Soft sanc coar (RU	dark bluish ly CLAY w se mudstone TLAND FOR	n grey ith free e lithore RMATIC	mottled orar quent subang elicts. DN)	igish brown silty gular to angular	slightly fine to	97.96	4.20	
													-	-	
Plan (Not to	o Scal	e)				·			(	General	Remarks				
0.70	▲ ↓ _	2.6	0•		1. L 2. H 3. T 4. ( 5. T	Locatio Hard d Frial pi Ground Frial pi	on scar igging t remai dwater t backf	ned with GF from 2.00m l ned stable d not encount illed with aris	PR prior bgl. luring e ered. sings u	r to breaking g xcavation. pon completic	ground. No servio on.	es enco	untered.		
							All d	mensions in	metre	6	Scale:		1:35		
Method	<b>N</b> 4 -	<b></b>		Plan	lt d:		105	207		Logged	Delama	Checke	ed T	MB	
	ivia	Juille C	iuy		<i>~</i> ·		JUE	-308		-,.	Roaidilla	_y.			



Contract:								Client:					Trial Pi	t:	
		Roa	de By	pass						Roxh	ill				<b>TP18</b>
Contract Re	ef:			Start:	08.0	9.17	Groun	nd Level:		National Gr	id Co-ordinate	:	Sheet:		
	313	583		End:	08.0	9.17		117.37		E:4748	880.5 N:25	1786.9		1	of <b>1</b>
Sam Depth	nples a	and In-s Type	itu Tests Res	ults	Water	Backfill			De	scription of S	trata		Reduced Level	Depth (Thick ness)	Materia Graphic Legend
0.20 0.20		ES PID	0.0p	opm			Brov to co quar (TOF	vn silty slightly barse. Gravel tzite and flint. PSOIL)	sano is sul	dy slightly gra bangular to si	avelly CLAY. S ubrounded fine	and is fine to coarse	 117.17 -	0.20	
0.60		V B	c <sub>u</sub> =56/	68/62			sanc suba (GL/	dy slightly grav angular to subr ACIAL TILL)	elly C ound	CLAY. Sand is ed fine to coa	ingish brown s s fine to coarse irse limestone.	e. Gravel is		-	
0.70 0.80 _0.80		PID D PID	0.0p 0.0p	opm opm										-  - (1.80)	
4.70							limes to si subr	. between 1. stone. Cobbles ubrounded. E ounded.	30m s are 3ould	and 1.70m t 100mm to 25 ers are >300	ooulders and 0mm and are : mm and are i	cobbles of subangular rounded to		-	
1.70	D D PID 0.0ppm V c <sub>u</sub> =74/68/83 D D						Firm	arey silty CLA	v				115.37	2.00	
2.10 2.10 2.10	V c <sub>u</sub> =74/68/83 D PID 0.0ppm						(GL/	ACIAL TILL)	<b>NI</b> .				-	-	
2.70		v	c <sub>u</sub> =114/ <sup>-</sup>	126/120				at 2.50m stiff.						(1.10) - -	
3.20 3.20		D PID	0.0p	opm			Very CLA (GL/	y stiff grey m Y. ACIAL TILL) at 3.30m greyi	ottled	l orangish br een.	rown silty slig	htly sandy	114.27	3.10	
						*****	Stroi (BLI) Trial	ng greyish gree SWORTH LIM pit terminated	en Lli IEST( 1 at 3.	MESTONE. ONE FORMA 50m depth.	TION)		-	-	<u>v</u>
- -													-	-	
													-	-	
Plan (Not to	n (Not to Scale)								(	General	Remarks	\$			
0.70		2.5	i0 — <b>&gt;</b>		1. L 2. T 3. ( 4. T	Locatio Frial pi Ground Frial pi	on scar t remai dwater t backf	nned with GPR ned stable dur not encounter illed with arisin	t prior ring e ed. ngs up	to breaking g xcavation.	ground. No se	rvices encou	intered.		
							All d	imensions in m	netres	3	Scale:		1:25		
Method	<b>.</b> -			Plan	t		-			Logged		Checke	d T	MR	
Jsea:	Mac	chine (	dug	Used	ב:		JCE	3-3CX		By:	RSalama	ву:			AU



# **TRIAL PIT LOG**

Contract:								Client:					Trial Pi	it:				
		Road	le By	pass						Roxh	ill				<b>TP20</b>			
Contract R	ef:	-00		Start:	08.0	9.17	Groun	d Level:		National G	rid Co-ordinat		Sheet:					
	313	583		End:	08.0	9.17	1	119.11		E:4/4	339.3 N:2	51894.4	σ	1	of <b>1</b>			
Sam Depth	nples a	and In-sit	u Tests Res	ults	Water	Backfill			De	scription of S	Strata		Reduce Level	Depth (Thick ness)	Material Graphic Legend			
0.50 0.50		D PID	0.0p	opm			Brow to cc quar Firm sanc suba (GL4	n silty slig parse. Grav tzite and fli brown and ly slightly g ungular to s ACIAL TILL	htly sand vel is sul nt. I light gru ravelly ( ubround )	dy slightly gra bangular to s ey mottled or CLAY. Sand i ed fine to coa	avelly CLAY. ubrounded fir angish brown s fine to coars arse limestone	Sand is fine ne to coarse silty slightly se. Gravel is e.	- 118.91 - - - - - -	0.20				
1.50 1.50		D PID	0.0p	opm				at 2.00m be	ecoming	dark grey.			-	- - - - - - -(3.60)				
2.50 2.50		D PID	0.0¢	opm									-					
3.50 3.50		D PID	0.0p	opm			Trial	pit termina	ted at 3.	80m depth.			- - - - - - - -	- - - - - - - - -				
													-	- - -				
Plan (Not to	o Scal	e)							(	General	Remark	S						
0.70		2.50	)		1. A 2. T 3. C 4. T	Area s Trial pi Ground Trial pi	canned t remai dwater t backfi	l with GPr p ned stable not encoun illed with ar	prior to b during e itered. isings.	reaking groun xcavation.	nd. No service	- es detected.	ted.					
							All di	mensions i	n metres	3	Scale:		1:25					
Method				Plan	lt d:					Logged		Checke	d I	MB				
J360.	iviac	chine d	ug	Use	u.		JCE	5-3CX		uy.	RSalama	□у.			AUD			



Contract:							Client:				Trial Pi	it:	
		Road	le By	pass				Ro	oxhill				<b>TP22</b>
Contract Re	ef:			Start:	13.0	9.17	Ground Level:	Nation	al Grid Co-ordinate:		Sheet:		
	313	583		End:	13.0	9.17	117.11	E:4	75190.4 N:2522	244.0		1	of <b>1</b>
Sam Depth	ples a	and In-sit	u Tests Res	ults	Water	Backfill	C	escription	of Strata		keduced Level	Depth (Thick ness)	Material Graphic Legend
-							Grass over brown si Sand is fine to coarse subrounded chalk, qu (TOPSOIL) Firm to stiff light grey CLAY with frequent a coarse. Gravel is su limestone, flint and qu (GLACIAL TILL/POSS	Ity slightly e. Gravel is artzite, flini brown silty ngular lime bangular ti artzite. SIBLE MAL	sandy slightly gravelly s fine to coarse, subar t and limestone. slightly sandy slightly stone cobbles. Sand i o subrounded, fine to DE GROUND)	r CLAY. ngular to gravelly s fine to coarse	<u>116.81</u>	(0.30) 0.30	
- 1.00 - 1.00    	1	B PID	0.0p	opm						-	-	- - - - - - - - - - - - - - - - - - -	
2.00 2.00	2	B PID	0.0p	pm						-	-	- - - - - -	
3.00 3.00	3	B PID	0.0p	ppm						-	<u>114.11</u>	3.00 - - - - - - - - - - - -	
Plan (Not +		۵)						Gana	ral Pemarka				
		<del>و</del> ) 2.50	)		1. A 2. H 3. T 4. C 5. T 6. T	Area s lard d Trial pi Ground Trial pi Trial pi	canned with GPR prior t igging from 1.50m bgl. t remained stable during dwater not encountered. t backfilled with arisings t used for soakaway tes	o breaking excavatio	ground. No services d	letected.			
							All dimensions in met	res	Scale:		1:25		
Method Used:	Mar	hino d	ua	Plan Useo	t d:		ICB-3CY	Logged Bv:	RSalama	Checked Bv:	J	MB	AGS
-	ivia	anne u	чу				30D-00A	,	i voaiai lia	,			



Contract:								Client:					Trial Pi	it:	
		Road	le By	pass						Roxh	ill				TP23
Contract R	ef:			Start:	13.09	9.17	Groun	d Level:		National G	id Co-ordinate:		Sheet:		
	313	583		End:	13.09	9.17		121.20	0	E:4750	)53.4 N:2522	237.1		1	of <b>1</b>
Sam Depth	ples a	and In-sit	u Tests Res	ults	Water	Backfill			De	scription of S	itrata		keduced Level	Depth (Thick ness)	Material Graphic Legend
							Gras Sanc subro	s over bro I is fine to ounded ch	own silty coarse. alk, quar	slightly sand Gravel is fine tzite, flint and	ly slightly gravelly to coarse, subai limestone.	y CLAY. ngular to	120.00	(0.30)	$\frac{\underline{x}^{1}}{\underline{y}} \cdot \underline{x}^{1} \cdot \underline{y}^{1} \cdot \underline{x}^{1} \cdot \underline{y}^{1} \cdot $
							Firm slight fine coars (GLA	brown lig tly gravelly to coarse se limestor CIAL TILL	ht grey y CLAY . Gravel ne quartz ./POSSII	mottled dark with rare lim is subangula tite and flint. BLE MADE G	grey silty slightl estone cobbles. ar to subrounded ROUND)	y sandy Sand is I fine to	- - - - -	- - - - -	
1.00	1	B PID	0.0p	opm									-	- - - - - - - - - - - - - - - - - - -	
2.00	2	B PID	0.0p	opm			1	Brown in c	olour froi	m 2.00m.			- - - - - - -	- - - - - - -	
3.00 3.00	3	B PID	0.0p	pm									- 118.20 - - - - - - - - - - - - -	- - - - - - - - - - - - - -	
													-	-	
Plan (Not to 2 o	o Scal	e) 2.50	)		1. Ai 2. Tr 3. G 4. Tr 5. Tr	rea se rial pi rounc rial pi rial pi	canned t remain dwater i t backfi t used f	with GPR ned stable not encour lled arising for soakaw	prior to l during e ntered. gs upon o /ay test.	completion.	Remarks	letected.			
							All di	mensions	in metres	6	Scale:		1:25		
Method	<b>.</b> -			Plan	t					Logged		Checke	d T	шR	
Jsed:	Mad	chine d	ug	Used	ג:		JCB	-3CX		ву:	RSalama	ву:	,		AGS



Contract:								Client:					Trial	Pit:	
		Road	le By	pass						Roxh	ill				TP26
Contract Re	ef:			Start:	13.09	9.17	Grour	nd Level:		National Gr	id Co-ordinate:		Shee	et:	
	313	583		End:	13.09	9.17		99.88		E:4751	45.4 N:25	0780.4		1	of <b>1</b>
Sam Depth	ples a	and In-sit	tu Tests Res	ults	Water	Backfill		Γ	Des	cription of S	trata		teduced	Depth (Thick ness)	Material Graphic Legend
							Gras San fine	ss over brown si d is fine to coars to coarse quartzit	ilty s se. te, f	slightly sand Gravel is su lint and lime	y slightly grave ubangular to se stone.	elly CLAY. ubrounded		(0.30)	$\frac{\underline{x}^{\underline{\lambda}}}{\underline{1}_{\underline{\lambda}}} \cdot \underline{\underline{x}}^{\underline{\lambda}} \underline{1}_{\underline{\lambda}} \cdot \underline{x}^{\underline{\lambda}}}$ $\frac{1}{\underline{1}_{\underline{\lambda}}} \cdot \underline{\underline{x}}^{\underline{\lambda}} \cdot \underline{1}_{\underline{\lambda}} \cdot \underline{x}^{\underline{\lambda}}}{\underline{1}_{\underline{\lambda}}} \cdot \underline{\underline{x}}^{\underline{\lambda}} \cdot \underline{1}_{\underline{\lambda}}$
1.00 1.00	1	B PID	0.0p	ppm			Firm Sand fine (GL/	i brown orange s d is fine to coars to coarse quartzit ACIAL TILL)	silty se. te fli	slightly sand Gravel is si int and limes	dy slightly grav ubangular to si tone.	elly CLAY. ubrounded	- - - - - - - - -	8 0.30 - - - - - - - -	
								light grey in colou	ur fro	om 1.50m			-	- - - - - -	
2.00 2.00	2	B PID	0.0p	pm				with angular lime	estor	ne cobbles fr	rom 2.50m		-	-	
3.00 3.00	2	B PID	0.0p	opm				Soil becoming da	amp	from 2.80m			- 96.8 - - - - - -	8 3.00 - - - - - - -	
													-		
Plan (Not to	o Scal	e)							G	eneral	Remarks	<u> </u>			
0.70		2.50	)>		1. Ai 2. Tr 3. G 4. Tr 5. Tr	rea so rial pi rouno rial pi rial pi	cannec t remai dwater t backf t used	d with GPR prior t ined stable during not encountered. illed with arisings for soakaway tes	to br g ex s upo st.	reaking grou cavation. on completic	nd. No service:	s detected.			
							All d	imensions in met	res		Scale:		1:25	j	
Method		- <b>I</b> - <b>!</b>		Plan	t 1		107			Logged	DOalar	Checke	ed	TUB	
Jacu.	Mac	cnine d	ug	0.960	J.		JCE	5-3UX		Бу.	KSalama	Бу.			AUD



#### APPENDIX E WINDOWLESS SAMPLE BOREHOLE LOGS



Contract:						C	lient:				Windo	w Samp	ole:
	Roade	By	pass	•					Roxhill	I		١	WS01
Contract Ref:			Start:	06.09.17	Gro	und L	eve	1:	National Grid	Co-ordinate:	Sheet:		
31	3583		End:	06.09.17		1	120	.71	E:47548	8.6 N:252412.5		1	of <b>1</b>
Progress		Sam	oles / T	ests		ter fill &	ru- ation		Description		uced vel	Depth	Material
Window Run	Depth	No	Туре	Results	i 📘	Wa' Back	Inst		Description	of Strata	Redu	(Thick ness)	Legend
-	-							Crop over	dark brown	slightly sandy slightly ent roots and rootlets.	-	(0.30)	
-	0.20	1	ES					Gravel is a	angular to subr	rounded fine to coarse	120,41	0.30	
-	0.20		PID	0.0ppm			ľť		)	ʃ	-	- 0.00	
-	0.40	2	В					Firm oran aravelly CI	gish brown ε AY. Gravel is	slightly sandy slightly angular to subrounded		-	
								fine to coar	se of chalk, qu	artzite and flint.		E	
-	-							(00,00,0	1122/		  -	-	<u>.</u>
-	0.90	3	D					l			_		
-	F					• • •		8 0			F	F	
	1.20-1.65	1	SPT(c)	N=27		•••	影	Becon	ning stiff from 1	.20m bgl.		-	······································
	- 1.20 -	4	D			***		, , ,	5	-		(2.20)	<u> </u>
1.20 - 2.00	-					•		, , ,			+	ŀ	
(85mm dia) 100% rec						••••		, 0			-	-	
						* * *		, •				-	
t	 					°,		8 0			E I	E	
-	2.00-2.45 2 SPT(c) N=50					••••	歌	becom	ing very stiff fro	om 2.00m.		-	
2.00 - 2.50 (75mm dia)	2.50					** *		, •				-	
100% rec	-					**	北	, , ,				-	<u> </u>
├	2.50-2.89	3	SPT(c)	N:50 for 285	mm	• •	<u>.H.</u> ,	Window sa	ample hole tern	ninated at 2.50m depth	118.21	2.50	<u> </u>
-	2.50 /dia) rec 2.50-2.89 3 SPT(c) N:50 for 285							on refusal.	•			F	
-	-											-	
-	-											Ļ	
-	-										+	ŀ	
-												-	
-	-											F	
												Ļ	
-	-										-	-	
-	-											F	
-	-											Ē	
-	-											-	
-	-											F	
-	-										-	-	
	Drilling Progress and Water Observations							·					
	Borehole         Casing         Borehole         Depth         Borehole         Depth         Depth         Diameter								Gen	eral Remarks			
	E Time Depth Depth Depth Diameter (m) (m) (m)						1. L	ocation scan	ned with GPR I	prior to breaking ground.	. No Ser	rvices	
							er 2. H	ncountered. land dug insr	pection pit to 1.	20m bgl,			
							3. G 4. C	roundwater r	not encontered. ndwater monito	pring well installed to 2.50	0m bgl.		
										J.			
						-		All dimens	ions in metres	Scale <sup>.</sup>	1:25		
Method Tra	cked wind	ow	Plar	ıt				Drilled		Logged	Check	edDuf	
Used:	sampling		Use	d: Pre	mie	r 110	J	By:	DSUK LTD	By: MSouthworth	By:	1711	AGS



Roade Bypass         Roxhill           Contract Ref:         Start:         Start:         Mational Grid Co-ordinate:         Sheet:           313583         End:         06.09.17         119.35         E:474865.0 N:251894.1         1           Progress         Samples / Tests         big start         0.000 ref.         1         0.000 ref.         <	Contract:					Client:			Window	<i>w</i> Samp	le:
Contract Ref:         Start:         06.09.17         Ground Level:         National Grid Co-ordinate:         Sheet:           Progress         Samples / Tests         0.00017         119.35         E.474865.0 N:251894.1         1           Window Run         Depth         No         Type         Results         0.000         0.0		Roade By	pass	;				Roxhill			WS02
313583         End:         06.09.17         119.35         E:474865.0 N:251894.1         1           Progress         Samples / Tests         b <th>Contract Ref:</th> <th></th> <th>Start:</th> <th>06.09.17</th> <th>Grour</th> <th>nd Level</th> <th>:</th> <th>National Grid Co-ordinate:</th> <th>Sheet:</th> <th></th> <th></th>	Contract Ref:		Start:	06.09.17	Grour	nd Level	:	National Grid Co-ordinate:	Sheet:		
Progress         Samples / Tests         by service         service         Description of Strata         By service	313	3583	End:	06.09.17		119	.35	E:474865.0 N:251894.1		1	of <b>2</b>
Window Run         Depth         No         Type         Results         Image: Stress of the stress o	Progress	Sar	nples / ٦	ests	ter	fill & ru- ation			uced /el	Depth	Material
0.20         1         ES         0.0ppm         Crop over brown sandy slightly gravelly CLAY with frequent roots and rootets. Gravel is angular to subrounded fine to coarse of chalk and quartite. (TOPSOIL)         119.95         0.40           0.50         2         D <td>Window Run</td> <td>Depth No</td> <td>туре</td> <td>Results</td> <td>Ma</td> <td>Back Inst ment</td> <td></td> <td>Description of Strata</td> <td>Redu</td> <td>(Thick ness)</td> <td>Legend</td>	Window Run	Depth No	туре	Results	Ma	Back Inst ment		Description of Strata	Redu	(Thick ness)	Legend
0.50         2         D           0.70         4         B           1.00         3         D           1.00         3         D           1.00         3         D           1.20-1.65         1         SPT(c)           1.40         5         D           1.20-2.00         (G5mm dia)         100% rec           2.00-2.45         2         SPT(c)           2.00-2.45         2         SPT(c)           2.00-3.00         2.40         6         D           3.00-3.45         3         SPT(c)         N=22           3.00-4.00         3.40         7         D           3.00-4.00         3.40         7         D           4.00-4.45         4         SPT(c)         N=40		0.20 1 0.20	ES PID	0.0ppm			Crop over with frequ angular to and quartzi (TOPSOIL)	brown sandy slightly gravelly CLAY ent roots and rootlets. Gravel is subrounded fine to coarse of chalk te.	- - 118.95	(0.40)  0.40	$\frac{\langle \mathbf{A}, \mathbf{I}_{1}, \cdots, \langle \mathbf{A}, \mathbf{I}_{2}, \cdots, \langle A$
0.70         4         B           1.00         3         D           1.00         3         D           1.20-1.65         1         SPT(c)           1.40         5         D           1.20-2.00         1.40         5         D           1.20-2.01         1.40         5         D           1.20-2.02         1.40         5         D           2.00-2.45         2         SPT(c)         N=22           Stiff greyish brown mottled orangish brown mottled orangish brown mottled inth.         (GLACIAL TILL)          at 2.90m becoming very stiff.         117.55           3.00-3.00         2.40         6         D          at 2.90m becoming very stiff.         116.25           3.00-4.00         3.40         7         D           3.00-4.00         3.40         7         D           4.00-4.45         4         SPT(c)         N=40	-	0.50 2	D				Firm beco slightly gra	oming stiff orangish brown sandy avelly CLAY. Gravel is angular to	-	-	-° 
1.00       3       D         1.20-1.65       1       SPT(c)       N=17         1.20-2.00       (45mm dia)       140       5       D         1.20-2.00       (45mm dia)       100% rec       117.55       1.80         2.00-2.45       2       SPT(c)       N=22       Stiff greyish brown motiled orangish brown slightly sandy slightly gravely CLAY. Gravel is angular to subrounded fine to coarse of chaik, quartize and fint.       (GLACIAL TILL)         2.00-3.00       2.40       6       D       at 2.90m becoming very stiff.       at 1.90m cobbles of sandstone.         3.00-4.00       3.40       7       D       at 2.90m becoming very stiff.       at 2.90m becoming very stiff.         3.00-4.00       3.40       7       D       at 2.90m becoming very stiff.       at 2.90m becoming very stiff.         4.00-4.45       4       SPT(c)       N=40       at 2.90m becoming very stiff.       at 2.90m becoming very stiff.         4.00-5.00       3.40       7       D       at 2.90m becoming very stiff.       at 2.90m becoming very stiff.         4.00-5.00       4.00-4.45       4       SPT(c)       N=40       at 2.90m becoming very stiff.       at 2.90m becoming very stiff.         100% rec       at 2.90m becoming very stiff.	-	0.70 4	В				quartzite. (GLACIAL	TILL)	-	-	
1.20-1.65       1       SPT(c)       N=17         1.20-2.00       1.40       5       D         1.20-2.00       (dSmm dia)       100% rec       117.55       1.80         100% rec       2.00-2.45       2       SPT(c)       N=22       Stiff greyish brown mottled orangish brown slightly gravelly CLAY. Gravel is a quarzite and flint. (GLACIAL TILL)       117.55       1.80         2.00-3.00       2.40       6       D       at 2.90m becoming very stiff.       116.25       3.10         100% rec       3.00-3.45       3       SPT(c)       N=46       at 2.90m becoming very stiff.       116.25       3.10         3.00-4.00       (65mm dia)       100% rec       at 2.90m becoming very stiff.       116.25       3.10         4.00-4.45       4       SPT(c)       N=40       at 2.90m becoming very stiff.       116.25       3.10         4.00-5.00       3.40       7       D       at 2.90m becoming very stiff.       116.25       3.10         4.00-5.00       4.00-4.45       4       SPT(c)       N=40       at 2.90m becoming very stiff.       116.25       3.10         4.00-5.00       6       0       at 2.90m becoming very stiff.       at 2.90m becoming very stiff.       at 2.90m becoming very st	-	1.00 3	D						-	- (1.40)	
(85mm dia) 100% rec       117.55       1.80         2.00-2.45       2       SPT(c)       N=22         2.00-3.00       2.40       6       D         (75mm dia)       100% rec       at 2.90m becoming very stiff.       at 2.90m becoming very stiff.         3.00-3.45       3       SPT(c)       N=46       at 2.90m becoming very stiff.         3.00-4.00       3.40       7       D         (65mm dia)       100% rec       at 2.90m becoming very stiff.       116.25         3.00-4.00       3.40       7       D         4.00-4.45       4       SPT(c)       N=40	1.20 - 2.00	1.20-1.65     1       1.40     5	SPT(c) D	N=17					-	-	
2.00 - 3.00 (75mm dia) 100% rec       2.40       6       D       at 2.90m becoming very stiff.         3.00 - 3.45       3       SPT(c)       N=46       at 2.90m becoming very stiff.         3.00 - 4.00 (65mm dia) 100% rec       3.40       7       D         4.00 - 5.00 (4.00 - 5.00       4.00-4.45       4       SPT(c)       N=40	(85mm dia) 100% rec	2.00-2.45 2	SPT(c)	N=22			Stiff greyis slightly sar angular to quartzite ar (GLACIAL at 1.90	sh brown mottled orangish brown hdy slightly gravelly CLAY. Gravel is subrounded fine to coarse of chalk, nd flint. TILL) m cobbles of sandstone.	 117.55  	- <u>1.80</u> 	
3.00-3.45       3       SPT(c)       N=46       at 2.90m becoming very stiff.         3.00-4.00       3.40       7       D         3.00-4.00       3.40       7       D         4.00-4.45       4       SPT(c)       N=40	2.00 - 3.00 (75mm dia) 100% rec	2.40 6	D						-	- (1.30) - - -	
3.00 - 4.00       3.40       7       D         3.00 - 4.00       3.40       7       D         100% rec       4.00-4.45       4       SPT(c)       N=40         4.00 - 5.00       4.00-4.45       4       SPT(c)       N=40		3.00-3.45 3	SPT(c)	N=46			Stiff dark	m becoming very stiff. grey silty slightly gravelly CLAY. angular to subrounded fine to coarse	- _ 116.25	- 	
4.00-4.45 4 SPT(c) N=40	3.00 - 4.00 (65mm dia) 100% rec	3.40 7	D				of chaik an (GLACIAL	d sandstone. TILL)	-	-	
	4.00 - 5.00 (65mm dia) 100% rec	4.00-4.45 4	SPT(c)	N=40					-	  (2.35)	

SINT SINT	Used:	1100	samp	ling	VV	Used	d: Pre	emier 11	10	By:	DSUK LTD	By:	MSouthworth	By:	Ĩ	AGS
LIBR	Mathad	Tre		vinder		Diam	 +		A		sions in metres	10000	Scale:	1:25	od –	
Vary_V8_06.GLB LibVersion: unment Ltd, Abbey Park, Humb				<u>(</u> m)		( <u>m</u> )	(mm)	(ṁ)	1. Loca enco 2. Hanc 3. Grou 4. Gas	tion scan untered. I dug ins ndwater and grou	ned with GPR p pection pit to 1.2 not encontered. ndwater monitor	orior to I 20m bgl ring we	breaking ground , Il installed to 5.0	. No Sei 0m bgl.	rvices	
v8_06_018 er Road, C	Date	Drilling Tim	Progre	ess and orehole Depth	I Wa	ater Ob asing Depth	Borehole Diameter	Water Depth	-		Gene	eral	Remarks			
8 Prj\ Coven	L			I										-L	L	
/ersion: v8_06 - Core+Logs ntry, CV3 4AQ. Tel: 02476 5	- 4.00 - 5. (65mm c 100% r	.00 - dia) _ ec _	4.00-4. 4.40	.45	4	SPT(c) D	N=40							- - - -	(2.35)	
- 002   Log WINDOW SAMPLE LOC 05600, Fax: 02476 501417, Web: w	3.00 - 4. (65mm of 100% r	.00 dia) ec	3.00-3. 3.40	.45	3	SPT(c) D	N=46			tiff dark iravel is f chalk ar GLACIAL	grey silty sli angular to subr id sandstone. TILL)	ghtly g ounded	gravelly CLAY. I fine to coarse	- - - - - - - - -	<u>3.10</u> - - - - -	
G - A4P   313583 - ROADE E ww.rsk.co.uk.   14/11/17 - 11	2.00 - 3. (75mm of 100% r	.00 dia) ec -	2.40		6	D				at 2.9	Om becoming ve	ery stiff.		-	- (1.30) - - -	
KPASS.GPJ - v8_06. 3:43   MS8	- - ¥ - -		2.00-2.	.45	2	SPT(c)	N=22		S sl qi (C	tiff greyi ightly sa ngular to uartzite a GLACIAL at 1.90	ish brown mo ndy slightly gra subrounded fir nd flint. TILL) Om cobbles of s	ttled o avelly C ne to c andstor	rangish brown LAY. Gravel is oarse of chalk, ne.		-	



Contract:							(	Client:			Wind	ow Samp	ole:
	R	loade E	Зуј	pass	;					Roxhill			WS02
Contract Re	ef:			Start:	06.09.17	Gr	ound	Level	:	National Grid Co-ordinate:	Shee	t:	
	31358	3		End:	06.09.17			119	.35	E:474865.0 N:251894	1	2	of <b>2</b>
Progress	;	S	amp	oles / T	[ests		ter	cfill & tru- ation		Description of Strate	vel	Depth	Material
Window R	un D	epth I	٧o	Туре	Results	6	Wa	Back Ins ment		Description of Strata	Red	ness)	Legend
- 4.00 - 5.00 (65mm dia 100% rec - ↓ - ↓ - ↓ - ↓ - ↓ - ↓ - ↓ - ↓ - ↓ - ↓		0-5.45	5	SPT(c)	N=43				Stiff dark Gravel is a of chalk an (GLACIAL (stratum of sheet) Window sa	grey silty slightly gravelly CL angular to subrounded fine to coa d sandstone. TILL) copied from 3.10m from previ	<u>av</u>	110233 ()         1         -   -	
Dr	illing Pro	gress and	Wa	ater OI	bservations					<b>_</b>			
	Time	Borehole	С	asing	Borehole	Wa	ater			General Remark	S		
	11110	(m)		(m)	(mm)	(r	n)						

All dimensions in metres

Drilled

By:

DSUK LTD Logged By:

1:25

Checked

AGS

Scale:

MSouthworth

GINT\_LIBRARY\_V8\_06.GLB LibVersion: v8\_06\_018 PrjVersion: v8\_06 - Core+Logs - 002 | Log WINDOW SAMPLE LOG - A4P | 313583 - ROADE BYPASS.GPJ - v8\_06. RSK Environment Ltd, Abbey Park, Humber Road, Coventry, CV3 4AQ. Tel: 02476 505600, Fax: 02476 501417, Web: www.rsk.co.uk, | 14/11/17 - 16:43 | MS8 |

**Tracked window** 

sampling

Plant

Used:

Premier 110

Method

Used:



Contract:						Client:			Window	w Samp	le:
	Roade	By	pass	<b>i</b>				Roxhill		1	WS03
Contract Ref:			Start:	06.09.17	Groun	nd Level	:	National Grid Co-ordinate:	Sheet:		
31	3583		End:	06.09.17		115	.32	E:474764.6 N:251244.6		1	of <b>1</b>
Progress		Sam	oles / T	Tests	er	fill & -u- ation			iced el	Depth	Material
Window Run	Depth	No	Туре	Results	Wat	Backf Instr menta		Description of Strata	Redu Lev	(Thick ness)	Legend
-	0.10 0.10 0.20-1.00	1 2	ES PID B	0.0ppm			Grass ove gravelly SA angular to and flint. (TOPSOIL)	r brown silty slightly clayey slightly ND. Sand is fine to coarse. Gravel is rounded fine to coarse of quartzite	 115.12	0.20	
-	0.50 - -	3	D				Orangish slightly gra Gravel is coarse of q (PROBABL	brown slightly silty slightly clayey velly SAND. Sand is fine to coarse. subangular to subrounded fine to uartzite, flint and chalk. .E GLACIOFLUVIAL DEPOSITS)	-	(1.00)	
-	- - 1.20-1.65	1	SPT	N=14			Firm orang	ish brown silty slightly sandy gravelly	- 114.12	_ 	
-	- 1.50 -	4	D				subangular quartzite, c (GLACIAL	have it coarse . Graver is to subrounded fine to coarse of halk and flint. TILL)	- - -	-	
-	- - - 2.00-2.45 -	2	SPT	N=14					-	- (1.50) - -	
-	- - 2.50 -	5	D				Orangish h	roum SAND	- - - 112.62	2.70	
- - - -	- - - 3.00-3.37 -	3	SPT	N:50 for 215m	ım		(GLACIAL Window sa due to refu	mple hole terminated at 3.00m depth sal.	- 112.32 - -	- (0.30) 3.00	
-	- - - -								- - -	-	
-	- - - -								- - -	- - - -	
	g Progress ar	nd W	ater Ol	bservations	Water			General Remarks	-	-	

á,	[	Drilling Pro	gress and	Water O	bservation	s			Con	oral	Domorko		
Ē	Date	Time	Borehole Depth	Casing Depth	Borehole Diameter	Water Depth			Gene	erai	Remarks		
ilelit Ltu, Abbey Faik, Huilib						(ḿ)	1. Locat encol 2. Hand 3. Grou 4. Gas a	ion scan untered. dug insp ndwater and grou	ned with GPR p pection pit to 1.2 not encontered. ndwater monitor	orior to 20m bg ring we	breaking ground. I, Il installed to 3.00	No Services )m bgl.	
							A	ll dimens	ions in metres		Scale:	1:25	
	Method Used:	thod Tracked window Pla				remier 11	0	Drilled By:	DSUK LTD	Logge By:	d MSouthworth	Checked By:	AGS



Contract:						Cli	ent:				Windo	w Samp	le:
	Roade	эBy	pass	;					Roxhill	I			WS0
Contract Ref:			Start:	05.09.17	Grou	ind Le	evel	<i>.</i> :	National Grid	Co-ordinate:	Sheet:		
31	3583		End:	05.09.17		1	04	.35	E:47508	8.9 N:250819.0		1	of <b>2</b>
Progress		Sam	ples / T	ſests	;	er III & II	tion				ced	Depth	Mater
Window Run	Depth	No	Туре	Results	Wat	Backfi	Instrumenta		Description	of Strata	Redur Lev	(Thick ness)	Graph Leger
	-							Grass over gravelly Cl	AY. Gravel is	wn very sandy slightly angular to subrounded		(0.40)	
	0.30	1	ES			ţ,	8	(TOPSOIL	)		103 05		
	0.30		PID	0.0ppm				Light yelle	owish brown	clayey slightly sandy	103.85	0.40	
	0.50	2						slightly gra Gravel is s	velly SILT. Sa subangular to a	and is fine to coarse. Incluar fine to coarse of	-	-	× × × ×
	0.70	3						siltstone lit	norelicts.	0	-	-	× ×
	-		!	1								(1.00)	× × ×
	-		'					4				_	× × ×
	1 10	4	י ח			•°• •°•	影	1			-	-	× ×
	1.20-1.65	1	SPT(c)	N=20		° ° ' ° °	叞				-	-	× ×
T	-		[```!	1		• • • • • •	影	<u> </u>			102.95	1.40	× ×
	Ĺ		!	1		، `، ^ ``	ŧ.	Firm green	ish grey silty C'			-	×
1.20 - 2.00 (85mm dia)	-		!	1		**` *`*	影			JFORMATION)	-	-	
100% rec	F					۰°، ۰۰	影				-	-	<u> </u>
	1.80					۰°، ۰,	鴥	from 1	80m to 2.60m	liaht arev.	-	-	É <u> </u>
♥	_			1		، م_ہ	訬	•		"e.,	-	-	<u> </u>
Á	2.00-2.45	2	SPT(c)	) N=34			Ì.	l					×
	-			1				l			F	-	<u></u>
	ŀ			1				l			-	-	
ا 2 00 - 3.00	ŀ			1				l			-	-	<u> </u>
(75mm dia)	ŀ			1				l				-	×
95% iec	Ľ		'	1				from 2	2.60m to 2.95m	ı greenish grey mottled	t '	Ľ	×
			_ !	1				orangish bi	own slightly sa	indy.	-	-	×
Ţ	2.80		ן ט	1				l			-	-	
	3 00-3.45	3	SPT(c)	N=38				at 3.00	om light arev.		-	-	
T	-	-	<b>C</b> . ``1						111 ligint gi ~ j :		-	-	×
	-			1				l				(2.98)	
				1				l				-(3.00)	
3.00 - 4.00 (65mm dia)	F		'	1				l			-	-	
95% rec	F			1				l			-	-	<u> </u>
	F		'	1				l			-	-	×
	3.80			1				l				-	
¥			'	1				l			Ľ	Ľ.	<u> </u>
<b>▲</b>	4.00-4.45	4	SPT(c)	N=8				l			-	-	[ <u> </u>
4.00 - 5.00	-			1				l				-	×
(65mm dia) 70% rec	F			1				l			+	-	x
	-			1				l			-	-	
	L			·		<b></b>							
	g Progress a Boreho	Ind vv	ater UL Casing	Diservations	Water	r			Gen	eral Remarks			
Date	ne (m)	<u> </u>	(m)	(mm)	(m)	<u> </u>		ocation scan	ned with GPR r	prior to breaking ground	No Se	rvices	
							er	ncountered.	······································			VICE.	
							2. Ha 3. G	and dug insp roundwater	ection pit to 1.2 not encontered	20m bgl,			
						4	4. G	as and grour	ndwater monito	ring well installed to 2.0	0m bgl.		
· <b>T</b>								All dimens	ions in metres	Scale:	1:25		
Vethod Ira	cked wind	low	Plan   Use	it :d: Drc	mior	110		Drilled By:		Logged By: <b>MSouthworth</b>	Checke By:	ed Tark	5 🔥

Logged By:

DSUK LTD

MSouthworth

sampling

Premier 110



Contract:							Client:				Window	<i>w</i> Samp	le:
	Roade	By	pass	;					Roxhill			1	WS04
Contract Ref:			Start:	05.09.17	Gr	ounc	l Leve	:	National Grid Co-ordinate:		Sheet:		
31	3583		End:	05.09.17			104	.35	E:475088.9 N:250	819.0		2	of <b>2</b>
Progress		Sam	oles / T	ests		er	fill & -u- ation				iced el	Depth	Material
Window Run	Depth	No	Туре	Results	6	Wat	Backf Instr menta		Description of Strata		Redu Lev	(Thick ness)	Legend
Window Run 4.00 - 5.00 (65mm dia) 70% rec	Depth 4.80 4.90-5.28	No 5	Type D SPT(c)	Results	3 ∂mm	Wat	Backf Instr menta	Firm green (WEATHE (stratum of sheet) Window sa	Description of Strata ish grey silty CLAY. RED RUTLAND FORMATION copied from 1.40m from	N) previous		(Thick ness)	Graphic Legend
											-		
-	[											-	
	g Progress al Borehole	nd W e C	ater Ol asing	oservations Borehole Diameter	Wa	ater			General Rem	narks			
	(m)		(m)	(mm)	(n	n)							

All dimensions in metres

Drilled

By:

DSUK LTD Logged By:

1:25

By:

Checked Rv.

AGS

Scale:

MSouthworth

**Tracked window** 

sampling

Method

Used:

Plant

Used:

Premier 110



Contract:	Roade Bypass					Client:			Windo	w Samp	ole:
	Road	de By	pass	;				Roxhill			WS05
Contract Ref:			Start:	05.09.17	Groun	nd Level	:	National Grid Co-ordinate:	Sheet		
31	3583		End:	05.09.17		102.	.94	E:475094.7 N:250779.9		1	of <b>1</b>
Progress Window Run	Denth	Sam	ples / 1	Fests Results	Vater	ackfill & Instru- entation		Description of Strata	evel	Depth (Thick	Material Graphic
-	0.20 0.20	1	ES PID	0.0ppm			MADE G slightly sil angular to guartzite b	ROUND: Grass over dark brow ty slightly gravelly CLAY. Gravel o subrounded fine to coarse prick and coal	/n _ is _ of _102.54	(0.40) 0.40	
- - - -	_ 0.30 _ 0.50 _ 0.80 _ 0.90	2 3 6 4	D D B D				(MADE GF Firm grey silty slight) is angular quartzite, f	COUND) occasionally mottled orangish brow y sandy slightly gravelly CLAY/ Grav to subrounded fine to coarse lint and chalk fragments.	/ - /n _ el _ of _	- - - (0.90) -	
	- 1.20-1.65 1.20	5 1 5	SPT(c) D	N=37			(GLACIAL Stiff greer slightly gr	TILL) nish grey very clayey slightly san avelly SILT. Gravel is angular	- 101.64 Jy _ to _	- - <u>1.30</u> -	× × ×
(85mm dia) 100% rec	- 1.70	7	D				subrounde (WEATHE from 1 from	d fine to coarse of chalk fragments. RED RUTLAND FORMATION) .35m to 1.40m pocket of silt. 1.50m to 1.55m band of extreme	- - -	- - -	× · · × • · · · × • · · · × • · · · ×
2.00 - 3.00 (75mm dia) 100% rec	2.00-2.45 2.00 - - -	5 2 9	SPT(c) D	N=21			weak slitst	one.	- - - -	-	× · · × × · · ×
3.00 - 4.00	2.70 - 3.00-3.45 - -	5 3	D SPT(c)	N=31			at 2.80	)m increase in siltstone gravel.	- - - - - -	- (3.15)  - - -	× ·× ·× ·× ·× ·× ·× ·× ·× ·× ·× ·× ·× ·×
(65mm dia) 100% rec ↓ ↓ ↓	- 3.70 - 4.00-4.30	10 ) 4	D SPT(c)	N:50 for 154n	nm				- - - - - -	- - - - - -	ו× ו× ו× ו× ו× ו× ו× ו×
- - - - - -	- - - - - -						Window sa	ample hole terminated at 4.45m dept	- - 98.49 h. - - - - -	- <u>4.45</u> - - - - -	× × × × ×
- - - - - -	- - - - -										
- - - -	- - - -								-	-	
Drillin Date Tir	Drilling Progress and Water Observations Borehole Casing Borehole Date Time Depth Depth Diameter				Water Depth			General Remark	6		
	Date Time Borehole Cas (m) (n				(m)	- 1. Lo er 2. Ha	ocation scan acountered. and dug insp	ned with GPR prior to breaking grou	nd. No Se	rvices	

1:35 All dimensions in metres Scale: Checked Logged By: **Tracked window** Drilled Method Plant AGS Used: Used: By: By: Premier 110 sampling DSUK LTD MSouthworth

4. Gas and groundwater monitoring well installed to 4.00m bgl.



Contract:					С	lient:				Window	w Samp	le:	
	Roade	By	pass	i					Roxhill			1	WS06
Contract Ref:			Start:	05.09.17	Grou	und L	eve	:	National Grid Co-ordinate	:	Sheet:		
31	3583		End:	05.09.17			97.	15	E:475179.7 N:25	0728.3		1	of <b>2</b>
Progress		Sam	oles / T	ests		ter fill &	rru- ation		Description of Oberts		uced	Depth	Material
Window Run	Depth	No	Туре	Results		Back	Inst ment		Description of Strata		Redu	ness)	Legend
-	0.40		<b>F0</b>				10	Grass ove	r dark brown sandy sligh	tly gravelly	-	(0.30)	<u>`•</u>
-	0.10 0.10	1	PID	0.0ppm		TAK.		angular to	subrounded fine to	coarse of	96.85	0.30	
-	-					)_		(TOPSOIL)	)	/	-	- 0.00	······
-	0.50	2	в					Firm orang	gish brown sandy slight vel is angular to subroun	ly gravelly	-	(0.50)	<u> </u>
-	_ 0.00	-						coarse of q	uartzite and flint.		-	-	<u>- · · · · ·</u>
-	0.70	3	D								96.35	0.80	
-	-							slightly gra	avelly SILT. Gravel is	angular to	-	-	× × ×
-	1.00	4	D					subrounded (WEATHE	d fine to coarse of siltstone RED RUTLAND FORMAT	e. ION)	-	(0.60)	× × ×
	1 20-1 65	1	SPT(c)	N=18				· ·		,	-	-	
t T	- 1.20 1.00	·									95.75	1.40	
	1.40-1.90	7	B					Firm dark	blackish brown to black s	ilty organic	-	-	
(85mm dia)	1.50 1.50	5	D					(WEATHER	RED RUTLAND FORMAT	ION)	-	(0.50)	× × ×
- 100% rec	-										_	-	× × ×
-	-							Firm claves	slightly sandy slightly gra	avelly SILT	95.25	1.90	× × ×
	2.00-2.45	2	SPT(c)	N=10		**		Gravel is a	ingular to subrounded fine	e to coarse		_	
-	- 2.00	6				**	影	(WEATHE	RED RUTLAND FORMAT	ION)	-	-	× × ×
-	-					**	訬				-	-	××××
2.00 - 3.00	-					••						(1.20)	$\times$ $\times$ $\times$ $\times$
- 64% rec	-						Ë.				-	-	
	_						酿						
	-					* * * *	訫				-	-	× × × ×
	3.00-3.45	3	SPT(c)	N=9		**	訬				94.05	3.10	
-							訃		YERY SILTY SAND.		_	-	×××
-	3.20	'				, ,	ŧ.				-	(0.55)	×···×
3.00 - 4.00	-					**	影				-	_`	×···×
(65mm dia) - 100% rec	-					•••	訬				93.50	3.65	×
	-					•••		Firm light	grey occasionally mottle	d orangish	-	-	××
	-						Ë	(WEATHEI	RED RUTLAND FORMAT	ION)	-	-	××
	4.00-4.45	4	SPT(c)	N=10		°.	::B::·				-	_	xx
4.00 - 5.00	4.00	8	D`′								ļ	-	
(55mm dia)	-										-	-	
	ŀ										F	-	xx
L 1			•					•				•	· · · · ·

[	Drilling Pro	gress and	Water O	bservation	S			Con	aral	Domorko		
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter	Water Depth			Gene	erar	Remarks		
		(m)	(m)	(mm)	(m)	1. Locat encou 2. Hand 3. Grou 4. Gas a	ion scan untered. dug insp ndwater ( and groun	ned with GPR p pection pit to 1.2 encontered at 3 ndwater monitor	20m bgl 20m bgl .50m bg ring wel	preaking ground. , gl. Il installed to 4.00	No Services )m bgl.	
						A	ll dimens	ions in metres		Scale:	1:25	
Method Used:	Trackee san	d windov npling	V Plar Use	nt ed: <b>P</b> i	remier 11	0	Drilled By:	DSUK LTD	Logge By:	d MSouthworth	Checked By:	AGS



Contract:	Contract:									Windo	w Samp	ole:
	Roade	e By	pass	;					Roxhill			<b>WS06</b>
Contract Ref:			Start:	05.09.17	Gr	ound	Leve	l:	National Grid Co-ordinate:	Sheet:		
31	3583		End:	05.09.17			97.	15	E:475179.7 N:250728.3		2	of <b>2</b>
Progress		Sam	ples / 1	Tests		л.	tion &			ced	Depth	Material
Window Run	Depth	No	Туре	Results	3	Wat	Backfi Instr menta		Description of Strata	Redu Lev	(Thick ness)	Graphic
Window Run 4.00 - 5.00 (55mm dia) 100% rec	Depth 4.50 5.00-5.45 5.00-5.45	No 9 5	Type D SPT(c)	Results	5	Wa		Firm light brown silty (WEATHEI (stratum of sheet) Window sa	grey occasionally mottled orangish CLAY. RED RUTLAND FORMATION) copied from 3.65m from previous		(110k ness) (1.80) - - - - - - - - - - - - - - - - - - -	
- - - - - - - - - - - - - - - - - - -	g Progress a Boreho me Depth (m)	Ind W le C	ater Ol Casing Depth (m)	bservations Borehole Diameter (mm)	Wa De (n	ater pth n)			General Remarks		-	

				A	ll dimens	sions in metres		Scale:	1:25	
Method Used:	Tracked window sampling	Plant Used:	Premier 11	0	Drilled By:	DSUK LTD	Logge By:	d MSouthworth	Checked	AGS



Contract:								Client:			, 	Windov	v Samp	le:
	Roade By ract Ref: 313583				i					Roxhill				WS07
Contract Ref:				Start:	05.09.17	Gr	ound	Level		National Grid Co-ordinate:	;	Sheet:		
3	1358	3		End:	05.09.17			102.	01	E:475127.9 N:250660	.3		1	of <b>1</b>
Progress		S	am	ples / T	ests		ter	fill & ru- ation				lced /el	Depth	Material
Window Run	De	epth I	No	Туре	Results		Wat	Back Inst menta		Description of Strata		Redu Lev	(Thick ness)	Legend
-	-							J.	Grass ove	r dark brown sand slightly grav	velly		-	<u>x 1/2</u> <u>. (1 1/2</u> )
-	0.20		1	ES PID	0 0ppm				angular to	subrounded fine to coarse of c	halk	101.71	0.30	
-	0.50		2	D	0.000				(TOPSOIL)	)			(0.40)	
-	-		_						Firm orang	ish brown very sandy slightly grav	velly [1 ie to [	101.31	0.70	<u>· · · · · · · · · · · · · · · · · · · </u>
-	-								coarse of q	juartzite.	- /F		-	
-	1.00		3	D					Stiff light y	rellowish brown clayey slightly sa	andy		 - (1 10)	
	1.20	-1.65	1 4	SPT(c)	N=30				slightly gra	avelly SILT. Gravel is angulat d fine to coarse of siltstone.	r to r		-(1.10)	
1.20 - 2.00	-		•						(WEATHEI	RED RUTLAND FORMATION)	-		-	××××
<ul> <li>(85mm dia)</li> <li>100% rec</li> </ul>	-										1	100.21	- - 1.80	X  X
-	1 00		5						Extremely	weak light yellowish brown slig	ghtly		-	
	2.00	-2.45	2	SPT(c)	N=31					RED RUTLAND FORMATION)		99.91	2.10	$\hat{x} \hat{x} \hat{x} \hat{x}$
	-								Firm to stif sandy sligh	f light yellowish brown clayey slig htly gravelly SILT. Gravel is angula	ghtly ∣ ar to /	99.71	2.30	$\frac{\times \times}{\times}$
2.00 - 3.00 (75mm dia)	-								subrounde	d fine to coarse of siltstone.	/[-		-	
100% rec	Ē								Stiff to very	v stiff greenish grey silty slightly sa	andy		-	
	200		6						CLAY. (WEATHEI	RED RUTLAND FORMATION)	-		-	
	3.00	-3.45	3	SPT(c)	N=33				at 2.80	m occasional iron staining.	-		-	××
	-								at 5.10		-		- <sup>-</sup> (2.15)	×··×
3.00 - 4.00 (65mm dia)	-										-		- '	× _ ×
100% rec	-										-		-	
	-		7								-		-	<u>x.                                    </u>
	4.00	-4.45	7 4	SPT(c)	N:50 for 295	mm					-		-	
-	-										-		-	
-	-								Window sa	mple hole terminated at 4 45m de	epth.	97.56	<u>- 4.45</u> -	·
-	-										-		-	
-	-										-		-	
-	-										-		-	
-	-										-		-	
-	-										ŀ		-	
-	-										F		-	
-	-										F		-	
-	F										F			
-	-										-		-	
Drilli	Drilling Progress and Wat		ater OF	nservations										
	Drilling Progress and Wa			Casing	Borehole	Wa	ater	-		General Remar	ks			
	ime	(m)		(m)	(mm)	Ue (n	pin n)	1. Lo	cation scan	ned with GPR prior to breaking an	ound.	No Ser	vices	
		Progress and Water Observations           Borehole         Casing         Borehole         W           e         Depth         Depth         Depth         Diameter         Diameter						er	countered.					

Hand dug inspection pit to 1.20m bgl,
 Groundwater not encontered.
 Gas and groundwater monitoring well installed to 2.50m bgl.

RY nent													
BKA							A	Il dimen	sions in metres	_	Scale:	1:35	
	Method	Tracked	d window	<b>v</b> Plar	ıt			Drilled		Logge	d	Checked	
Z Š U Č	Used:	sam	pling	Use	d: Pr	emier 11	0	By:	DSUK LTD	By:	MSouthworth	By:	AGS



Contract:							(	Client:				Window	w Samp	le:
	F	Roade	Ву	pass	i					Roxhill				WS08
Contract Ref	:			Start:	05.09.17	Gro	ound	Level	:	National Grid Co-ord	inate:	Sheet:		
3	1358	3		End:	05.09.17	•		101	76	E:475122.6 N	:250604.3		1	of <b>2</b>
Progress		S	Sam	ples / T	ests		er	fill & ru- ation				iced 'el	Depth	Material
Window Ru	n   C	epth	No	Туре	Result	s	Wat	Backl Insti menta		Description of Stra	ita	Lev	(Thick ness)	Legend
	-								Grass ove	r sandy slightly grav	elly CLAY with		- (0 30)	<u> </u>
-	-								subrounde	d fine to coarse of qua	rtzite.	101.46	0.00)	
	-						D	24 04	_(TOPSOIL Firm_oran	) gish brown sandy s	slightly gravelly	101.40	0.30	<u> </u>
	0.40		1	ES PID	0.0ppm	,			CLAY. Gra	ivel is angular to sub	rounded fine to	[	(0.50)	<u> </u>
	0.60		2	D					(GLACIAL	TILL)		-	-	
	0.70	)	5	В								100.96	0.80	
•	- 0.00		2						Stiff to ve	ry stiff light yellowish ndv slightly gravelly s	n brown clayey SILT Gravel is	-	-	
-		,	5				¢ ¢	:::=::·	angular to	subangular fine to co	arse of siltstone	-	-	
	1.10	D I	4	D			¢		(WEATHE	RED RUTLAND FOR	MATION)	-	-	×
A	1.20	0-1.65	1	SPT(c)	N=37		Š					-	-	
	F						4					-	-	× × ×
1.20 - 2.00	-											-	-	
(85mm dia) 100% rec							¢						-	× × ×
	1 00		7				Š		from 1	90m to 1 00m thin he	and of oxtromoly	-	(2.10)	
<b>V</b>	- 1.00	,	1				Ŷ		weak siltst	.oom to 1.90m thin ba one.	and of extremely	-	- ´	×××
·	2.00	)-2.45	2	SPT(c)	N=46		Š					-	_	
	2.00		8	D			¢					[	_	××××
	-						Ŷ					-	-	
2.00 - 3.00	-						•					-	-	× × × ×
(75mm dia)							¢ ¢							× × × ×
100 % 160							•						_	××××
	-						Ŷ					00.00	2 00	
V	-						¢		Stiff to ver	y stiff grey silty CLAY	with occasional	98.86	2.90	<u>× ×</u>
	- 3.00	0-3.45	3	SPT(c)	N=36					ithorelicts.			_	
	-											-	-	
	-											-	-	
3.00 - 4.00	3.40	b	9	D								-	-	
(65mm dia) 87% rec	[												-	xx
1	-											-	-	xx
	-											-	-	xx
V	F											-	-	
	4.00	0-4.45	4	SPT(c)	N=35							[		
4.00 - 5.00	-											-	(2.55)	
(65mm dia) 81% rec	-											-	-	xx
	4.40	D	10	D									-	xx
Drill	Drilling Progress and Water Observations					ter			General	Remarks				
Date 1	ate Time Borehole Casing Borehole Wat Depth Depth Diameter Dep (m) (m) (mm) (mm)					oth 1)		ocation scan	ned with GPR prior to	breaking ground	No Ser	vices		
	(m) (m) (mm) (m)								cauon scan	neu with GER phorito	preaking ground.	INO Sel	VICES	

encountered.2. Hand dug inspection pit to 1.20m bgl,3. Groundwater not encontered.4. Gas and groundwater monitoring well installed to 3.00m bgl.

RY_V8 nent L													
BRA							A	II dimen	sions in metres		Scale:	1:25	
NT K Env K	Method	Tracked	l windov	V Plant	t 1. D.		0	Drilled		Logge	d MC authorseth	Checked	
10 X	0360.	sam	pling	0360	·· Pr	emier 11	U	Dy.	DSUKLID	Dy.	MSouthworth	By.	AUD



Contract:							Client:					Window Sample:		
Roade Bypass							Roxhill					WS08		
Contract Ref:			Start:	05.09.17	17 Groun		d Level:			National Grid Co-ordinate:	Sheet:			
313583			End:	05.09.17			101	.76		E:475122.6 N:250604.3		2	of <b>2</b>	
Progress Sam			oles / Tests			er	u- tion	L			ced	Depth	Material	
Window Run	Depth	No	Туре	Results	6	Wate	Backfi Instr menta		Description of Strata		Lev	(Thick ness)	Graphic Legend	
Window Run - 4.00 - 5.00 (65mm dia) 81% rec	Depth 	5	SPT(c)	N=49	3	<u>~</u>		Stiff to mudst (WEA <sup>*</sup> ( <i>stratu</i> sheet) Windo	very one I THEF m c	y stiff grey silty CLAY with occasional ithorelicts. RED RUTLAND FORMATION) copied from 2.90m from previous	<u>₽</u> - - - - - - - - - - - - - - - - - - -	ness)	Legend	
Drillin	g Progress a Borehol ne Borehol (m)	nd W e C	ater Ol Casing Depth (m)	Diservations Borehole Diameter (mm)	Wa De (n	ater pth n)	-			General Remarks	-	-		

All dimensions in metres

Drilled

By:

DSUK LTD Logged By:

1:25

By:

Checked

AGS

Scale:

MSouthworth

**Tracked window** 

sampling

Method

Used:

Plant

Used:

Premier 110


Contract:						Client:				Window	w Samp	le:
	Roade	By	pass	i				Roxhill				WS09
Contract Ref:			Start:	05.09.17	Grou	ind Level:		National Grid Co-ordinate:		Sheet:		
31	3583		End:	05.09.17		113.	77	E:474968.6 N:2509	989.9		1	of <b>1</b>
Progress		Samp	oles / T	ests		fill & ru- ation				uced vel	Depth	Material
Window Run	Depth	No	Туре	Results		Na Back Inst ment		Description of Strata		Redu	(Thick ness)	Legend
-	- 0.20 - 0.20		ES PID	0.0ppm			Grass over gravelly CL fine to coar (TOPSOIL)	r orangish brown very sandy AY. Gravel is angular to sub se of quartzite, flint and chalk	v slightly rounded	113.37	(0.40) 	$\frac{\underline{A} I_{2}}{\underline{A} I_{2}} \cdot \underline{A} I_{2} \cdot \underline$
-	- 0.60 -		D				Orangish CLAY. Sa subangular chalk and f (GLACIAL	brown silty sandy slightly nd is fine to coarse. G to angular fine to coarse of c lint. TILL)	gravelly ravel is juartzite,	-	-	
- - -	- - 1.00		В							-	- - - (1.60)	
1.20 - 2.00	1.20-1.65	1	SPT(c)	N=40			Gravel incl coarse silts	.20m very stiff and mottled lig udes subangular to angular tone lithorelicts.	ght grey. fine to	-	-	
- 100% rec	-	0	D SDT(a)	N-17			Firm otiff (	lork grou oith, clighth, cood		- - 111.77	- - 2.00	
2.00 - 3.00 (75mm dia)	- - - -	2	5-1(6)	IN-17			gravelly CL of siltstone (WEATHEI	AY, Gravel is subangular to lithorelicts. RED RUTLAND FORMATION	angular N)	-	- - - _ _(1.00)	
- 100% rec	2.60		D							110.77	- - - 3.00	
	- - -	3	SPT(c)	N:50 for 154n	nm		Window sa due to refus	mple hole terminated at 3.00 sal.	m depth	-	-	
-	- - -									-	-	
-	- - -									-	-	
-										-	-	
Drillin Date Tir	g Progress a Borehol ne Depth	nd Wa	ater Ol asing Depth	Borehole Diameter	Water Depth	r 1		General Rem	arks			

(m) (m) (mm) (m) 1. Location scanned with GPR prior to breaking ground. No Services encountered. 2. Hand dug inspection pit to 1.20m bgl, Groundwater not encontered.
 Gas and groundwater monitoring well installed to 3.00m bgl. 1:25 All dimensions in metres Scale: Checked **Tracked window** Drilled Method Plant Logged AGS Used: Used: By: By: By: sampling Premier 110 DSUK LTD MSouthworth



Contract:						Client:			Windo	w Samp	le:
	Roade	Ву	pass	i				Roxhill			WS10
Contract Ref:			Start:	06.09.17	Ground	d Level	:	National Grid Co-ordinate:	Sheet:		
31	3583		End:	06.09.17		117.	.97	E:474832.9 N:251829.0		1	of <b>1</b>
Progress		Sam	ples / T	ests	e	fill & ru- ation			iced /el	Depth	Material
Window Run	Depth	No	Туре	Results	Wat	Backt Instr menta		Description of Strata	Redu Lev	(Thick ness)	Legend
	0.40 0.40 0.50 0.60 1.10 1.20-1.65	1 3 2 6 1	ES PID B D SPT(c)	0.0ppm N=30			Crop over CLAY with angular to quartzite. (TOPSOIL) Firm oran gravelly s subrounded and ironsto (GLACIAL becom	dark brown slightly gravelly sand frequent roots and rootlets. Gravel i o subrounded fine to coarse o ) gish brown slightly sandy slightl ility CLAY. Gravel is angular t d fine to coarse of chal, quartzite, flir one. TILL) hing stiff from 1.20m.	y - s - 117.67 - y - y - t - - - - - - - - - - - - - -	- (1.30)	
1.20 - 2.00 (85mm dia) 100% rec 2.00 - 3.00 (75mm dia) 100% rec	2.00-2.45	2	D SPT(c)	N=22			Firm to sti silty slightly is fine to coar (GLACIAL	iff light grey mottled orangish brow y sandy slightly gravelly CLAY. San parse. Gravel is angular to subangula rse of chalk and quartzite. TILL)	116.37 1 - 1 - 1 - 1 - - - - - - - - - - - - - -	<u>1.60</u> (1.60)	
3.00 - 4.00 (65mm dia) 100% rec	3.00-3.45 3.80 4.00-4.44	3	SPT(c) D SPT(c)	N=18 N:50 for 290n	nm		Stiff dark CLAY. (GLACIAL	grey mottled orangish brown silt TILL)	- - - - - - - - - - - - - - - - - - -	- 3.20 - - - - - - - - - - - - - - - - - - -	
	4.00-4.44 4 SP1(c) N:50 for 290mm				Window sa due to refu	ample hole terminated at 4.45m dept sal.	-113.52 	- 4.45 - - - - - - - - - - - - - - - - - - -			
Drilling Date Tin	g Progress a Borehol ne Depth	nd W e C	ater Ol Casing Depth	Diservations Borehole Diameter	Water Depth			General Remarks			

(m) (mm) (m) (m) 1. Location scanned with GPR prior to breaking ground. No Services encountered. 2. Hand dug inspection pit to 1.20m bgl, Groundwater not encontered.
 Gas and groundwater monitoring well installed to 4.00m bgl. 1:35 All dimensions in metres Scale: Checked **Tracked window** Drilled Method Plant Logged AGS Used: Used: By: By: By: sampling Premier 110 DSUK LTD MSouthworth



Contract:						Client:			Window	w Samp	le:
	Roade	By	pass	i				Roxhill			WS11
Contract Ref:			Start:	06.09.17	Grour	nd Level	:	National Grid Co-ordinate:	Sheet:		
31	3583		End:	06.09.17		121	.33	E:475066.5 N:252232.3		1	of <b>2</b>
Progress		Samp	oles / T	ests	ter	fill & tru- ation		Description of Strate	vel	Depth	Material
Window Run	Depth	No	Туре	Results	Na	Back Insident		Description of Strata	Red	ness)	Legend
-	- 0.20 - 0.20 -		ES PID	0.0ppm			Grass ove gravelly CL Gravel is a of quartzite (GLACIAL	r dark brown slightly sandy slightly AY with frequent roots and rootlets. angular to subrounded fine to coarse TILL/POSSIBLE MADE GROUND)	- 121.03	-(0.30) 0.30	
-	- 0.60 -		D				Firm to st slightly gra to subroun quartzite. (GLACIAL (POSSIBLE	iff brown grey mottled orange silty velly sandy CLAY. Gravel is angular ided fine to coarse chalk, flint and TILL/POSSIBLE MADE GROUND) E MADE GROUND)	-	-	
-	1.00		в						-	-	$\bigotimes$
	1.20-1.65	1	SPT(c)	N=22			becom	ing stiff from 1.20m. ing light orangish brown from 1.30m	-	- - - (2.30)	
1.20 - 2.00 (87mm dia) 100% rec	1.50		D						-	-	
	- 2.00-2.45 -	2	SPT(c)	N=23					- - -	-	
2.00 - 3.00 (77mm dia) - 100% rec	2.50		D				Firm to stit	ff orangish brown silty slightly sandy	118.73	2.60	
	- - - - - - -	3	SPT(c)	N=15			slightly gra subangular quartzite, fl (GLACIAL	velly CLAY. Sand is fine to coarse to subrounded fine to coarse of int and quartzite. TILL)	-	- - - - -	
3.00 - 4.00 (67mm dia) - 80% rec	- 3.50 -		D						-	-	
- 4.00 - 5.00 (57mm dia) 100% rec	- 4.00 n dia) o rec - - - - - - - - - - - - -				becom	ing stiff from 4.00m	-	- (2.64) - - - -			

nau,	с	Drilling Pro	gress and	Water C	Observatior	IS			Can	oral	Domorko		
Herrichten, Abbey Faik, Hurriber Ko	Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)	1. Loca enco 2. Hand 3. Grou 4. Gas a	tion scan untered. dug insp ndwater and grou	ned with GPR p pection pit to 1.2 not encontered. ndwater monitor	eral prior to 20m bgl ring we	Remarks breaking ground. I, Il installed to 5.00	No Services )m bgl.	
							A	II dimens	sions in metres		Scale:	1:25	
	Method Used:	d Tracked window sampling		V Pla Us	nt ed: <b>P</b>	remier 11	0	Drilled By:	DSUK LTD	Logge By:	d MSouthworth	Checked By:	AGS



1:25

Checked By:

AGS

Scale:

MSouthworth

Contract:							Client:			Windo	w Samp	ole:
	Roade	By	pass	;					Roxhill			WS11
Contract Ref:			Start:	06.09.17	Gr	ounc	l Leve	:	National Grid Co-ordinate:	Sheet:		
31	3583		End:	06.09.17			121	.33	E:475066.5 N:252232.3		2	of <b>2</b>
Progress		Sam	ples / ٦	Fests		er	II & u- tion			ced el	Depth	Material
Window Run	Depth	No	Туре	Results	3	Wate	Backfi Instri menta		Description of Strata	Redu	(Thick ness)	Graphic Legend
-	4.50		D					Firm to stit	ff orangish brown silty slightly sandy avelly CLAY. Sand is fine to coarse	-	-	
- 4.00 - 5.00 (57mm dia) 100% rec - - - - - - - - - - - - -	- 4.80-5.24 - - - - - - - - - - - - - - -	5	SPT(c)	N:50 for 285	5mm			Subangular quartzite, fl (GLACIAL (stratum of sheet) Window sa due to refu	r to subrounded fine to coarse of lint and quartzite. TILL) copied from 2.60m from previous ample hole terminated at 5.24m depth sal.	- - - - - - - - - - - - - - - - - - -	- - - - - - - - - - - - - - - - - - -	
-	-									-	-	
Drillir	g Progress a Borehol	nd W	ater Ol Casing	bservations Borehole	Wa	ater	-		General Remarks			
	Date Time Borehole Casing Depth Depth (m) (m) (m) (m)											

All dimensions in metres

Drilled

By:

DSUK LTD Logged By:

Method

Used:

**Tracked window** 

sampling

Plant

Used:

Premier 110



Contract:	ontract: Roade Bypass									Windo	w Samp	ole:
	Roade	pass	i					Roxhill			WS12	
Contract Ref:	ct Ref: Start: 06.09.17 313583 End: 06.09.17					und L	evel	:	National Grid Co-ordinate:	Sheet:		
31	3583		End:	06.09.17		1	19	.74	E:475138.6 N:252273.3		1	of <b>2</b>
Progress		Sam	oles / T	ests		ter fill &	tru- ation		Departmention of Otroto	vel	Depth	Material
Window Run	Depth	No	Туре	Results		Wa Back	Inst ment		Description of Strata	Redu	ness)	Legend
-	- - - 0.30 - 0.30 -	1	ES PID	0.0ppm				Grass ove gravelly CL Gravel is a of quartzite (POSSIBLE Firm greyi slightly gra	r dark brown slightly sandy slightly AY with frequent roots and rootlets. angular to subrounded fine to coarse a. E MADE GROUND) ish brown mottled orangish brown welly sandy CLAY Gravel is angular	- - - 119.34	(0.40) 0.40	
	- 0.80 0.90 - 1.10 1.20-1.65	2 4 3 1	D B D SPT(c)	N=9				to subroun quartzite. (POSSIBLE	E MADE GROUND)		- - - - (1.50)	
1.20 - 2.00 (85mm dia) 100% rec	- - - - -	5	D							- - - - 117.84	- - - - 1.90	
	- 2.00-2.45 2.00 -	26	SPT(c) D	N=11				Firm dark silty CLAY. to coarse o (GLACIAL (POSSIBLE	grey slightly gravelly slightly sandy Gravel is angular to subrounded fine of chalk. TILL/POSSIBLE MADE GROUND) E MADE GROUND)	- - 117.44	(0.40)	
2.00 - 3.00 (75mm dia) 100% rec	- - 2.60 -	7	D					Firm orang sandy silt subangular (GLACIAL (POSSIBLE	gish brown slightly gravelly slightly ty CLAY. Gravel is angular to fine to coarse of chalk and quartzite. TILL/POSSIBLE MADE GROUND) E MADE GROUND)	-	-	
	- 3.00-3.45 	3	SPT(c)	N=15				becom	ing firm to stiff from 3.00m bgl	-  -	-	
- 3.00 - 4.00 (65mm dia) - 100% rec	- 3.50	8	D					from 3 clay.	3.40m to 3.60m pockets of dark grey	-	-	
- 4.00 - 5.00 (65mm dia) 100% rec	- - 4.00-4.45 - - -	4	SPT(c)	N=20		• • • • • • • • • • • • • • • • • • •		becom	ing stiff from 4.00m.	-	(3.15) - - -	

[	Drilling Pro	gress and	Water O	bservation	s			Con	orol	Domorko		
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter	Water Depth			Gene	erai	Remarks		
						1. Local enco 2. Hand 3. Grou 4. Gas	ion scan untered. dug insp ndwater and grou	ned with GPR p pection pit to 1.2 not encontered. ndwater monitor	orior to 20m bg ring we	breaking ground. l, Il installed to 5.00	No Services Om bgl.	
						A	ll dimens	ions in metres		Scale:	1:25	
 Method Used:	Tracked window Plant sampling Used:			nt d: <b>P</b> I	remier 11	0	Drilled By:	DSUK LTD	Logge By:	d MSouthworth	Checked By:	AGS



1:25

Checked By:

AGS

Scale:

MSouthworth

Contract:							Client:			Windo	w Samp	le:
	Roa	ide By	/pass	;					Roxhill			WS12
Contract Ref	:		Start:	06.09.17	Gr	ound	l Level	:	National Grid Co-ordinate:	Sheet:		
3	13583		End:	06.09.17			119	.74	E:475138.6 N:252273.3		2	of <b>2</b>
Progress		Sar	nples / ٦	Fests		er	ill & 'u- ation			ced	Depth	Material
Window Ru	n Dept	h No	Туре	Results	3	Wat	Backf Insti menta		Description of Strata	Lev	(Thick ness)	Legend
4.00 - 5.00     (65mm dia)     100% rec     ✓	<ul> <li>Deput</li> <li>- Deput</li> <li></li></ul>	5 5	SPT(c)	N=31				Firm oran sandy sili subangular (GLACIAL (POSSIBLI (stratum of sheet) Window sa	gish brown slightly gravelly slightly ty CLAY. Gravel is angular to fine to coarse of chalk and quartzite. TILL/POSSIBLE MADE GROUND) EMADE GROUND) copied from 2.30m from previous		ness)	
Drilli	ng Progres	ss and V	Vater O	bservations					Conorol Domostic			
Date T	ime Bor	epth	Casing Depth	Borehole Diameter	Wa De	ater pth	1		General Remarks			
		,				<u></u>						

All dimensions in metres

Drilled

By:

DSUK LTD Logged By:

**Tracked window** 

sampling

Method

Used:

Plant

Used:

Premier 110



#### APPENDIX F ROTARY BOREHOLE LOGS



Contract:							Client:					Boreho	ole:	
		Road	de Bypa	ass					Roxh	ill				BH01
Contract Re	ef:		S	Start:	18.09.17	Groun	d Level:	_	National Gr	id Co-ordir	ate:	Sheet:		_
	313	583	E	nd:	20.09.17	7	119.70	)	E:4751	41.6 N:	252265.6	-	1	of <b>4</b>
Depth (m)	No	Sample: Type	s & Testin Resul	lg Its	Mecl TCR SC (%) (%	nanical L R RQD ) (%) (r	Backfill & bo	Water	Descr	iption of S	trata	Reduced	Depth (Thick ness)	Material Graphic Legend
0.50 0.50 0.60 0.60 1.00-1.45	1 2 1	ES PID D PID SPT	0.0pp 0.0pp N=11	m m 1					Grass over fir nottled orange gravelly CLAY v cobbles and bc coarse. Gra subrounded fine chalk and limest GLACIAL T GROUND)	m to stiff silty slightly with occasi oulders. S vel is s to coarse one. ILL/POSSII	f grey brown / sandy slighty onal limestone and is fine to ubangular to quartzite, flint, BLE MADE		- - - - - - - - - - - -	
1.60 1.60 2.00-2.45	3 2	D PID SPT	0.0pp N=16	m 6			I					- - - - - -	- - - - - -	
2.60 2.60 3.00-3.45	4 3	D PID SPT	0.0pp N=24	m 4			Ι		stiff from 3.	00m bgl.		- - - - - - - - - - - -	(5.30)	
4.00-4.45	4	SPT	N=14	4			Ι	f	becoming rom 3.50m	brown ora	ange in colour	- - - - - - - - -	- - - - - - - - -	
5.00-5.45	5	SPT	N=18	8			I	S	stiff from 5.	00m bgl. liaht arev	mottled brown	114.40	5.30	
5.60 5.60 6.00-6.45	5 6	D PID SPT	0.0ppi N=19	m 9			I		silty slightly sa occasional cobb s fine to coarse subrounded fin Cobbles are 250mm bgl.	ndy grave bles of lime . Gravel is e to coar subangula	ly CLAY with estone. Sand subangular to se limestone. r 100mm to	-	-	
6.60 6.60 7.00-7.45	6 7	D PID SPT	0.0ppi N=24	m 4			I	(	GLACIAL TILL)	)		-	-(3.70)	
7.60 7.60 8.00-8.45	7 8	D PID SPT	0.0ppi N=24	m 4			Ι					-	-	
8.60 8.60	8	D PID	0.0ppi	m					brown oran	ge at 8.70n	ı bgl.	110.70	9.00	
Во	ring F	Progress	and Wate	er Ob	servations	3			-					
Date	Time	Bore	hole Cas	sing	Borehole Diameter	Water			Ge	neral F	kemarks			
19/09/17 19/09/17 19/09/17 19/09/17	Depth         Depth         Depth         (mm)           /09/17         1.00         None         300           /09/17         19.50         9.00         123           /09/17         19.50         9.00         123           /09/17         30.00         9.00         123				(mm) 300 123 123 123	Depth Dry Dry Dry Dry	<ul> <li>1. Loca enco</li> <li>2. Han</li> <li>3. Grout</li> <li>4. Gas com</li> </ul>	ation so buntere d dug i undwat and gi pletion	canned with GF ed. inspection pit tp ter not encounter roundwater mor l.	R prior to t 1.20m bgl ered. hitoring wel	preaking ground I installed to 20.	. No se 00m bgl	rvices upon	
						Δ	All dime	ensions in metre	es la	Scale:	1:50			
Method	-	tor: 0 -		Plan	t d. O	aakia C	-0.005	Drille		Logged	Declary -	Checke		
Used:	Rotary Cored Used: Comaco					icchio GE	-0 205	By:	DSUK LTD	Ву:	RSalama	Ву:		AGS

	E	Boring Pro	ogress and	Water Ob	servations	6			Co	noral	Domorko		
	Date	Time	Borehole Depth	Casing Depth	Borehole Diameter	Water Depth			Ge	nerai	Remarks		
•	19/09/17 19/09/17 19/09/17 19/09/17		1.00 19.50 19.50 30.00	None 9.00 9.00 9.00	300 123 123 123	Dry Dry Dry Dry	1. Loca enco 2. Han 3. Grou 4. Gas com	ation sca buntered d dug ins undwater and gro pletion.	nned with GF spection pit tp not encounte undwater mor	R prior to 1.20m bo ered. hitoring we	breaking ground gl. ell installed to 20	d. No services .00m bgl upon	
							A	II dimen	sions in metre	es	Scale:	1:50	
	Method Plant Used: Rotary Cored Used: Comacchio					cchio GEC	205	Drilled By:	DSUK LTD	Logged By:	RSalama	Checked By:	AGS



Contract:							Client:				Boreho	le:	
		Road	de Bypass							Roxhill			BH01
Contract Ret	f:		Start:	18.0	9.17	Grou	ind Level:			National Grid Co-ordinate:	Sheet:		
3	313	583	End:	20.0	9.17		119.70	)		E:475141.6 N:252265.6		2	of <b>4</b>
Denth		Sample	s & Testing	Ν	Mecha	anical	Log 😵 🛓	ter			iced 'el	Depth	Material
(m)	No	Туре	Results	TCR (%)	SCR (%)	RQD (%)	nentackf mentackf mentackf	Wat		Description of Strata	Redu Lev	(Thick ness)	Legend
9.00-10.00 9.00-9.45 9.00-9.19	9 9	SPT C	N=48	35	19 ↓				Mec MUI spa (BLI FOF	dium strong dark grey silty DSTONE with horizontal medium ced planar stepped clean fracture. ISWORTH LIMESTONE RMATION) . mottled light grey from 9.60m bgl.		(1.00)	
- 10.00-11.50 - 10.15 - 10.15 - 10.15 	10	D PID	0.0ppm	100	92	80			9.70 Ver LIM clos frac (BL FOF	band of firm clay from 9.60m to m bgl. y to extremely strong light grey IESTONE with horizontal to vertical sely spaced planar smooth clean stures. ISWORTH RMATION) . mottled brown beige from 10.65m		-	
11.50-13.00									bgl.  to 1	. band of soft grey clay from 11.10m 1.15m bgl.	-	-	
11.83-12.00 - 12.00-12.06 -	11 10	SPT	N:30 for 10mm	97	79	75			 12.0	band of very soft dark grey clay from 00, to 12.05m bgl.	-	-	
13.00-14.50 13.20-13.50 13.40 13.40	12 13	C D PID	0.0ppm	93	78	68				light grey in colour from 13.50m bgl.		(5.20)	
- 14.50-16.00				X	X	X					-	-	
- 14.80-15.00 15.00-15.06	14 11	C SPT	N:50 for 20mm	82	81	68			Mor	tium strong to strong dark grov silty	104.50	15.20	
- 15.60 - 15.60 - 15.60 - 16.00-17.50	15	D PID	0.0ppm						MU clos frac (BL FOF	DSTONE with horizontal to vertical sely spaced planar smooth tight clean tures. ISWORTH LIMESTONE RMATION)	-104.20 - - - -	15.50	
16.70-16.95	16	С		91	80	79			Ver LIM med ope (BL FOF	y to extremely strong grey IESTONE with horizontal close to dium space planar smooth partly n clean fractures. ISWORTH LIMESTONE RMATION)		(1.95)	
- 17.50-19.00				93	<b>X</b> 85	81			Des	scription on next sheet	-102.25 - -	17.45	

'n	E	Boring Pro	ogress and	Water Ob	servation	6			0.0	noral	Domorko			
	Date	Time	Borehole	Casing	Borehole Diameter	Water			Ge	nerai	Remarks			
2	Duit	TIME	Depth	Depth	(mm)	Depth								
3														
Ś														
2														
2														
5							A	II dimen	sions in metre	es	Scale:	1:50		
;	Method			Plan	t			Drilled		Logged	-	Checked	<b>Du</b> 2	
5	Used:	Rotary Cored Used: Comacchio					205	By:	DSUK LTD	By:	RSalama	By:	MD	AGS

GINT\_LIBRARY\_V8\_06.GLB LibVersion: v8\_06\_018 PrjVersion: v8\_06 - Core+Logs - 002 | Log COMPOSITE LOG - A4P | 313583 - ROADE BYPASS.GPJ - v8\_06. RSK Environment Ltd, Abbey Park, Humber Road, Coventry, CV3 4AQ. Tel: 02476 505600, Fax: 02476 501417, Web: www.rsk.co.uk, | 10/11/17 - 14:49 | DM1 |



Contract:	Contract: Roade Bypass						Client:			Boreho	ole:	
	Roade Bypass ntract Ref: Start: 18.09.1								Roxhill			BH01
Contract Ret	:		Start:	18.0	9.17	Grou	nd Level:		National Grid Co-ordinate:	Sheet:		
3	135	583	End:	20.0	9.17		119.70		E:475141.6 N:252265.6		3	of <b>4</b>
Denth		Sample	s & Testing	ľ	Mecha	anical	Log ⊗ using bold			iced /el	Depth	Material
(m)	No	Туре	Results	TCR (%)	SCR (%)	RQD (%)	A ments and Back II Ments Back II Ments Ments		Description of Strata	Redu	(Thick ness)	Legend
- 18.00-18.03 - - -	12	SPT	N:50 for 20mm	93	85	81		Me MU spa pa (P0 (st	edium strong to strong grey silty JDSTONE with horizontal closely aced planar smooth and rough tight to rtly open fractures. DSSIBLE RUTLAND FORMATION) ratum copied from 17.45m from	-	-	
19.00-20.00								pre	evious sheet) light blue grey from 18.00m to	-	-	
- 19.30-19.40 - 19.50 - 19.50	17 18	C D PID	0.0ppm	55	20	20		19 bg	.30m bgl. dark grey from 19.30m to 19.70m l.		-	
20.00-21.00				49	26	16				-	(5.75)	
20.60-20.80	19	С			ļ	↓				-	-	
21.00-22.50 21.00-21.07	13	SPT	N:50 for 40mm	Å					. dark grey from 21.00m bgl.	-	-	
-				59	56	56				- - - -	- - - - - - -	
22.50-24.00				<b>-</b>	X	X				-	- - - - -	
23.20 23.20	20	D PID	0.0ppm	85	82	41		Ex ho pla	tremely strong grey LIMESTONE with rizontal close to medium spaced inar smooth partly open clean	- 96.50	- <u>23.20</u> - -	
23.80-24.00	21	С		-		X		(P	OSSIBLE RUTLAND FORMATION)	-	(1.60)	
24.00-24.03	14	SPT	N:50 for 20mm					silt	band of medium strong to strong y mudstone from 24.30m to 24.45m			
24.70 24.70	22	D PID	0.0ppm	100	95	88		Str Vei me	nong grey silty MUDSTONE with rtical to sub-horizontal closely to edium spaced planar smooth and uph tight to partly open fractures with	- 94.90   	- 24.80 - - - -	
25.50-27.00								Shi (Pi	ell fragments. DSSIBLE RUTLAND FORMATION)	- - - - -	- - - -	
- - - - - -				100	97	93			. чак grey from 26.00m bgi.	-	- - - - -	
				<b>_</b>	<b>_</b>					-	-	
_												

Boring Progress and Water Observations **General Remarks** Borehole Diameter (mm) Borehole Casing Water Date Time Depth Depth Depth All dimensions in metres 1:50 Scale: Checked Logged By: Drilled Method Plant AGS Used: **Rotary Cored** Used: Comacchio GEO 205 By: DSUK LTD RSalama By:



Contract:								Client:				Boreho	ole:	
		Road	de By	pass							Roxhill			BH01
Contract Ref				Start:	18.09	9.17	Grou	nd Level	:		National Grid Co-ordinate:	Sheet:		
3	135	83		End:	20.09	9.17		119	.70		E:475141.6 N:252265.6		4	of <b>4</b>
	S	Sample	s & Tes	ting	Ν	Necha	nical I	Log 🖉 _	er tion			ced	Depth	Material
Depth (m)	No	Туре	Res	sults	TCR	SCR	RQD	lf gackt	Nenta Wat		Description of Strata	Lev	(Thick ness)	Graphic
27.00-28.50	15	SPT	N:5 170	0 for )mm	63	61	61			Stro ver me rou she (PC (str	ong grey silty MUDSTONE with tical to sub-horizontal closely to dium spaced planar smooth and igh tight to partly open fractures with ell fragments. DSSIBLE RUTLAND FORMATION) ratum copied from 24.80m from	- ut - - - - - - - - - - - - - - - - - - -	(5.30)	
28.15-28.50	23	С								pre	vious sneet)	Ē	Ē	
28.50-30.00					70	59	55						-	
	10	ODT			<b>V</b>	V	<b>.</b>					-89.60	-30.10	
Bori Date 1	ing Pi Time	rogress Bore	and W	ater Ob asing	servat Boreh Diame	tions ole eter	Wate	r			General Remarks			

Depth Depth (mm) Depth 1:50 All dimensions in metres Scale: Checked Rv Method Logged By: Drilled Plant AGS Used: **Rotary Cored** Used: Comacchio GEO 205 By: DSUK LTD RSalama By:



Contract: Roade Bypass								С	lient:					Boreho	le:	
		Road	de Bypa	ass								Roxhill				BH02
Contract Re	f:		Si	tart:	15.0	9.17	Grou	und I	_evel:			National Grid Co-ordinate:		Sheet:		
3	8135	583	E	nd:	18.0	9.17		•	121.4	5		E:475077.5 N:252210	.1		1	of <b>4</b>
Denth		Sample	s & Testing	g	N	Mecha	anical	Log	fill & tru- ation	iter		Description of Cheste		uced vel	Depth	Material
(m)	No	Туре	Result	ts	1CR (%)	SCR (%)	RQD (%)	lf (mn	ment Back	Na		Description of Strata		Redu Le	(Thick ness)	Legend
0.70 0.70 1.00-1.45 1.20 1.20	1 1 2	D PID SPT ES PID	0.0ppr N=7 0.0ppr	n							Firn oral gra Gra to with bou (GL GR	n to stiff grey mottled brown nge silty slightly sandy slig velly CLAY. Sand is fine to coa avel is subangular to subrounded coarse quartzite, flint and limest n occasional limestone cobbles ilders. ACIAL TILL/POSSIBLE MA OUND)	red htly rse. fine one and ADE		(1.80)	
- 1.70 - 1.70 - 2.00-2.45 - 2.70	3 2 4	D PID SPT D	0.0ppr N=16	n ;							Firn san fine sub and cob	n to stiff brown orange silty slig dy slightly gravelly CLAY. San to coarse. Gravel is subangula brounded fine to coarse quartzite, d limestone with frequent limest obles.	ihtly d is ir to flint one		(1.40)	
2.70	26	PID UT	0.0ppr 100% reco	n overv							GR	OUND)		118 25	- 3 20	$\left \right\rangle$
- 3.70 - 3.70	5	D PID	0.0ppr	n							Firm oran gra Gra sub	n to stiff grey mottled brown nge silty slightly sandy slig velly CLAY. Sand is fine to coa avel is subangular gular prounded fine to coarse quartzite, t limestone	red htly rse. to flint	117.55	(0.70)	
4 70 5 15	2	ерт	N-16								(GL GR 	ACIAL TILL/POSSIBLE MA OUND) . dark grey mottled brown from 3.1 4.80m bgl.	ADE 70m	116.65	(0.90) 4.80	
4.70 4.70 4.70	6	D PID	0.0ppr	n							Firn san fine sub and	m to stiff brown orange silty slig ndy slightly gravelly CLAY. San e to coarse. Gravel is subangula prounded fine to coarse quartzite, d limestone with frequent limest	htly d is ir to flint cone	-	- - - - - -	
5.70-6.10 5.70 5.70	4 7	SPT D PID	N=29 0.0ppr	) m							Cob (GL GR Firn slig	bbles. ACIAL TILL/POSSIBLE MA (OUND) In light grey mottled brown orange htly sandy slightly gravelly CL ad is fine to coarse Gravelly CL	ADE silty .AY.	- - - - -	- (1.90) 	
6.70-6.82 6.70 6.70 7.00 7.00	5 8 9	SPT D PID D PID	N:50 for 7 0.0ppr 0.0ppr	0mm n n							sar sub qua frec (GL  4.8( Stif lime (WI LIM	angular to subrounded, fine to coarse. Gravel pangular to subrounded, fine to coa artzite, flint and limestone quent limestone cobbles. .ACIAL TILL) light grey mottled brown betw 0m to 5.10m bgl. f grey CLAY with thin bands estone. EATHERED BLISWOF IESTONE FORMATION)	veen of	114.75	6.70	
8.50-10.00 8.50-8.95	6	SPT	N=44	Ļ	▲ 23	<b>▲</b> 13	<b>▲</b> 0				Des	scription on next sheet		112.95	8.50 - -	

oad,	E	Boring Pro	gress and	Water Ob	oservations	6			Co	noral	Domorko		
е Х	Date	Time	Borehole	Casing	Borehole Diameter	Water			Ge	nerai	Remarks		
ient Ltd, Abbey Park, Humbi	14/09/17 15/09/17 18/09/17		Depth 11.50 24.00 30.00	Depth 10.00 10.00 10.00	(mm) 300 123 123	Depth 11.30 21.40 21.30	1. Loca encc 2. Han 3. Grou minu 4. Gas com	ation sca ountered d dug ins undwater ites. and gro pletion.	nned with GP spection pit tp r encountered undwater mor	R prior to 1.20m bg at 25.20r hitoring we	breaking ground gl. n bgl and rose to ell installed to 30.	I. No services 23.60m after 20 00m bgl upon	
lironn							A	II dimen	sions in metre	s	Scale:	1:50	
	Method Used:	Rotar	y Cored	Plan Use	t d: <b>Com</b> a	cchio GEO	205	Drilled By:	DSUK LTD	Logged By:	RSalama	Checked By:	AGS



Contract:							CI	ient:					Boreho	ole:	
		Roa	de Bypass								Roxhill				BH02
Contract Re	f:		Start:	15.0	9.17	Grou	und L	evel:			National Grid Co-	ordinate:	Sheet:		
3	3135	583	End:	18.0	9.17		1	21.4	5		E:475077.5	N:252210.1		2	of <b>4</b>
Depth		Sample	es & Testing		Mecha	anical	Log	kfill & stru- itation	ater		Description	of Strata	luced	Depth (Thick	Material Graphic
(m)	No	Туре	Results	(%)	(%)	(%)	(mm	mer n Bao	3				Rec	ness)	
- - - - - - -				23	   13   ↓	0 0				(WI LIN (str pre	t silty CLAY with lin EATHERED IESTONE FORMA atum copied fro vious sheet)	BLISWORTH BLISWORTH TION) 500 8.500 from	-	(1.60)	
10.00-11.50	_	~~~			Å		-			Fvt	remely weak arey s		111.35	10.10	ثَــــــــــــــــــــــــــــــــــــ
_ 10.00-10.45 _ _	7	SPT	N=44							BL (BL	ISWORTH RMATION)		-111.05 -	- 10.40 -	
- 10.60 - 10.60	10	D PID	0.0ppm	100	92	80				Stro (BL FO	ong to very strong s ISWORTH RMATION)	ilty LIMESTONE. LIMESTONE	-	- (1.10)	
11.15-11.50	11	С								11.	band of firm g 10m to 11.16m bgl.	rey silty clay from	109 95	11 50	
- 11.50-13.00 11.50-11.58	8	SPT	N:50 for 45mm		Å		-			Sof	t grey silty gravelly angular fine to coa	CLAY. Gravel is arse limestone with	109.75	11.70	
- 12.00		PID	0.0ppm							hor spa	izontal to vertical ced planar smooth	close to medium clean fractures.	-	-	
12.27-12.54	12	С		97	79	75				(BL FO	ISWORTH RMATION)	LIMESTONE	-	-	
- - - - 13.00-14.50					X	X	-			Stro with clos clea (BL FO	ong to very strong horizontal to s to medium space an fractures. ISWORTH RMATION)	grey LIMESTONE subhorizontal with ced planar smooth LIMESTONE	-	-	
13.50-13.55 13.50 13.57-13.77	13 14	D PID C	0.0ppm	93	78	68				12. 13.	mottled browr 60m bgl. mottled browr 60m bgl.	i from 12.10m to i from 13.00m to	-	(4.50)	
- 14.50-16.00 14.50-14.56	9	SPT	N:50 for 30mm	X	X	X							-	-	
				82	81	68							-	-	
- 15.70 - 15.70	15	D PID	0.0ppm	,	Y	, v				 to 1	. band of very stiff 5.65m bgl.	clay from 15.60m	-	-	
16.00-17.50 16.00-16.20	16	С		91	80	79				We clos frac (BL FO	ak dark grey silty sely spaced vertica sture. ISWORTH RMATION)	MUDSTONE with I partly open clean LIMESTONE	105.25 104.85	16.20 16.60	
- 17.50-19.00 - 17.50-19.00	10	SPT	N:50 for 50mm	93	85	81	_			Ver LIN hor (BL FO	y strong to Extreme IESTONE with izontal tight fracture ISWORTH RMATION)	ely strong grey silty medium space es. LIMESTONE	-	(2.05)	

oad, C	E	Boring Pro	gress and	Water Ob	servations	6			Co	noral	Domorko			
Der Ko	Date	Time	Borehole	Casing	Borehole Diameter	Water			Ge	nerai	Remarks			
l			Depth	Depth	(mm)	Depth								
Ξ														
e' Va														
ADDe														
Ę														
nent														
lronr							ŀ	Il dimen	sions in metre	es	Scale:	1:50		
SK EN	Method Used:	Rota	ry Cored	Plan Use	t d: <b>Com</b> a	cchio GEC	205	Drilled By:	DSUK LTD	Logged By:	RSalama	Checked By:	TMB	AGS

GINT\_LIBRARY\_V8\_06.GLB LibVersion: v8\_06\_018 PrjVersion: v8\_06 - Core+Logs - 002 | Log COMPOSITE LOG - A4P | 313583 - ROADE BYPASS.GPJ - v8\_06. RSK Environment Ltd, Abbey Park, Humber Road, Coventry, CV3 4AQ. Tel: 02476 505600, Fax: 02476 501417, Web: www.rsk.co.uk, | 10/11/17 - 14:49 | DM1 |



Contract:						Client:				Boreho	le:	
	Road	e Bypass							Roxhill			BH02
Contract Ref:		Start:	15.09	9.17	Grour	d Level:			National Grid Co-ordinate:	Sheet:		
3135	583	End:	18.09	9.17		121.4	5		E:475077.5 N:252210.1		3	of <b>4</b>
Depth (m) No	Samples Type	& Testing Results	N TCR (%)	lecha SCR (%)	nical L RQD (%) (I	Backfill & Bo Instru- mentation	Water		Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend
18.50-18.60 17	с		93	85	81			to 1	. band of very stiff clay from 17.45m 7.50m bgl.	-102.80	18.65	
- 19.00-20.00 - 19.00 18 - 19.00	D PID	0.0ppm	55	20	20			MUI hori ope (PO	DSTONE with closely spaced zontal - subhorizontal tight to party n clean and clay infilled fractures. SSIBLE RUTLAND FORMATION) mottled blue from 19.00m bgl.		- - - - - - - - - - - - - - - - - - -	
20.00-21.00 20.00-20.23 11	SPT N	1:50 for 95mm	49	26	16		0 0 0 0 0 0 0			-	- - - - - - -	
21.00-22.50			*	<b>X</b>	X		0 0 0 0 0 0 0 0			-	(5.35)	
22.17-22.40 19	С		59	56	56		0 0 0 0 0 0 0 0 0		. band of stiff clay from 22.50, to		- - - - - - - - - - - -	
22.50-22.53 12 23.00 20 23.00 20	SPT N D PID	1:50 for 20mm 0.0ppm	85	82	41		• • • •	22.6	60m bgl.		- - - - - -	
24.00-25.50			<b>X</b>	<b>X</b>	<b>X</b>		• ⊻_ • •	to 2 Extr with med frac	. band of very stiff clay from 23.60m 3.80m bgl. remely strong grey silty LIMESTONE horizontal to subhorizontal close to dium spaced planar smooth clean tures.	- 97.45 - -	24.00	
25.05-25.70 21	С		100	95	88			(PO	SSIBLE RUILAND FORMATION)	96 05	25 40	
25.50-27.00 25.50-25.54 25.50 25.50 25.50 25.50	SPT N D PID	1:50 for 20mm 0.0ppm	100	97	93			Wea med part (PO  25.6	ak to strong grey MUDSTONE with dium spaced horizontal planar smooth dy open to open clean fractures. SSIBLE RUTLAND FORMATION) band of soft silty clay from 25.50m to 30m bgl.			
26.77-27.00 23	С		•	V			* * *			-	-	

â	<sub>i</sub> F	Boring Pro	gress and	Water Ob	servations	3			$\mathbf{C}$	noral	Domorko			
5	Date	Time	Borehole	Casing	Borehole Diameter	Water			Gei	lierai	Remarks			
2			Depth	Depth	(mm)	Depth								
Ľ,				í '										
y - a				í '										
222				1										
, ,				í '										
				1										
5				í '			A	II dimens	sions in metre	s	Scale:	1:50		
1	Method	_		Plan	t			Drilled		Logged		Checked	THE	
j,	Used:	Rotar	y Cored	User	ປ: Coma	cchio GEO	205	By:	DSUK LTD	By:	RSalama	By:	m	AGS

GINT LIBRARY\_V8\_06. GLB LibVersion: v8\_06\_018 PrjVersion: v8\_06 - Core+Logs - 002 | Log COMPOSITE LOG - A4P | 313583 - ROADE BYPASS.GPJ - v8\_06. RSK Environment Ltd, Abbey Park, Humber Road, Coventry, CV3 4AQ. Tel: 02476 505600, Fax: 02476 501417, Web: www.rsk.co.uk, | 10/11/17 - 14:49 | DM1 |



1:50

Checked By:

AGS

Scale:

RSalama

Logged By:

Contract:								Client:				Boreho	ole:	
		Roa	de By	ypass							Roxhill			BH02
Contract Re	f:			Start:	15.09	9.17	Grour	nd Level:			National Grid Co-ordinate:	Sheet:		
3	3135	583		End:	18.09	9.17		121.4	5		E:475077.5 N:252210.1		4	of <b>4</b>
Depth		Sample	s & Te	sting	N TCR	/lecha SCR	anical L RQD	ackfill & bo <sup>-</sup> nstru- entation	Nater		Description of Strata	evel -	Depth (Thick	Material Graphic
Depth (m) 27.00-28.50 28.30 28.30 28.50-30.00 28.50-28.75 29.10-29.40	No 24 3 14 2 25	Type PID SPT C	0.0 N:5 16	0ppm 50 for 00mm	TCR (%) 63 70 •	SCR (%) 61 59 V	RQD (%) ( 61 55 55		Water	We med (PC ( <i>stri</i> prev bgl.	Description of Strata ak to strong grey MUDSTONE with dium spaced horizontal planar smooth by open to open clean fractures. SSIBLE RUTLAND FORMATION atum copied from 25.40m from vious sheet) . dark grey from 27.00m to 28.20m . mottled blue from 29.20m to 29.80m Borehole terminated at 30.00m bgl.	onpay 	(4.60)	Graphic Legend
-												-	-	
Γ												[	[	
Bo	rina P	roares	s and V	Vater Oh	servat	tions								
	Borehole Casing						Water				General Remarks			
Date	Date Time Depth Depth						Depth							
	Depth Depth					·,								

All dimensions in metres

DSUK LTD

Drilled

By:

Method

Used:

Plant

Used:

Comacchio GEO 205

**Rotary Cored** 



Contract:								CI	lient:								B	oreho	le:	
		Roa	de Bypa	SS									Roxh	nill						BH03
Contract Re	f:		Sta	art:	12.0	9.17	Grou	und L	evel:				National G	Grid Co-c	ordinate:		S	heet:		
3	3135	583	En	id:	13.0	9.17		1	119.	60			E:474	853.9	N:25′	1919.4			1	of <b>2</b>
Donth		Sample	s & Testing		1	Mecha	anical	Log	ru- ru-	ation	ter		_				0	vel /el	Depth	Material
(m)	No	Туре	Results	5	TCR (%)	SCR (%)	RQD (%)	lf (mm	Backt	menta	Wai		Desc	cription of	of Strata	1		Lev	(Thick ness)	Legend
- - - - - -									K			Gras sand root subr (TO	ss over da dy CLAY lets. G rounded fin PSOIL)	ark brow with fre Gravel e to coa	n slightl equent is an rse quar	y gravell roots an gular to tzite.	ly - id <u>11</u> :o -	9.30	0.30	
1.00-1.45 1.00 1.00 1.50	1 1 2	SPT D PID D	N=43 0.0ppm	ı								Firm sligh to frag (GL	n orange htly sandy ( subrounded ments, qua ACIAL TILL	brown CLAY. d fine rtzite an -)	slightly Gravel to coa d flint.	gravell is angula rse chal	ly ar - lk - -		(2.70)	
2.00	3	D PID	0.0ppm	I													-		- - - - - - -	
3.00-3.32 3.00 3.00	2 4	SPT D PID	N:50 fo 170mm 0.0ppm	r า า								Firm sligh to s flint (GL	n dark bro ntly gravelly ubrounded and chalk. ACIAL TILL	own gre / CLAY. fine to _)	ey sligh Gravel coarse	tly sand is angula quartzite	-11 ly - ar - e, - -	6.60	3.00	
4.00 4.00	5	D PID	0.0ppm	ı													- - - - - 11	5.10	4.50	
4.50-6.00	3	SPT	N=43		37	8	7					Firm sligh coar subr LIMI (WE LIMI	n to stiff ntly gravelly rse. Gra rounded ESTONE. ATHERED ESTONE F	grey sil y CLAY avel is mec ORMAT	lty sligh Sand subar lium BLI TON)	tly sand is fine t ngular to coarso SWORTH	ly - :o - :e - H -	0.10	(2.60)	
-5.90 5.90	6	D PID	0.0ppm	ı	-	X	X												_ (2.00) _ _ - -	
6.00-7.50 6.00-6.45	4	SPT	N=45		45	33	33											2 50	- - - - - - - - -	
- 7.50-9.00 - 7.50-7.54 	5	SPT	N:50 for 30	)mm	89	69	48		,			Stro LIMI spac plan fract (BLI FOF	ng dark ESTONE ced horizon ar, rough tures. SWORTH RMATION) with shell ir	grey fi with cl ntal to ve n and nclusion	ne gra ose to ertical ste smoo LIN s from 7	ined silt mediun epped an th clea IESTONI	ty - n - id - in - E - -	2.50	<u>7.10</u>	
8.20 8.35-8.60	8	PID C	0.0ppm	ı						*** ***		bgl.	. beige bro	own fron	n 7.90m n 8.40m	to 8.20r	n [ n [ n [		- - - -	

oad,	E	Boring Pro	gress and	Water Ob	oservations	6			Ca	noral	Domorko		
er Ko	Date	Time	Borehole	Casing	Borehole Diameter	Water			Ge	nerai	Remarks		
am	Duie	TITIC	Depth	Depth	(mm)	Depth	1 1 000	tion coo	nnod with CD	D prior to	brooking group	d No convisoo	
Ϊ	12/09/17		3.00	4.50	123	Dry	I. LUCa	untered			bleaking ground	u. NO SEIVICES	
ark	13/09/17		3.00	4.50	123	2.60	2. Han	d dua ins	spection pit tp	1.20m bo	al.		
ey	13/09/17		15.00	9.00	123	13.60	3. Grou	Indwate	encountered	at 8.00m	i bgl.		
ADC							4. Gas	and gro	undwater mor	nitoring we	ell installed to 15	5.00m bgl upon	
Lta,							com	pletion.					
Juert													
ILOUI							A	II dimen	sions in metre	es	Scale:	1:50	
ED	Method			Plan	t			Drilled		Logged		Checked	
X N N N	Used:	Rotar	y Cored	Use	d: Coma	cchio GEC	205	By:	DSUK LTD	By:	RSalama	By:	AGS

GINT LIBRARY\_V8\_06. GLB LibVersion: v8\_06\_018 PrjVersion: v8\_06 - Core+Logs - 002 | Log COMPOSITE LOG - A4P | 313583 - ROADE BYPASS.GPJ - v8\_06. RSK Environment Ltd, Abbey Park, Humber Road, Coventry, CV3 4AQ. Tel: 02476 505600, Fax: 02476 501417, Web: www.rsk.co.uk, | 10/11/17 - 14:49 | DM1 |



Contract:								Client:						Boreho	le:	
		Roa	de By	pass							Roxhill					BH03
Contract Ret	:			Start:	12.09	9.17	Grou	nd Level:		1	National Grid C	Co-ordinate:		Sheet:		
3	13	583		End:	13.0	9.17		119.60	)		E:474853	8.9 N:251919	.4		2	of <b>2</b>
<b>_</b>		Sample	s & Test	ting	Ν	/lecha	anical I	Tio ∞ <sup>™</sup> bo⊤	er					ced el	Depth	Material
Deptn (m)	No	Туре	Res	sults	TCR	SCR	RQD	uenta nenta nenta nenta nenta	Wat		Descriptio	on of Strata		kedu Lev	(Thick ness)	Graphic
9.00-10.50 9.00-9.03	6	SPT	N:50 fo	r 20mm	89	56	45			Stron LIME space plana fractu (BLIS FORI (strat	ng dark grey STONE with ed horizontal to ar, rough a ures. SWORTH MATION) tum copied our choct)	fine grained close to med overtical stepped and smooth c LIMESTO from 7.10m	silty dium and lean DNE from		(6.20)	
10.50-12.00 10.50-10.71 11.15-11.25	7	SPT	N:50 125	0 for mm	91	59	52			from bgl.	<ul> <li>stiff clay wit</li> <li>stiff clay wit</li> <li>9.00m to 9.10r</li> <li>beige brown fr</li> <li>beige brown fr</li> </ul>	th sandstone gra n bgl. from 9.20m to 9. rom 9.60m to 10.0	vels 40m 00m		- - - - - - - - -	
11.15 12.00-13.50 12.00-12.11	8	SPT	0.0p N:50 fo	opm r 70mm	X					bgl.	beige brown fro	om 11.20m to 13.0	00m		- - - - - - -	
- 12.13-12.35 - - - - - - - -	10	C			87	67	53							106.30	13.30	
- 13.50-15.00 - 13.50-13.54 - 13.50 - 14.02-14.18	9 11	SPT PID C	N:50 fo 0.0p	r 30mm opm	93	72	65			Extre MUD (RUT  13.60	emely strong ISTONE. I LAND FORMA band of stiff Dm bgl.	dark grey ATION) clay from 13.50r	silty n to	-	-(1.75)	
- 14.90 - 15.00-15.05 - 15.00	12 10	D SPT PID	N:50 fo 0.0p	r 36mm opm	<b>.</b>					close clay ∖14.65 Bo	. band of stiff ely spaced plar infilled fractur 5m bgl. orehole termiar	f clay with horizo nar smooth clean es from 14.600n nted at 15.05m bg	ontal and n to I.	- <u>-</u>	_ <u>15.05</u>	
Bor Date	ing F Fime	Progress Bore	s and Wa shole C	ater Ob asing Depth	servat Boreh Diame	ole	Wate	r			Gene	eral Remar	ks			

All dimensions in metres

DSUK LTD

Drilled

By:

Plant

Used:

Comacchio GEO 205

**Rotary Cored** 

GINT LIBRARY\_V8\_06.GLB LibVersion: v8\_06\_018 PrjVersion: v8\_06 - Core+Logs - 002 | Log COMPOSITE LOG - A4P | 313583 - ROADE BYPASS.GPJ - v8\_06. RSK Environment Ltd, Abbey Park, Humber Road, Coventry, CV3 4ÃQ. Tel: 02476 505600, Fax: 02476 501417, Web: www.rsk.co.uk | 10/11/17 - 14:49 | DM1 |

Method

Used:

Checked By: RSalama

Scale:

Logged By:

1:50





Contract:							CI	ient:				Boreho	le:	
		Road	de Bypass								Roxhill			BH04
Contract Re	f:		Start:	11.0	9.17	Grou	ind L	evel:			National Grid Co-ordinate:	Sheet:		
3	3135	583	End:	13.0	9.17		1	15.7	1		E:474793.0 N:251226.6		1	of <b>3</b>
		Sample	s & Testing		Mecha	anical	Log	tion &	'n			ced	Depth	Material
Depth (m)	No	Туре	Results	TCF (%)	R SCR (%)	RQD (%)	lf (mm	Backfi Instr menta	Wat		Description of Strata	Redu	(Thick ness)	Graphic Legend
-										Gra san	ss over dark brown slightly gravelly dy CLAY with frequent roots and	115.41	0.30	<u>x 1/</u> . <u>x 1/</u> . · <u>x</u> 1/. · x 1/. · x 1/.
-								127 518		root sub	tlets. Gravel is angular to rounded fine to coarse quartzite	-	-	
-										Firn	n orange brown slightly gravelly	-	-	
1.00-1.45 1.00	1   1	SPT D	N=6							san sub	oy CLAY. Gravel is angular to rounded fine to coarse chalk,	-	- -	
1.00		PID	0.0ppm							(GL	ACIAL TILL)	-	-	·
-												-		
2.00-2.45	2 2	SPT D	N=11									-	- (3.70)	
- 2.00		PID	0.0ppm									-	-	
-												-	-	
- 3.00-3.45 3.00	3 3	SPT D	N=24									-	-	
- 3.00		PID	0.0ppm									-	-	
-					_							111.71	4.00	
4.00-5.00	4	SPT	N:50 for							Firn	n orange brown slightly gravelly dy CLAY. Gravel is angular to	-111.61-	- <b>4.10</b> - -	
4.00 4.00 4.50	4	D PID D		90	17	12				gua	rounded fine to coarse chaik, irtzite and flint.	-	-	
		D	0.000							Med	dium strong to strong yellow orange	-	-	
5.00-5.41	5	SPT	N:50 for	Ī						OCC Ext	asional clayey matrix. Fractures are	-	-	
-			0.0ppm							deg	prees planar occasionally stepped both and clean. No staining noted on	-	-	
- - -				87	40	35				frac (WE	tures. EATHERED BLISWORTH	-		
-										LIM	ESTONE FORMATION) weak from 5.50m to 5.90m bgl.	-	_(4.20) - -	
6.50-8.00	6	SPT	N:50 for 60mm									-	-	
-	-	-						.•.∃•.•				-	-	
-				85	64	53						-	-	
-												-	-	
- - 8.00-9.50					╞	╞╋					shell inclusions from 7.80m bgl.	-	- 	
8.00-8.30 8.00-8.03	6 7	C SPT	N:50 for 20mm							Мес	dium strong to strong dark grey fine	107.41	8.30	
- 8.00 -		PID	0.0ppm	91	79	79 			*	grai	ined LIMESTONE with shell usions.	107.01	8.70	
									}		EATHERED BLUE LIAS	-	-	┝┯┶┯┸

'n,	E	Boring Pro	gress and	Water Ob	servations	6			Co	noral	Domorko		
	Date	Time	Borehole	Casing	Borehole Diameter	Water			Ge	nerai	Remarks		
פווו בומ, אטטפא רמוא, הטוווט	11/09/17 12/09/17 12/09/17		Depth 15.50 15.50 20.00	Depth 11.00 11.00 11.00	(mm) 123 123 123	Depth 14.90 14.10 19.30	1. Loca encc 2. Han 3. Grou 4. Bore	ation sca ountered d dug ins undwater shole bac	nned with GP spection pit tp r not encounte ckfilled with ar	R prior to 1.20m bg ered. risings upo	breaking ground Jl. on completion.	l. No services	
0							A	II dimen	sions in metre	es	Scale:	1:50	
	Method Used:	Rota	ry Cored	Plan Use	t d: <b>Coma</b>	icchio GEO	205	Drilled By:	DSUK LTD	Logged By:	MSouthworth	Checked By:	AGS

GINT LIBRARY\_V8\_06. GLB LibVersion: v8\_06\_018 PrjVersion: v8\_06 - Core+Logs - 002 | Log COMPOSITE LOG - A4P | 313583 - ROADE BYPASS.GPJ - v8\_06. RSK Environment Ltd, Abbey Park, Humber Road, Coventry, CV3 4AQ. Tel: 02476 505600, Fax: 02476 501417, Web: www.rsk.co.uk, | 10/11/17 - 14:49 | DM1 |



Contract:								Clier	nt:						Boreho	le:	
		Roa	de By	pass								Roxhill					BH04
Contract Ref	f:			Start:	11.09	9.17	Grou	nd Lev	el:			National Grid	Co-ordinate:		Sheet:		
3	135	583		End:	13.09	9.17		11	5.71	1		E:47479	3.0 N:25	1226.6		2	of <b>3</b>
Depth (m)	No	Sample Type	es & Tes Res	ting sults	N TCR (%)	Aecha SCR (%)	anical I RQD (%)	Log 8 If 15 (mm)	Instru- mentation	Water		Descript	tion of Strata	a	Reduced Level	Depth (Thick ness)	Material Graphic Legend
9.50-11.00 9.50 9.50-9.55 9.50	7 8	D SPT PID	N:50 fo 0.0	r 30mm opm	91	79 <b>X</b> 73	79 79 68				FOF (BL FOF Mec brov occ 35 f with clay frac (BL FOF	RMATION) ISWORTH RMATION) dium strong to wn fine grained asional clayey to 45 degrees occasional c. No stail tures. ISWORTH RMATION)	LII strong yello d LIMESTON matrix. Fra stepped sm fractures in ning identif	MESTONE by orange NE with an ictures are ooth clean filled with fied upon MESTONE	106.21	(0.80) 9.50 (0.50) 10.00	
- 11.00-12.50 - 11.00-11.05 	9	SPT	N:50 fo	r 40mm	68	53	53	۰.	<ul> <li>→ . • .</li> </ul>		(stra prev Stiff occ (RU Stro	atum copied vious sheet) shell inclusion to very stiff da asional pockets TLAND FORM ong light	from 8.7 s from 9.40r irk grey silty s of orange b IATION) grey fine	<i>'0m from</i> n bgl. CLAY with prown silt. grained	-	(3.30)	
12.50-14.00	10	SPT	N=	-44	47	36	36				MU deg occ (RU 10.9	DSTONE. Fr rees planar asionally rough TLAND FORM . pocket of da 20m to 10.95m . no recovery f	actures are and steppe very wide a IATION) ark grey silty bgl. rom 12.50m	25 to 35 d smooth nd clean. clay from to 13.10m	102.41	13.30	
- 14.00-15.50 14.00 14.00 14.00 14.00	9 11	D SPT PID	N:50 241 0.0p	0 for mm opm	68	61	55				Ver CLA lithc smc Extr (RU	y stiff dark blu AY with prelicts. Fractu poth occasion remely wide an ITLAND FORM	ie grey silty frequent res are 35 to ially rough d clean. IATION)	structured mudstone 45 planar wide to		(2.70)	
15.50-17.00 15.50-15.95 16.10-16.20	12	SPT C	N=	-47	93	77	77				Stro MU plar and (RU	ong light p DSTONE. Fr har smooth wi clean. TLAND FORM	grey fine actures are de to Extre IATION)	grained 25 to 35 mely wide	99.71	(2.10)	x _ x
17.00-18.50 17.00-17.05	13	SPT	N:50 fo	r 40mm	95	72	53								- - - - - -	- · · · · · · · · · · · · · · · · · · ·	

, יחמע, ר	E	Boring Pro	gress and	Water Ob	servation	3			Co	noral	Domarka			
101	Date	Time	Borehole	Casing	Borehole Diameter	Water			Ge	neral	Remarks			
m n	ļ]		Depth	Depth	(mm)	Depth								
-														
8														
- ch														
'n														
ē														
5							A	II dimen	sions in metre	es	Scale:	1:50		
ì	Method			Plan	t			Drilled		Logged		Checked	210	
5	Used:	Rota	y Cored	Used	d: Coma	acchio GEO	205	By:	DSUK LTD	By:	MSouthworth	By:	mD.	AGS

GINT\_LIBRARY\_V8\_06.GLB LibVersion: v8\_06\_018 PrjVersion: v8\_06 - Core+Logs - 002 | Log COMPOSITE LOG - A4P | 313583 - ROADE BYPASS.GPJ - v8\_06. RSK Environment Ltd, Abbey Park, Humber Road, Coventry, CV3 4AQ. Tel: 02476 505600, Fax: 02476 501417, Web: www.rsk.co.uk | 10/11/17 - 14:49 | DM1 |



Contract:								Client:				Boreho	ole:	
		Roa	de E	Bypass							Roxhill			BH04
Contract Re	f:			Start:	11.09	9.17	Groun	d Level:			National Grid Co-ordinate:	Sheet:		
3	3135	583		End:	13.09	9.17		115.7	71		E:474793.0 N:251226.6		3	of <b>3</b>
Dopth		Sample	s & T	esting	Ν	/lecha	anical L	og 🔋 🖞	ter			lced /el	Depth	Material
(m)	No	Туре	F	Results	TCR (%)	SCR (%)	RQD (%) (I	lf State nm) B	Na		Description of Strata	Sedu	(Thick ness)	Legend
- 18.50-20.00 - 18.50 - 18.50 - 18.50-18.77 - 18.50	11 14	D SPT PID	N 1 0	l:50 for 60mm ).0ppm	95	72 X 80	53 ¥ 80			Meo grai to 3 wide (RL	dium strong to strong dark grey fine ined MUDSTONE. Fractures are 25 35 planar smooth wide to Extremely e and open. JTLAND FORMATION)	97.61/-	(2.35)	
- 19 50-19 90	12	C									becoming light grev from 19.50m	-	-	
- 19.30-19.90	12	C								bgl.	becoming light grey norm 19.30m	-	-	
_ 20.00-20.10	15	SPT	N:50	for 60mm	<u> </u>	¥.	¥.					-	-	
-												95.26	20.45	
Bor	ing P	rogress	s and	Water Ob	servat	ions								
Date	Time	Bore	hole	Casing	Boreh Diame	ole eter	Water				General Remarks			
		De	pth	Depth	(mm	ו)	Depth							

1:50 All dimensions in metres Scale: Checked By: Drilled Logged By: Method Plant AGS DSUK LTD Used: **Rotary Cored** Used: Comacchio GEO 205 By: **MSouthworth** 



Contract:								С	lient:				Boreho	ole:	
		Roa	de Bypass	S								Roxhill			BH05
Contract Re	f:		Start:	: 0	7.0	9.17	Grou	und L	_evel:			National Grid Co-ordinate:	Sheet:		
3	313	583	End:	0	8.0	9.17			101.7	6		E:475105.8 N:250762.3		1	of <b>3</b>
Depth	No	Sample	s & Testing	Т	N CR	Vecha SCR	anical RQD	Log If	ackfill & Instru- entation	Water		Description of Strata	evel	Depth (Thick	Material Graphic
- (11)		Туре		(	(%)	(%)	(%)	(mm	)····································	-	Bro	own silty slightly sandy slightly gravelly	<u>8</u> –	ness)	
- - - - -											CLA sub flint (TC	AY. Sand is fine to coarse. Gravel is pangular to subrounded fine to coarse t, quartzite and limestone. DPSOIL)	101.46	- 0.30 - - -	
1.00-1.45 1.00 1.30 1.30 1.30	1 1 2	SPT PID ES PID D	N=30 0.0ppm 0.0ppm								Soft to firm light grey mottled bro orange silty slightly sandy sligh gravelly CLAY. Sand is fine to coar Gravel is subangular to subrounded f to coarse quartzite, flint and limestone. (GLACIAL TILL) stiff from 1.20m bgl.			-(2.70)	
2.00-2.45	2	SPT D	N=22												
_2.70 3.00-3.45	3	PID SPT	0.0ppm N=27								Ver slig coa (GL	ry stiff grey mottled orange red silty htly sandy CLAY. Sand is fine to arse. LACIAL TILL)	- <u>98.76</u> - - - - -	(1.00)	
- 3.70 _3.70	4	D PID	0.0ppm	_	•	_	_				0.115		97.76	4.00	× · · · × ·
4.00-5.50 4.00-4.36	4	SPT	N:50 for 210mm									EATHERED BLISWORTH	97.00-	- <b>4.10</b> / - - -	
4.50-4.60 4.50	6	D PID	0.0ppm	2	 97 	63 	33				Stro meo plar fille	ong orange LIMESTONE with close to dium spaced horizontal to vertical nar smooth tight partly open gravel ed clean fractures.	- - - - -	-	
5.20-5.50	5	С			v						(BL   FOI	ISWORTH LIMESTONE RMATION)	-	(2.40) -	
5.50-7.00	6	SPT	N:50 for 30mr	m	64	59	13					. mottled light grey from 4.30m bgl.		- - - - -	
- 7.00-8.50 7.00-7.45	7	SPT	N=37		X	X		-			Firm muo (RL	n grey silty CLAY with gravel sized dstone lithorelicts. JTLAND FORMATION)	- 95.26 - - - - - -	- 6.50 	
-												ware the second state of t	94.16	7.60	
- - - -					85	76	64			Ţ	MU (RL	remely weak dark grey black IDSTONE. JTLAND FORMATION)	- - - -	- -(0.90)	
					X						NI-	receiver from 9 50m to 0 50m b -1	93.26	8.50	
8.50-10.00 8.50-8.95 8.80-9.00	8 7	SPT C	N=42		₹ 27	24	22			₹		recovery from 8.50m to 9.50m bgl.	- - -	- - -	ZCL

ź	E	Boring Pro	gress and	Water Ob	servations	3			Ca	noral	Domorko		
	Date	Time	Borehole	Casing	Borehole Diameter	Water			Ge	nerai	Remarks		
	Duto		Depth	Depth	(mm)	Depth	1 1 000	tion sca	nned with CP	P prior to	breaking group		
	07/09/17		14.00	11.50	N/R	Dry	enco	untered			breaking ground		
	07/09/17		20.00	11.50	N/R	14.30	2. Han	d dug ins	spection pit tp	1.20m bg	gl.		
ĥ							3. Grou	undwate	encountered	at 9.00m	bgl.		
2							4. Gas	and gro	undwater mor	nitoring we	ell installed to 12	.00m bgl upon	
2							Com	pietion.					
Ē													
							A	II dimen	sions in metre	es	Scale:	1:50	
Ē	Method			Plan	t			Drilled		Logged		Checked	
	Used:	Rota	y Cored	Use	d: <b>Coma</b>	cchio GEC	0 205	By:	DSUK LTD	By:	RSalama	By:	AGS

GINT\_LIBRARY\_V8\_06.GLB LibVersion: v8\_06\_018 PrjVersion: v8\_06 - Core+Logs - 002 | Log COMPOSITE LOG - A4P | 313583 - ROADE BYPASS.GPJ - v8\_06. RSK Environment Ltd, Abbey Park, Humber Road, Coventry, CV3 4AQ. Tel: 02476 505600, Fax: 02476 501417, Web: www.rsk.co.uk, | 10/11/17 - 14:49 | DM1 |



Contract:								Client:						Boreho	le:	
		Road	de By	pass							Roxhill					BH05
Contract Ret	f:			Start:	07.09	9.17	Grou	nd Level:			National Grid C	Co-ordinate:		Sheet:		
3	135	583		End:	08.09	9.17		101.7	6		E:475105	5.8 N:2507	62.3		2	of <b>3</b>
Depth (m)	No	Sample: Type	s & Test Res	ting sults	TCR (%)	/lecha SCR (%)	anical I RQD (%) (	Backfill & Bo <sup>-</sup> Instru- mentation	Water		Descriptio	on of Strata		Reduced Level	Depth (Thick ness)	Material Graphic Legend
9.40-9.50	8	D PID	0 Or	mac	27	24	22			No (stra prev	recovery from 8 atum copied vious sheet)	.50m to 9.50m from 8.50m	bgl. from	92.16	(1.10) 9.60	ZCL
- 10.00-10.45	9	SPT	N=	28	<b>_</b>	<b>v</b>				MU \(RL Gre	DSTONE. JTLAND FORMA	ATION) ayey SAND.	Diack	91.76	10.00	
										(RU (ST	AMFORD MEM	ATION) BER)			(1.50)	
- 11.50-12.50 [ 11.50-11.95 -	10	SPT	N=	42	70	<b>5</b> 5	10		> > >	∖We ∖(RL Ver ∖(RL	ak grey silty MU JTLAND FORM y stiff dark grey JTLAND FORM	DSTONE. ATION) silty CLAY. ATION)		-90.21/- 	(0.55) 12.10	xx x 
12.30-12.40 12.50-14.00 12.50-12.95	9	C SPT	N=	:43		<b>_</b>				Ver with med smo	y stiff weak gr horizontal to s dium spaced both and rough	ey silty MUDS subhorizontal c planar and s tight to open	TONE lose to tepped clean	-	-	
-					76	52	39			and (RL	clay infilled frac ITLAND FORM	ctures. ATION)		-	- - - - - - -	
- 13.70-16.50 _13.70 - 14.00-15.50 - 14.00-14.45	10	D PID SPT	0.0p N=	opm :42						 13.9	. band of frim 95m to 14.03m b	n grey silty cla ogl.	y from	-	(4.90)	
- - - - - - - - - - - - - - - - - - -					87	67	58			fron	. band of soft n 15.00m to 15.2	to firm grey sil 20m bgl.	ty clay	-	- - - - - - -	
15.50-15.95	13	SPT	N=	46	100	87	62			fron	. band of soft n 16.10m to 16.3	to firm grey sil 30m bgl.	ty clay	-	-	
- - 17.00-18.50 - 17.00-17.39 -	14	SPT	N:50 235	) for mm	100	68	54			Ver size \(RL Des	y stiff grey sill ed MUDSTONE ITLAND FORM/ scription on next	ty CLAY with lithorelicts. ATION) sheet	gravel	84.76	17.00	xx

oad, c	E	Boring Pro	gress and	Water Ob	servations	S			Co	norol	Domorko			
E R	Date	Time	Borehole	Casing	Borehole Diameter	Water			Ge	nerai	Remarks			
Ë		_	Depth	Depth	(mm)	Depth								
Σ Υ														
гаг														
pey														
Ę,														
nen														
							ŀ	All dimen	sions in metre	es	Scale:	1:50		
	Method Used:	Rota	ry Cored	Plan Use	t d: <b>Com</b> a	acchio GEC	0 205	Drilled By:	DSUK LTD	Logged By:	RSalama	Checke By:	TAB	AGS

GINT\_LIBRARY\_V8\_06.GLB LibVersion: v8\_06\_018 PrjVersion: v8\_06 - Core+Logs - 002 | Log COMPOSITE LOG - A4P | 313583 - ROADE BYPASS.GPJ - v8\_06. RSK Environment Ltd, Abbey Park, Humber Road, Coventry, CV3 4AQ. Tel: 02476 505600, Fax: 02476 501417, Web: www.rsk.co.uk, | 10/11/17 - 14:49 | DM1 |



								Client:				Boreh	ole:	
		Road	de B	ypass							Roxhill			BH05
Contract Ref	:			Start:	07.0	9.17	Grou	nd Level:			National Grid Co-ordinate:	Sheet:		
3	135	583		End:	08.0	9.17		101.7	<b>'</b> 6		E:475105.8 N:250762.	3	3	of <b>3</b>
Depth (m)	s No	Sample Type	s & Te	esting esults	TCR (%)	Aecha SCR (%)	anical I RQD (%) (	Backfill & Bo <sup>-</sup> Instru- mentation	Water		Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend
- 18.50-20.00 18.50-18.94	15	SPT	N: 28	:50 for 85mm	100	68	54			We spa clos (RL (str pre	ak grey silty MUDSTONE with clos iced, subhorizontal, planar smo sed fractures. JTLAND FORMATION) atum copied from 17.30m fr vious sheet)	ely - oth - om - 82.76	(1.70)	
- - - -					60	20	9			Sof (RL	t grey silty CLAY. JTLAND FORMATION)		(0.70)	
20.00-20.45	16	SPT	1	N=47		<b>.</b>	<b>.</b>			Ext with smo frac	remely weak grey silty MUDSTO n closely to medium spaced pla poth partly open to open cle stures horizontal to subhorizontal.	82.06 NE - nar - ean - - 81.31	- <u>19.70</u> -(0.75) - 20.45	x ×
											JTLAND FORMATION) Borehole terminated at 20.45m bgl.		- 20.43 	
Bori	ng P	rogress Bore	and \ hole	Water Ob Casing	servat Boreh	tions	Water	-			General Remark	S		

I	Boring Pro	ogress and	Water Ob	servations	3			0.0	noral	Domorko		
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth			Ge	nerai	Remarks		
			·									
										0.1	4.50	
						P	li dimens	ons in metre	es	Scale:	1:50	
Method Used:	Rota	ry Cored	Plan Use	t d: <b>Coma</b>	cchio GEC	0 205	Drilled By:	DSUK LTD	Logged By:	RSalama	Checked By:	AGS



#### APPENDIX G INSITU SOAKAWAY RESULTS



#### STRUCTURAL SOILS LTD

#### **INSITU TESTING REPORT**



1774

Report No.	747620R.01(00)				
Date	25-September-2017	Contract Roade B	ypass		
Client Address	RSK Environment Ltd Spring Lodge 172 Chester Road Helsby Cheshire WA6 0AR				
For the Atter	ntion of Romani S	Salama			
Order receive Testing Start Testing Com	ed ed ipleted	18-August-2017 13-September-2017 13-September-2017	Client Reference Client Order No. Instruction Type	None P0270736 Written	
Tests marked Laboratory.	l 'Not UKAS Accredited' in	this report are not included	in the UKAS Accredita	tion Schedule for our	
UKAS Accre	edited Tests				
Not UKAS A	Accredited Tests				
3no. Insitu so	bakaway tests carried out at l	locations specified by clier	ıt.		
The results re	epresent the ground conditio	ns at the specified location	s and depths at the time	of testing.	
Please Note: F Test were und Opinions and	Remaining samples will be retai ertaken on samples 'as received interpretations expressed in this	ned for a period of one month ' unless otherwise stated. s report are outside the scope	n from today and will then t of accreditation for this lab	be disposed of. oratory.	
Structu	ural Soils Ltd 1a Princess Street	t Bedminster Bristol BS3 4A0	G Tel.0117 9471000. e-mai	l dimitris.xirouchakis@soils.c	o.uk









#### APPENDIX H INSITU DYNAMIC CONE PENETROMETER RESULTS






























# APPENDIX I CHEMICAL LABORATORY CERTIFICATES FOR SOIL ANALYSIS



# FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: Issue Number: 17/06450 1

Date: 06 October, 2017

Client:

RSK Environment Ltd Coventry Humber Road, Abbey Park Coventry UK CV3 4AQ

Project Manager:	Darren Bench
Project Name:	Roade Bypass
Project Ref:	313583
Order No:	N/A
Date Samples Received:	07/09/17
Date Instructions Received:	22/09/17
Date Analysis Completed:	06/10/17

Prepared by:

APR

Danielle Brierley Client Manager Approved by:

GWaller

Gill Walker Laboratory Manager



Page 1 of 18



# Client Project Name: Roade Bypass

Lab Sample ID	17/06450/1	17/06450/2	17/06450/3	17/06450/4	17/06450/5	17/06450/6	17/06450/7	17/06450/8		
Client Sample No										
Client Sample ID	TP01	TP02	TP03	TP04	TP05	TP12	TP14	TP15		
Depth to Top	0.20	0.20	0.30	0.50	0.20	0.20	0.20	0.20		
Depth To Bottom										
Date Sampled	11-Sep-17	11-Sep-17	11-Sep-17	11-Sep-17	11-Sep-17	08-Sep-17	07-Sep-17	07-Sep-17		ų
Sample Type	Soil		od re							
Sample Matrix Code	6AE	6AE	6AE	6AE	6	5AE	5AE	5AE	Units	Meth
% Stones >10mm <sub>A</sub>	<0.1	<0.1	<0.1	2.7	<0.1	1.9	1.9	3.4	% w/w	A-T-044
pH <sub>D</sub> <sup>M#</sup>	7.66	7.15	8.10	8.20	6.86	7.90	7.67	7.40	рН	A-T-031s
Phenols - Total by HPLC <sub>A</sub>	<0.2	<0.2	<0.2	0.4	<0.2	<0.2	<0.2	<0.2	mg/kg	A-T-050s
Total Organic Carbon <sub>D</sub> <sup>M#</sup>	3.73	1.61	2.64	1.69	2.69	0.99	1.33	2.07	% w/w	A-T-032s
Arsenic <sub>D</sub> <sup>M#</sup>	4	10	2	<1	4	11	7	8	mg/kg	A-T-024s
Cadmium <sub>D</sub> <sup>M#</sup>	0.9	1.1	1.0	1.0	0.7	1.1	1.0	1.3	mg/kg	A-T-024s
Copper <sub>D</sub> <sup>M#</sup>	33	16	24	15	12	15	14	15	mg/kg	A-T-024s
Chromium <sub>D</sub> <sup>M#</sup>	36	26	39	37	34	26	26	35	mg/kg	A-T-024s
Chromium (hexavalent)₀	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	A-T-040s
Lead <sub>D</sub> <sup>M#</sup>	30	24	20	16	21	96	21	22	mg/kg	A-T-024s
Mercury <sub>D</sub>	<0.17	<0.17	0.30	<0.17	<0.17	<0.17	<0.17	<0.17	mg/kg	A-T-024s
Nickel <sup>M#</sup>	26	24	31	30	21	27	26	29	mg/kg	A-T-024s
Selenium <sub>D</sub> <sup>M#</sup>	1	1	1	<1	<1	<1	<1	<1	mg/kg	A-T-024s
Zinc <sup>M#</sup>	82	68	69	53	63	73	71	87	mg/kg	A-T-024s



# Client Project Name: Roade Bypass

Lab Sample ID	17/06450/1	17/06450/2	17/06450/3	17/06450/4	17/06450/5	17/06450/6	17/06450/7	17/06450/8		
Client Sample No										
Client Sample ID	TP01	TP02	TP03	TP04	TP05	TP12	TP14	TP15		
Depth to Top	0.20	0.20	0.30	0.50	0.20	0.20	0.20	0.20		
Depth To Bottom										
Date Sampled	11-Sep-17	11-Sep-17	11-Sep-17	11-Sep-17	11-Sep-17	08-Sep-17	07-Sep-17	07-Sep-17		ž
Sample Type	Soil		od re							
Sample Matrix Code	6AE	6AE	6AE	6AE	6	5AE	5AE	5AE	Units	Meth
Asbestos in Soil (inc. matrix)										
Asbestos in soil <sub>A</sub> <sup>#</sup>	NAD		A-T-045							
Asbestos ACM - Suitable for Water Absorption Test?	N/A									



# Client Project Name: Roade Bypass

Lab Sample ID	17/06450/1	17/06450/2	17/06450/3	17/06450/4	17/06450/5	17/06450/6	17/06450/7	17/06450/8		
Client Sample No										
Client Sample ID	TP01	TP02	TP03	TP04	TP05	TP12	TP14	TP15		
Depth to Top	0.20	0.20	0.30	0.50	0.20	0.20	0.20	0.20		
Depth To Bottom										
Date Sampled	11-Sep-17	11-Sep-17	11-Sep-17	11-Sep-17	11-Sep-17	08-Sep-17	07-Sep-17	07-Sep-17		j.
Sample Type	Soil		od re							
Sample Matrix Code	6AE	6AE	6AE	6AE	6	5AE	5AE	5AE	Units	Meth
Nitrogen Pesticides										
Ametryn <sub>a</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
Atraton <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
Atrazine <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
Prometon <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
Prometryn <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
Propazine <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
Simazine <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
Simetryn <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
Terbuthylazine <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
Terbutryn <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon



# Client Project Name: Roade Bypass

Lab Sample ID	17/06450/1	17/06450/2	17/06450/3	17/06450/4	17/06450/5	17/06450/6	17/06450/7	17/06450/8		
Client Sample No										
Client Sample ID	TP01	TP02	TP03	TP04	TP05	TP12	TP14	TP15		
Depth to Top	0.20	0.20	0.30	0.50	0.20	0.20	0.20	0.20		
Depth To Bottom										
Date Sampled	11-Sep-17	11-Sep-17	11-Sep-17	11-Sep-17	11-Sep-17	08-Sep-17	07-Sep-17	07-Sep-17		_
Sample Type	Soil		od ret							
Sample Matrix Code	6AE	6AE	6AE	6AE	6	5AE	5AE	5AE	Units	Metho
Pest-c										
Mevinphos <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
Dichlorvos <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
alpha-Hexachlorocyclohexane (HCH) <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
Diazinon <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
gamma-Hexachlorocyclohexane (HCH / Lindane) <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
Heptachlor <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
Aldrin <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
beta-Hexachlorocyclohexane (HCH) <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
Methyl Parathion <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
Malathion <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
Fenitrothion <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
Heptachlor Epoxide <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
Parathion (Ethyl Parathion) <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
p,p-DDE <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
p,p-DDT <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
p,p-Methoxychlor <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
p,p-TDE (DDD) <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
o,p-DDE <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
o,p-DDT <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
o,p-Methoxychlor <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
o,p-TDE (DDD) <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
Endosulphan I <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
Endosulphan II <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
Endosulphan Sulphate <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
Endrin <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
Ethion <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
Dieldrin <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon
Azinphos-methyl <sub>A</sub>	-	<50	-	-	-	<50	-	-	µg/kg	Subcon



# Client Project Name: Roade Bypass

Lab Sample ID	17/06450/1	17/06450/2	17/06450/3	17/06450/4	17/06450/5	17/06450/6	17/06450/7	17/06450/8		
Client Sample No										
Client Sample ID	TP01	TP02	TP03	TP04	TP05	TP12	TP14	TP15		
Depth to Top	0.20	0.20	0.30	0.50	0.20	0.20	0.20	0.20		
Depth To Bottom										
Date Sampled	11-Sep-17	11-Sep-17	11-Sep-17	11-Sep-17	11-Sep-17	08-Sep-17	07-Sep-17	07-Sep-17		Į.
Sample Type	Soil		od re							
Sample Matrix Code	6AE	6AE	6AE	6AE	6	5AE	5AE	5AE	Units	Meth
PAH 16										
Acenaphthene <sub>A</sub> <sup>M#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-019s
Acenaphthylene <sub>A</sub> <sup>M#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-019s
Anthracene <sub>A</sub> <sup>M#</sup>	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	A-T-019s
Benzo(a)anthracene <sub>A</sub> <sup>M#</sup>	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	A-T-019s
Benzo(a)pyrene <sub>A</sub> <sup>M#</sup>	0.06	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	A-T-019s
Benzo(b)fluoranthene <sub>A</sub> <sup>M#</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	A-T-019s
Benzo(ghi)perylene <sub>A</sub> <sup>M#</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	A-T-019s
Benzo(k)fluoranthene <sub>A</sub> <sup>M#</sup>	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	A-T-019s
Chrysene <sub>A</sub> <sup>M#</sup>	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	mg/kg	A-T-019s
Dibenzo(ah)anthracene <sub>A</sub> <sup>M#</sup>	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	A-T-019s
Fluoranthene <sub>A</sub> <sup>M#</sup>	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	mg/kg	A-T-019s
Fluorene <sub>A</sub> <sup>M#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-019s
Indeno(123-cd)pyrene <sub>A</sub> <sup>M#</sup>	0.04	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	A-T-019s
Naphthalene <sub>A</sub> <sup>M#</sup>	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	A-T-019s
Phenanthrene <sub>A</sub> <sup>M#</sup>	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	A-T-019s
Pyrene <sub>A</sub> <sup>M#</sup>	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	A-T-019s
PAH (total 16) <sub>A</sub> <sup>M#</sup>	0.10	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	mg/kg	A-T-019s



# Client Project Name: Roade Bypass

Lab Sample ID	17/06450/1	17/06450/2	17/06450/3	17/06450/4	17/06450/5	17/06450/6	17/06450/7	17/06450/8		
Client Sample No										
Client Sample ID	TP01	TP02	TP03	TP04	TP05	TP12	TP14	TP15		
Depth to Top	0.20	0.20	0.30	0.50	0.20	0.20	0.20	0.20		
Depth To Bottom										
Date Sampled	11-Sep-17	11-Sep-17	11-Sep-17	11-Sep-17	11-Sep-17	08-Sep-17	07-Sep-17	07-Sep-17		
Sample Type	Soil		od ret							
Sample Matrix Code	6AE	6AE	6AE	6AE	6	5AE	5AE	5AE	Units	Metho
TPH CWG										
Ali >C5-C6 <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
Ali >C6-C8 <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
Ali >C8-C10 <sub>4</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
Ali >C10-C12 <sub>A</sub> <sup>#</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-023s
Ali >C12-C16 <sub>A</sub> <sup>#</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-023s
Ali >C16-C21 <sub>A</sub> <sup>#</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-023s
Ali >C21-C35 <sub>A</sub> <sup>#</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-023s
Total Aliphatics <sub>A</sub>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-023s
Aro >C5-C7 <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
Aro >C7-C8 <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
Aro >C8-C9 <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
Aro >C9-C10 <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
Aro >C10-C12 <sub>A</sub> <sup>#</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-023s
Aro >C12-C16 <sub>A</sub> <sup>#</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-023s
Aro >C16-C21 <sub>A</sub> <sup>#</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-023s
Aro >C21-C35 <sub>A</sub> <sup>#</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-023s
Total Aromatics <sub>A</sub>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-023s
TPH (Ali & Aro) <sub>A</sub>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-023s
BTEX - Benzene <sub>A</sub> #	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
BTEX - Toluene <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
BTEX - Ethyl Benzene <sub>A</sub> #	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
BTEX - m & p Xylene <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
BTEX - o Xylene <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
MTBE <sub>A</sub> #	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s



# Client Project Name: Roade Bypass

	17/00/150/0	17/00/50/40	17/00/50/14	17/00/50/10	17/00/150/10	17/00/150/15	17/00/50/10	17/00/20/17		
Lab Sample ID	17/06450/9	17/06450/10	17/06450/11	17/06450/12	17/06450/13	17/06450/15	17/06450/16	17/06450/17		
Client Sample No										
Client Sample ID	TP15	TP16	TP16A	TP16A	TP17	WS02	WS04	WS05		
Depth to Top	1.50	0.10	0.20	0.50	0.20	0.20	0.30	0.20		
Depth To Bottom										
Date Sampled	07-Sep-17	07-Sep-17	08-Sep-17	08-Sep-17	07-Sep-17	06-Sep-17	30-Aug-17	30-Aug-17		ž
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		od re
Sample Matrix Code	5A	4AE	4AE	5AE	5AE	5AE	5A	5AE	Units	Meth
% Stones >10mm <sub>A</sub>	<0.1	2.7	25.7	<0.1	<0.1	<0.1	<0.1	4.8	% w/w	A-T-044
pH <sub>D</sub> <sup>M#</sup>	8.47	8.17	8.78	8.17	7.91	7.66	8.11	7.55	рН	A-T-031s
Phenols - Total by HPLC <sub>A</sub>	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	A-T-050s
Total Organic Carbon <sub>D</sub> <sup>M#</sup>	<0.03	1.43	<0.03	0.58	2.19	1.19	1.93	2.56	% w/w	A-T-032s
Arsenic <sup>D<sup>M#</sup></sup>	<1	3	1	3	3	7	3	<1	mg/kg	A-T-024s
Cadmium <sub>p</sub> <sup>M#</sup>	<0.5	0.8	<0.5	0.7	0.7	1.3	0.8	0.8	mg/kg	A-T-024s
Copper <sub>D</sub> <sup>M#</sup>	5	12	2	10	13	13	14	20	mg/kg	A-T-024s
Chromium <sub>D</sub> <sup>M#</sup>	11	18	4	20	20	33	18	25	mg/kg	A-T-024s
Chromium (hexavalent)₀	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	A-T-040s
Lead <sub>D</sub> <sup>M#</sup>	4	18	2	13	16	19	16	16	mg/kg	A-T-024s
Mercury <sub>D</sub>	<0.17	<0.17	0.31	<0.17	0.29	<0.17	0.20	<0.17	mg/kg	A-T-024s
Nickel <sup>M#</sup>	11	17	3	17	16	33	16	21	mg/kg	A-T-024s
Selenium <sub>D</sub> <sup>M#</sup>	<1	<1	<1	<1	<1	1	<1	<1	mg/kg	A-T-024s
Zinc <sub>D</sub> <sup>M#</sup>	16	54	5	45	50	72	52	58	mg/kg	A-T-024s



# Client Project Name: Roade Bypass

Lab Sample ID	17/06450/9	17/06450/10	17/06450/11	17/06450/12	17/06450/13	17/06450/15	17/06450/16	17/06450/17		
Client Sample No										
Client Sample ID	TP15	TP16	TP16A	TP16A	TP17	WS02	WS04	WS05		
Depth to Top	1.50	0.10	0.20	0.50	0.20	0.20	0.30	0.20		
Depth To Bottom										
Date Sampled	07-Sep-17	07-Sep-17	08-Sep-17	08-Sep-17	07-Sep-17	06-Sep-17	30-Aug-17	30-Aug-17		J.
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		od re
Sample Matrix Code	5A	4AE	4AE	5AE	5AE	5AE	5A	5AE	Units	Meth
Asbestos in Soil (inc. matrix)										
Asbestos in soil <sub>A</sub> <sup>#</sup>	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD		A-T-045
Asbestos ACM - Suitable for Water Absorption Test?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		



# Client Project Name: Roade Bypass

Lab Sample ID	17/06450/9	17/06450/10	17/06450/11	17/06450/12	17/06450/13	17/06450/15	17/06450/16	17/06450/17		
Client Sample No										
Client Sample ID	TP15	TP16	TP16A	TP16A	TP17	WS02	WS04	WS05		
Depth to Top	1.50	0.10	0.20	0.50	0.20	0.20	0.30	0.20		
Depth To Bottom										
Date Sampled	07-Sep-17	07-Sep-17	08-Sep-17	08-Sep-17	07-Sep-17	06-Sep-17	30-Aug-17	30-Aug-17		if
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		od re
Sample Matrix Code	5A	4AE	4AE	5AE	5AE	5AE	5A	5AE	Units	Meth
Nitrogen Pesticides										
Ametryn <sub>a</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
Atraton <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
Atrazine <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
Prometon <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
Prometryn <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
Propazine <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
Simazine <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
Simetryn <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
Terbuthylazine <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
Terbutryn <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon



# Client Project Name: Roade Bypass

Lab Sample ID	17/06450/9	17/06450/10	17/06450/11	17/06450/12	17/06450/13	17/06450/15	17/06450/16	17/06450/17		
Client Sample No										
Client Sample ID	TP15	TP16	TP16A	TP16A	TP17	WS02	WS04	WS05		
Depth to Top	1.50	0.10	0.20	0.50	0.20	0.20	0.30	0.20		
Depth To Bottom										
Date Sampled	07-Sep-17	07-Sep-17	08-Sep-17	08-Sep-17	07-Sep-17	06-Sep-17	30-Aug-17	30-Aug-17		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		od ref
Sample Matrix Code	5A	4AE	4AE	5AE	5AE	5AE	5A	5AE	Units	Metho
Pest-c										
Mevinphos <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
Dichlorvos <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
alpha-Hexachlorocyclohexane (HCH) <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
Diazinon <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
gamma-Hexachlorocyclohexane (HCH / Lindane) <sub>a</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
Heptachlor <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
Aldrin <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
beta-Hexachlorocyclohexane (HCH) <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
Methyl Parathion <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
Malathion <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
Fenitrothion <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
Heptachlor Epoxide <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
Parathion (Ethyl Parathion) <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
p,p-DDE <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
p,p-DDT <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
p,p-Methoxychlor <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
p,p-TDE (DDD) <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
o,p-DDE <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
o,p-DDT <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
o,p-Methoxychlor <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
o,p-TDE (DDD) <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
Endosulphan I <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
Endosulphan II <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
Endosulphan Sulphate <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
Endrin <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
Ethion <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
Dieldrin <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon
Azinphos-methyl <sub>A</sub>	-	-	<50	-	<50	-	-	-	µg/kg	Subcon



# Client Project Name: Roade Bypass

Lab Sample ID	17/06450/9	17/06450/10	17/06450/11	17/06450/12	17/06450/13	17/06450/15	17/06450/16	17/06450/17		
Client Sample No										
Client Sample ID	TP15	TP16	TP16A	TP16A	TP17	WS02	WS04	WS05		
Depth to Top	1.50	0.10	0.20	0.50	0.20	0.20	0.30	0.20		
Depth To Bottom										
Date Sampled	07-Sep-17	07-Sep-17	08-Sep-17	08-Sep-17	07-Sep-17	06-Sep-17	30-Aug-17	30-Aug-17		if
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		od re
Sample Matrix Code	5A	4AE	4AE	5AE	5AE	5AE	5A	5AE	Units	Meth
PAH 16										
Acenaphthene <sub>A</sub> <sup>M#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-019s
Acenaphthylene <sub>A</sub> <sup>M#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-019s
Anthracene <sub>A</sub> <sup>M#</sup>	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	A-T-019s
Benzo(a)anthracene <sub>A</sub> <sup>M#</sup>	<0.04	<0.04	0.16	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	A-T-019s
Benzo(a)pyrene <sub>A</sub> <sup>M#</sup>	<0.04	<0.04	0.28	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	A-T-019s
Benzo(b)fluoranthene <sub>A</sub> <sup>M#</sup>	<0.05	<0.05	0.32	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	A-T-019s
Benzo(ghi)perylene <sub>A</sub> <sup>M#</sup>	<0.05	<0.05	0.29	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	A-T-019s
Benzo(k)fluoranthene <sub>A</sub> <sup>M#</sup>	<0.07	<0.07	0.12	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	A-T-019s
Chrysene <sub>A</sub> <sup>M#</sup>	<0.06	<0.06	0.19	<0.06	<0.06	<0.06	<0.06	<0.06	mg/kg	A-T-019s
Dibenzo(ah)anthracene <sub>A</sub> <sup>M#</sup>	<0.04	<0.04	0.05	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	A-T-019s
Fluoranthene <sub>A</sub> <sup>M#</sup>	<0.08	<0.08	0.17	<0.08	<0.08	<0.08	<0.08	<0.08	mg/kg	A-T-019s
Fluorene <sub>A</sub> <sup>M#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-019s
Indeno(123-cd)pyrene <sub>A</sub> <sup>M#</sup>	<0.03	<0.03	0.25	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	A-T-019s
Naphthalene <sub>A</sub> <sup>M#</sup>	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	A-T-019s
Phenanthrene <sub>A</sub> <sup>M#</sup>	<0.03	<0.03	0.04	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	A-T-019s
Pyrene <sub>A</sub> <sup>M#</sup>	<0.07	<0.07	0.18	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	A-T-019s
PAH (total 16) <sub>A</sub> <sup>M#</sup>	<0.08	<0.08	2.07	<0.08	<0.08	<0.08	<0.08	<0.08	mg/kg	A-T-019s



# Client Project Name: Roade Bypass

Lab Sample ID	17/06450/9	17/06450/10	17/06450/11	17/06450/12	17/06450/13	17/06450/15	17/06450/16	17/06450/17		
Client Sample No										
Client Sample ID	TP15	TP16	TP16A	TP16A	TP17	WS02	WS04	WS05		
Depth to Top	1.50	0.10	0.20	0.50	0.20	0.20	0.30	0.20		
Depth To Bottom										
Date Sampled	07-Sep-17	07-Sep-17	08-Sep-17	08-Sep-17	07-Sep-17	06-Sep-17	30-Aug-17	30-Aug-17		
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		od re
Sample Matrix Code	5A	4AE	4AE	5AE	5AE	5AE	5A	5AE	Units	Metho
TPH CWG										
Ali >C5-C6 <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
Ali >C6-C8 <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
Ali >C8-C10 <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
Ali >C10-C12 <sub>A</sub> #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-023s
Ali >C12-C16 <sub>A</sub> #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-023s
Ali >C16-C21 <sub>A</sub> <sup>#</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-023s
Ali >C21-C35 <sub>A</sub> <sup>#</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-023s
Total Aliphatics <sub>A</sub>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-023s
Aro >C5-C7_ <sup>#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
Aro >C7-C8 <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
Aro >C8-C9 <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
Aro >C9-C10 <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
Aro >C10-C12 <sub>A</sub> <sup>#</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-023s
Aro >C12-C16 <sub>A</sub> <sup>#</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-023s
Aro >C16-C21 <sub>A</sub> <sup>#</sup>	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-023s
Aro >C21-C35 <sub>A</sub> <sup>#</sup>	<0.1	<0.1	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-023s
Total Aromatics <sub>A</sub>	<0.1	<0.1	0.8	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-023s
TPH (Ali & Aro) <sub>A</sub>	<0.1	<0.1	0.8	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	A-T-023s
BTEX - Benzene <sub>4</sub> #	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
BTEX - Toluene <sub>A</sub> #	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
BTEX - Ethyl Benzene <sup>#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
BTEX - m & p Xylene <sub>A</sub> #	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
BTEX - o Xylene <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
MTBE <sub>A</sub> #	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s



# Client Project Name: Roade Bypass

Lab Sample ID	17/06450/18	17/06450/19	17/06450/21	17/06450/23				
Client Sample No								
Client Sample ID	WS06	WS06	WS08	WS10			-	
Depth to Top	0.10	1.50	0.40	0.40				
Depth To Bottom								
Date Sampled	05-Sep-17	05-Sep-17	05-Sep-17	06-Sep-17				đ
Sample Type	Soil	Soil	Soil	Soil				od re
Sample Matrix Code	5AE	3E	5AE	5A			Units	Meth
% Stones >10mm <sub>A</sub>	10.7	<0.1	<0.1	<0.1			% w/w	A-T-044
pH <sub>D</sub> <sup>M#</sup>	7.66	7.75	8.02	7.97			pН	A-T-031s
Phenols - Total by HPLC <sub>A</sub>	0.2	<0.2	<0.2	<0.2			mg/kg	A-T-050s
Total Organic Carbon <sub>D</sub> <sup>M#</sup>	1.29	2.03	0.65	0.44			% w/w	A-T-032s
Arsenic <sub>D</sub> <sup>M#</sup>	4	<1	6	6			mg/kg	A-T-024s
Cadmium <sub>D</sub> <sup>M#</sup>	0.8	<0.5	1.1	0.9			mg/kg	A-T-024s
Copper <sub>D</sub> <sup>M#</sup>	13	21	13	16			mg/kg	A-T-024s
Chromium <sub>D</sub> <sup>M#</sup>	22	29	22	28			mg/kg	A-T-024s
Chromium (hexavalent) <sub>D</sub>	<1	<1	<1	<1			mg/kg	A-T-040s
Lead <sub>D</sub> <sup>M#</sup>	17	16	14	13			mg/kg	A-T-024s
Mercury <sub>D</sub>	<0.17	<0.17	<0.17	<0.17			mg/kg	A-T-024s
Nickel <sub>D</sub> <sup>M#</sup>	19	3	23	30			mg/kg	A-T-024s
Selenium <sub>D</sub> <sup>M#</sup>	<1	<1	<1	<1			mg/kg	A-T-024s
Zinc <sub>D</sub> <sup>M#</sup>	55	9	65	50			mg/kg	A-T-024s



# Client Project Name: Roade Bypass

Lab Sample ID	17/06450/18	17/06450/19	17/06450/21	17/06450/23				
Client Sample No								
Client Sample ID	WS06	WS06	WS08	WS10				
Depth to Top	0.10	1.50	0.40	0.40				
Depth To Bottom								
Date Sampled	05-Sep-17	05-Sep-17	05-Sep-17	06-Sep-17				ł
Sample Type	Soil	Soil	Soil	Soil				od re
Sample Matrix Code	5AE	3E	5AE	5A			Units	Meth
Asbestos in Soil (inc. matrix)								
Asbestos in soil <sub>A</sub> <sup>#</sup>	NAD	NAD	NAD	NAD				A-T-045
Asbestos ACM - Suitable for Water Absorption Test?	N/A	N/A	N/A	N/A				



# Client Project Name: Roade Bypass

Lab Sample ID	17/06450/18	17/06450/19	17/06450/21	17/06450/23				
Client Sample No								
Client Sample ID	WS06	WS06	WS08	WS10				
Depth to Top	0.10	1.50	0.40	0.40				
Depth To Bottom								
Date Sampled	05-Sep-17	05-Sep-17	05-Sep-17	06-Sep-17				ų.
Sample Type	Soil	Soil	Soil	Soil				od re
Sample Matrix Code	5AE	3E	5AE	5A			Units	Meth
PAH 16								
Acenaphthene <sub>A</sub> <sup>M#</sup>	<0.01	<0.01	<0.01	<0.01			mg/kg	A-T-019s
Acenaphthylene <sub>A</sub> <sup>M#</sup>	<0.01	<0.01	<0.01	<0.01			mg/kg	A-T-019s
Anthracene <sub>A</sub> <sup>M#</sup>	<0.02	<0.02	<0.02	<0.02			mg/kg	A-T-019s
Benzo(a)anthracene <sub>A</sub> <sup>M#</sup>	0.06	<0.04	<0.04	<0.04			mg/kg	A-T-019s
Benzo(a)pyrene <sub>A</sub> <sup>M#</sup>	0.07	<0.04	<0.04	<0.04			mg/kg	A-T-019s
Benzo(b)fluoranthene <sub>A</sub> <sup>M#</sup>	0.07	<0.05	<0.05	<0.05			mg/kg	A-T-019s
Benzo(ghi)perylene <sub>A</sub> <sup>M#</sup>	<0.05	0.08	<0.05	<0.05			mg/kg	A-T-019s
Benzo(k)fluoranthene <sub>A</sub> <sup>M#</sup>	<0.07	<0.07	<0.07	<0.07			mg/kg	A-T-019s
Chrysene <sub>A</sub> <sup>M#</sup>	<0.06	<0.06	<0.06	<0.06			mg/kg	A-T-019s
Dibenzo(ah)anthracene <sub>A</sub> <sup>M#</sup>	<0.04	<0.04	<0.04	<0.04			mg/kg	A-T-019s
Fluoranthene <sup>A<sup>M#</sup></sup>	0.09	<0.08	<0.08	<0.08			mg/kg	A-T-019s
Fluorene <sub>A</sub> <sup>M#</sup>	<0.01	<0.01	<0.01	<0.01			mg/kg	A-T-019s
Indeno(123-cd)pyrene <sub>A</sub> <sup>M#</sup>	0.05	0.06	<0.03	<0.03			mg/kg	A-T-019s
Naphthalene <sub>A</sub> <sup>M#</sup>	<0.03	<0.03	<0.03	<0.03			mg/kg	A-T-019s
Phenanthrene <sub>A</sub> <sup>M#</sup>	0.04	<0.03	<0.03	<0.03			mg/kg	A-T-019s
Pyrene <sub>A</sub> <sup>M#</sup>	<0.07	<0.07	<0.07	<0.07			mg/kg	A-T-019s
PAH (total 16) <sub>A</sub> <sup>M#</sup>	0.41	0.13	<0.08	<0.08			mg/kg	A-T-019s



Client Project Name: Roade Bypass

Lab Sample ID	17/06450/18	17/06450/19	17/06450/21	17/06450/23				
Client Sample No								
Client Sample ID	WS06	WS06	WS08	WS10				
Depth to Top	0.10	1.50	0.40	0.40				
Depth To Bottom								
Date Sampled	05-Sep-17	05-Sep-17	05-Sep-17	06-Sep-17				f
Sample Type	Soil	Soil	Soil	Soil				od re
Sample Matrix Code	5AE	3E	5AE	5A			Units	Meth
трн сwg								
Ali >C5-C6 <sub>A</sub> #	<0.01	<0.01	<0.01	<0.01			mg/kg	A-T-022s
Ali >C6-C8 <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01			mg/kg	A-T-022s
Ali >C8-C10 <sub>4</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01			mg/kg	A-T-022s
Ali >C10-C12 <sub>A</sub> <sup>#</sup>	<0.1	<0.1	<0.1	<0.1			mg/kg	A-T-023s
Ali >C12-C16 <sub>A</sub> <sup>#</sup>	<0.1	<0.1	<0.1	<0.1			mg/kg	A-T-023s
Ali >C16-C21 <sub>A</sub> <sup>#</sup>	<0.1	<0.1	<0.1	<0.1			mg/kg	A-T-023s
Ali >C21-C35 <sub>A</sub> <sup>#</sup>	<0.1	<0.1	<0.1	<0.1			mg/kg	A-T-023s
Total Aliphatics <sub>A</sub>	<0.1	<0.1	<0.1	<0.1			mg/kg	A-T-023s
Aro >C5-C7 <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01			mg/kg	A-T-022s
Aro >C7-C8 <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01			mg/kg	A-T-022s
Aro >C8-C9 <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01			mg/kg	A-T-022s
Aro >C9-C10 <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01			mg/kg	A-T-022s
Aro >C10-C12 <sub>A</sub> <sup>#</sup>	<0.1	<0.1	<0.1	<0.1			mg/kg	A-T-023s
Aro >C12-C16 <sub>A</sub> <sup>#</sup>	<0.1	<0.1	<0.1	<0.1			mg/kg	A-T-023s
Aro >C16-C21 <sub>A</sub> <sup>#</sup>	<0.1	<0.1	<0.1	<0.1			mg/kg	A-T-023s
Aro >C21-C35 <sub>A</sub> #	<0.1	<0.1	<0.1	<0.1			mg/kg	A-T-023s
Total Aromatics <sub>A</sub>	<0.1	<0.1	<0.1	<0.1			mg/kg	A-T-023s
TPH (Ali & Aro) <sub>A</sub>	<0.1	<0.1	<0.1	<0.1			mg/kg	A-T-023s
BTEX - Benzene <sub>A</sub> #	<0.01	<0.01	<0.01	<0.01			mg/kg	A-T-022s
BTEX - Toluene <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01			mg/kg	A-T-022s
BTEX - Ethyl Benzene <sub>A</sub> #	<0.01	<0.01	<0.01	<0.01			mg/kg	A-T-022s
BTEX - m & p Xylene <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01			mg/kg	A-T-022s
BTEX - o Xylene <sub>A</sub> #	<0.01	<0.01	<0.01	<0.01			mg/kg	A-T-022s
MTBE <sub>A</sub> #	<0.01	<0.01	<0.01	<0.01			mg/kg	A-T-022s



#### **REPORT NOTES**

#### General:

This report shall not be reproduced, except in full, without written approval from Envirolab.

All samples contained within this report, and any received with the same delivery, will be disposed of one month after the date of this report.

Analytical results reflect the quality of the sample at the time of analysis only.

Opinions and interpretations expressed are outside the scope of our accreditation.

If results are in italic font they are associated with an AQC failure and there is insufficient sample to repeat the analysis. These are not accredited and are unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

#### Soil chemical analysis:

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

#### TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

#### Electrical Conductivity of water by Method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

#### Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.

Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

#### Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample. Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

#### Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,

E = contains roots/twigs.

#### Key:

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Superscript "M" indicates method accredited to MCERTS.

Subscript "A" indicates analysis performed on the sample as received.

Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.



# APPENDIX J CHEMICAL LABORATORY CERTIFICATES FOR GROUNDWATER ANALYSIS



# FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: Issue Number: 17/06888 1

Date: 23 October, 2017

**Client:** 

RSK Environment Ltd Coventry Humber Road, Abbey Park Coventry UK CV3 4AQ

Project Manager: Project Name: Project Ref: Order No: Date Samples Received: Date Instructions Received: Date Analysis Completed: Darren Bench/Michael Lawson Roade Bypass 313583 N/A 09/10/17 11/10/17 22/10/17

Prepared by:

Manshall

Melanie Marshall Laboratory Coordinator Approved by:

lock

lain Haslock Analytical Consultant



Page 1 of 9



# Client Project Name: Roade Bypass

Lab Sample ID	17/06888/1	17/06888/2	17/06888/3	17/06888/4	17/06888/5	17/06888/6			
Client Sample No									
Client Sample ID	BH01	BH02	BH04	BH05	WS02	WS10			
Depth to Top	17.17	20.15	9.92	7.00	2.80	3.25			
Depth To Bottom									
Date Sampled	05-Oct-17	05-Oct-17	05-Oct-17	05-Oct-17	05-Oct-17	05-Oct-17			÷
Sample Type	Water - EW			od re					
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A		Units	Meth
рН (w) <sub>А</sub> <sup>#</sup>	6.76	6.89	6.94	7.01	6.86	7.16		рН	A-T-031w
Electrical conductivity @ 20degC (w) <sub>A</sub> #	1347	839	787	1090	1785	2560		µs/cm	A-T-037w
Alkalinity (total) (w) Colorimetry <sub>4</sub> <sup>#</sup>	307	296	281	340	291	301		mg/I Ca CO3	A-T-038w
Hardness Total₄ <sup>#</sup>	758	434	452	502	1110	1840		mg/I Ca CO3	A-T-049w
Ammoniacal nitrogen (w) <sub>A</sub> <sup>#</sup>	0.56	0.49	0.09	0.32	0.05	0.07		mg/l	A-T-033w
Nitrate (w) <sub>A</sub> <sup>#</sup>	<0.10	0.12	2.90	<0.10	2.46	0.15		mg/l	A-T-026w
Sulphate (w) <sub>A</sub> <sup>#</sup>	471	158	198	259	788	1520		mg/l	A-T-026w
DOC (w) <sub>A</sub> <sup>#</sup>	3.7	3.8	4.4	2.9	2.7	2.4		mg/l	A-T-032w
Arsenic (dissolved) <sub>A</sub> <sup>#</sup>	<1	<1	<1	1	<1	<1		µg/l	A-T-025w
Boron (dissolved) <sub>A</sub> <sup>#</sup>	1400	2220	277	329	67	109		µg/l	A-T-025w
Cadmium (dissolved) <sub>A</sub> #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		µg/l	A-T-025w
Calcium (dissolved) <sub>A</sub> #	240	134	164	166	379	564		mg/l	A-T-049w
Copper (dissolved) <sub>A</sub> <sup>#</sup>	<1	1	1	<1	1	2		µg/l	A-T-025w
Chromium (dissolved) <sub>A</sub> <sup>#</sup>	1	3	10	<1	7	8		µg/l	A-T-025w
Chromium (hexavalent) (w) <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05		mg/l	A-T-040w
Iron (dissolved) <sub>A</sub> <sup>#</sup>	137	18	19	<10	<10	29		µg/l	A-T-025w
Ferrous iron Fell (w) <sub>A</sub>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		mg/l	Test kit
Ferric iron Felll (w)	0.1	<0.1	<0.1	<0.1	<0.1	<0.1		mg/l	Calc
Lead (dissolved) <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	<1	<1		µg/l	A-T-025w
Magnesium (dissolved) <sub>A</sub> #	39	24	11	21	40	104		mg/l	A-T-049w
Mercury (dissolved) <sub>A</sub> #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		µg/l	A-T-025w
Nickel (dissolved) <sub>A</sub> <sup>#</sup>	8	3	8	2	29	24		µg/l	A-T-025w
Selenium (dissolved) <sub>A</sub> <sup>#</sup>	1	2	5	<1	24	3		µg/l	A-T-025w
Zinc (dissolved) <sub>A</sub> #	31	21	27	<1	40	139		µg/l	A-T-025w



# Client Project Name: Roade Bypass

Lab Sample ID	17/06888/1	17/06888/2	17/06888/3	17/06888/4	17/06888/5	17/06888/6			
Client Sample No									
Client Sample ID	BH01	BH02	BH04	BH05	WS02	WS10			
Depth to Top	17.17	20.15	9.92	7.00	2.80	3.25			
Depth To Bottom									
Date Sampled	05-Oct-17	05-Oct-17	05-Oct-17	05-Oct-17	05-Oct-17	05-Oct-17			÷
Sample Type	Water - EW			od re					
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A		Units	Meth
PAH 16MS (w)									
Acenaphthene (w) <sub>A</sub> #	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		µg/l	A-T-019w
Acenaphthylene (w) <sub>A</sub> #	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		µg/l	A-T-019w
Anthracene (w) <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		µg/l	A-T-019w
Benzo(a)anthracene (w) <sub>A</sub> #	<0.01	<0.01	<0.01	<0.01	<0.01	0.03		µg/l	A-T-019w
Benzo(a)pyrene (w) <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	0.05		µg/l	A-T-019w
Benzo(b)fluoranthene (w) <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	0.04		µg/l	A-T-019w
Benzo(ghi)perylene (w) <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	0.02		µg/l	A-T-019w
Benzo(k)fluoranthene (w) <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	0.02		µg/l	A-T-019w
Chrysene (w) <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	0.03		µg/l	A-T-019w
Dibenzo(ah)anthracene (w) <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		µg/l	A-T-019w
Fluoranthene (w) <sub>A</sub> <sup>#</sup>	<0.01	<0.01	0.02	<0.01	<0.01	0.05		µg/l	A-T-019w
Fluorene (w) <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		µg/l	A-T-019w
Indeno(123-cd)pyrene (w) <sub>A</sub> <sup>#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	0.03		µg/l	A-T-019w
Naphthalene (w) <sub>A</sub> #	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		µg/l	A-T-019w
Phenanthrene (w) <sub>A</sub> <sup>#</sup>	<0.01	<0.01	0.02	<0.01	<0.01	0.02		µg/l	A-T-019w
Pyrene (w) <sub>A</sub> <sup>#</sup>	<0.01	<0.01	0.02	<0.01	<0.01	0.04		µg/l	A-T-019w
PAH (total 16) (w) <sub>A</sub> <sup>#</sup>	<0.01	<0.01	0.06	<0.01	<0.01	0.33		µg/l	A-T-019w
Phenols (speciated HPLC) (w)									
Phenol (w) <sub>A</sub>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/l	A-T-050w
Cresols (w) <sub>A</sub>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/l	A-T-050w
Xylenols (w) <sub>A</sub>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	 	mg/l	A-T-050w
Resorcinol (w) <sub>A</sub>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/l	A-T-050w
Phenols - Total by HPLC (w) <sub>A</sub>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/l	A-T-050w



# Client Project Name: Roade Bypass

Lab Sample ID	17/06888/1	17/06888/2	17/06888/3	17/06888/4	17/06888/5	17/06888/6		
Client Sample No								
Client Sample ID	BH01	BH02	BH04	BH05	WS02	WS10		
Depth to Top	17.17	20.15	9.92	7.00	2.80	3.25		
Depth To Bottom								
Date Sampled	05-Oct-17	05-Oct-17	05-Oct-17	05-Oct-17	05-Oct-17	05-Oct-17		
Sample Type	Water - EW		od ref					
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A	Jnits	<b>dethc</b>
SVOC (excluding PAH-16) (w)								
2,4,5-Trichlorophenol <sub>A</sub>	<2	<2	<1	<1	-	-	µg/l	A-T-052w
2,4,6-Trichlorophenol <sub>A</sub>	<2	<2	<1	<1	-	-	µg/l	A-T-052w
2,4-Dichlorophenol <sub>A</sub>	<2	<2	<1	<1	-	-	μg/l	A-T-052w
2,4-Dimethylphenol <sub>A</sub>	<2	<2	<1	<1	-	-	μg/l	A-T-052w
2,4-Dinitrotoluene <sub>A</sub>	<2	<2	<1	<1	-	-	μg/l	A-T-052w
2,6-Dinitrotoluene <sub>A</sub>	<2	<2	<1	<1	-	-	µg/l	A-T-052w
2-Chloronaphthalene <sub>A</sub>	<2	<2	<1	<1	-	-	µg/l	A-T-052w
2-Chlorophenol <sub>A</sub>	<2	<2	<1	<1	-	-	µg/l	A-T-052w
2-Methylnaphthalene <sub>A</sub>	<2	<2	<1	<1	-	-	µg/l	A-T-052w
2-Methylphenol <sub>A</sub>	<2	<2	<1	<1	-	-	µg/l	A-T-052w
2-Nitrophenol <sub>A</sub>	<2	<2	<1	<1	-	-	µg/l	A-T-052w
4-Bromophenyl phenyl ether <sub>A</sub>	<2	<2	<1	<1	-	-	µg/l	A-T-052w
4-Chloro-3-methylphenol <sub>A</sub>	<2	<2	<1	<1	-	-	µg/l	A-T-052w
Bis(2-chloroisopropyl)ether <sub>A</sub>	<2	<2	<1	<1	-	-	µg/l	A-T-052w
4-Methylphenol <sub>A</sub>	<2	<2	<1	<1	-	-	µg/l	A-T-052w
4-Nitrophenol <sub>A</sub>	<2	<2	<1	<1	-	-	µg/l	A-T-052w
Bis(2-chloroethyl)ether <sub>A</sub>	<2	<2	<1	<1	-	-	µg/l	A-T-052w
Bis(2-chloroethoxy)methane <sub>A</sub>	<2	<2	<1	<1	-	-	µg/l	A-T-052w
Bis(2-ethylhexyl)phthalate <sub>A</sub>	<20	<20	<10	<10	-	-	µg/l	A-T-052w
Butylbenzyl phthalate <sub>A</sub>	<2	<2	<1	<1	-	-	µg/l	A-T-052w
Carbazole <sub>A</sub>	<2	<2	<1	<1	-	-	µg/l	A-T-052w
Dibenzofuran <sub>a</sub>	<2	<2	<1	<1	-	-	µg/l	A-T-052w
n-Dibutylphthalate <sub>A</sub>	<2	<2	<1	<1	-	-	µg/l	A-T-052w
n-Dioctylphthalate <sub>A</sub>	<20	<20	<10	<10	-	-	µg/l	A-T-052w
n-Nitroso-n-dipropylamine <sub>A</sub>	<2	<2	<1	<1	-	-	µg/l	A-T-052w
Diethyl phthalate <sub>A</sub>	<2	<2	<1	<1	-	-	µg/l	A-T-052w
Dimethyl phthalate <sub>A</sub>	<2	<2	<1	<1	-	-	µg/l	A-T-052w
Hexachlorobenzene <sub>A</sub>	<2	<2	<1	<1	-	-	µg/l	A-T-052w
Pentachlorophenol <sub>A</sub>	<2	<2	<1	<1	-	-	µg/l	A-T-052w
Phenol <sub>A</sub>	<2	<2	<1	<1	-	-	µg/l	A-T-052w
Hexachloroethane <sub>A</sub>	<2	<2	<1	<1	-	-	µg/l	A-T-052w
Nitrobenzene <sub>A</sub>	<2	<2	<1	<1	-	-	µg/l	A-T-052w



## Client Project Name: Roade Bypass

Lab Sample ID	17/06888/1	17/06888/2	17/06888/3	17/06888/4	17/06888/5	17/06888/6			
Client Sample No									
Client Sample ID	BH01	BH02	BH04	BH05	WS02	WS10			
Depth to Top	17.17	20.15	9.92	7.00	2.80	3.25			
Depth To Bottom									
Date Sampled	05-Oct-17	05-Oct-17	05-Oct-17	05-Oct-17	05-Oct-17	05-Oct-17			يو
Sample Type	Water - EW			od re					
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A		Units	Meth
Isophorone <sub>A</sub>	<2	<2	<1	<1	-	-		µg/l	A-T-052w
Hexachlorocyclopentadiene <sub>A</sub>	<2	<2	<1	<1	-	-		µg/l	A-T-052w
Perylene <sub>A</sub>	<2	<2	<1	<1	-	-		µg/l	A-T-052w



# Client Project Name: Roade Bypass

Lab Sample ID	17/06888/1	17/06888/2	17/06888/3	17/06888/4	17/06888/5	17/06888/6			
Client Sample No									
Client Sample ID	BH01	BH02	BH04	BH05	WS02	WS10			
Depth to Top	17.17	20.15	9.92	7.00	2.80	3.25			
Depth To Bottom									
Date Sampled	05-Oct-17	05-Oct-17	05-Oct-17	05-Oct-17	05-Oct-17	05-Oct-17			
Sample Type	Water - EW			d ref					
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A		Jnits	Metho
VOC (w)									
Dichlorodifluoromethane <sub>A</sub> #	<1	<1	<1	<1	-	-		μg/l	A-T-006w
Chloromethane <sub>A</sub>	<10	<10	<10	<10	-	-		μg/l	A-T-006w
Vinyl Chloride <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	-	-		μg/l	A-T-006w
Bromomethane <sub>A</sub> #	<1	<1	<1	<1	-	-		μg/l	A-T-006w
Chloroethane <sub>4</sub> #	<1	<1	<1	<1	-	-		µg/l	A-T-006w
Trichlorofluoromethane <sub>A</sub> #	<1	<1	<1	<1	-	-		µg/l	A-T-006w
trans 1,2-Dichloroethene <sub>A</sub> #	<1	<1	<1	<1	-	-		µg/l	A-T-006w
Dichloromethane <sub>A</sub>	<5	<5	<5	<5	-	-		µg/l	A-T-006w
Carbon Disulphide <sub>A</sub> #	<1	<1	<1	<1	-	-		µg/l	A-T-006w
1,1-Dichloroethene <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	-	-		µg/l	A-T-006w
1,1-Dichloroethane <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	-	-		µg/l	A-T-006w
cis 1,2-Dichloroethene <sub>A</sub> #	<1	<1	<1	<1	-	-		µg/l	A-T-006w
Bromochloromethane <sub>A</sub> #	<5	<5	<5	<5	-	-		µg/l	A-T-006w
Chloroform <sub>A</sub>	<1	<1	<1	<1	-	-		µg/l	A-T-006w
2,2-Dichloropropane <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	-	-		µg/l	A-T-006w
1,2-Dichloroethane <sub>A</sub> <sup>#</sup>	<2	<2	<2	<2	-	-		µg/l	A-T-006w
1,1,1-Trichloroethane <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	-	-		µg/l	A-T-006w
1,1-Dichloropropene <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	-	-		µg/l	A-T-006w
Benzene <sub>4</sub> #	<1	<1	<1	<1	-	-		µg/l	A-T-006w
Carbon Tetrachloride <sub>A</sub> #	<1	<1	<1	<1	-	-		µg/l	A-T-006w
Dibromomethane <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	-	-		µg/l	A-T-006w
1,2-Dichloropropane <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	-	-		µg/l	A-T-006w
Bromodichloromethane <sub>A</sub> #	<10	<10	<10	<10	-	-		µg/l	A-T-006w
Trichloroethene <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	-	-		µg/l	A-T-006w
cis 1,3-Dichloropropene <sub>A</sub> #	<1	<1	<1	<1	-	-		µg/l	A-T-006w
trans 1,3-Dichloropropene <sub>A</sub> #	<1	<1	<1	<1	-	-		µg/l	A-T-006w
1,1,2-Trichloroethane <sub>A</sub> #	<1	<1	<1	<1	-	-		µg/l	A-T-006w
Toluene <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	-	-		µg/l	A-T-006w
1,3-Dichloropropane <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	-	-		µg/l	A-T-006w
Dibromochloromethane <sub>A</sub> #	<3	<3	<3	<3	-	-		µg/l	A-T-006w
1,2-Dibromoethane <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	-	-		µg/l	A-T-006w
Tetrachloroethene <sub>A</sub> #	<1	<1	<1	<1	-	-		µg/l	A-T-006w



**Client Project Name: Roade Bypass** 

Client	Project	Ref:	313583	

Lab Sample ID	17/06888/1	17/06888/2	17/06888/3	17/06888/4	17/06888/5	17/06888/6			
Client Sample No									
Client Sample ID	BH01	BH02	BH04	BH05	WS02	WS10			
Depth to Top	17.17	20.15	9.92	7.00	2.80	3.25			
Depth To Bottom									
Date Sampled	05-Oct-17	05-Oct-17	05-Oct-17	05-Oct-17	05-Oct-17	05-Oct-17			÷
Sample Type	Water - EW			od re					
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A		Units	Meth
1,1,1,2-Tetrachloroethane <sub>A</sub>	<1	<1	<1	<1	-	-		µg/l	A-T-006w
Chlorobenzene <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	-	-		µg/l	A-T-006w
Ethylbenzene <sub>A</sub> #	<1	<1	<1	<1	-	-		µg/l	A-T-006w
m & p Xylene <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	-	-		µg/l	A-T-006w
Bromoform <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	-	-		µg/l	A-T-006w
Styrene <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	-	-		µg/l	A-T-006w
1,1,2,2-Tetrachloroethane <sub>A</sub>	<1	<1	<1	<1	-	-		µg/l	A-T-006w
o-Xylene <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	-	-		µg/l	A-T-006w
1,2,3-Trichloropropane <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	-	-		µg/l	A-T-006w
lsopropylbenzene <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	-	-		µg/l	A-T-006w
Bromobenzene <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	-	-		µg/l	A-T-006w
2-Chlorotoluene <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	-	-		µg/l	A-T-006w
n-propylbenzene <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	-	-		µg/l	A-T-006w
4-Chlorotoluene <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	-	-		µg/l	A-T-006w
1,2,4-Trimethylbenzene <sub>A</sub> #	<1	<1	<1	<1	-	-		µg/l	A-T-006w
4-IsopropyItoluene <sub>A</sub> #	<1	<1	<1	<1	-	-		µg/l	A-T-006w
1,3,5-Trimethylbenzene <sub>A</sub> #	<1	<1	<1	<1	-	-		µg/l	A-T-006w
1,2-Dichlorobenzene <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	-	-		µg/l	A-T-006w
1,4-Dichlorobenzene <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	-	-		µg/l	A-T-006w
sec-Butylbenzene <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	-	-		µg/l	A-T-006w
tert-Butylbenzene <sup>#</sup>	<2	<2	<2	<2	-	-		µg/l	A-T-006w
1,3-Dichlorobenzene <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	-	-		µg/l	A-T-006w
n-butylbenzene <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	-	-		µg/l	A-T-006w
1,2-Dibromo-3-chloropropane <sub>A</sub> #	<2	<2	<2	<2	-	-		µg/l	A-T-006w
1,2,4-Trichlorobenzene <sub>A</sub> <sup>#</sup>	<3	<3	<3	<3	-	-		µg/l	A-T-006w
1,2,3-Trichlorobenzene <sub>A</sub> <sup>#</sup>	<3	<3	<3	<3	-	-		µg/l	A-T-006w
Hexachlorobutadiene <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	-	-		µg/l	A-T-006w



# Client Project Name: Roade Bypass

	17/00000//	17/20000/2	17/20000/0	17/2000011	17/20000/5	17/20000/0			
Lab Sample ID	17/06888/1	17/06888/2	17/06888/3	17/06888/4	17/06888/5	17/06888/6	 		
Client Sample No									
Client Sample ID	BH01	BH02	BH04	BH05	WS02	WS10			
Depth to Top	17.17	20.15	9.92	7.00	2.80	3.25			
Depth To Bottom									
Date Sampled	05-Oct-17	05-Oct-17	05-Oct-17	05-Oct-17	05-Oct-17	05-Oct-17			
Sample Type	Water - EW			od re					
Sample Matrix Code	N/A	N/A	N/A	N/A	N/A	N/A		Units	Meth
трн сwg									
Ali >C5-C6 (w) <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	<1	<1		μg/l	A-T-022w
Ali >C6-C8 (w) <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	<1	<1		µg/l	A-T-022w
Ali >C8-C10 (w) <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	<1	<1		µg/l	A-T-022w
Ali >C10-C12 (w) <sub>A</sub> <sup>#</sup>	<5	<5	<5	<5	<5	<5		µg/l	A-T-023w
Ali >C12-C16 (w) <sub>A</sub> <sup>#</sup>	<5	<5	<5	<5	<5	<5		µg/l	A-T-023w
Ali >C16-C21 (w) <sub>A</sub> <sup>#</sup>	<5	<5	<5	<5	<5	<5		µg/l	A-T-023w
Ali >C21-C35 (w) <sub>A</sub> <sup>#</sup>	<5	<5	<5	<5	<5	<5		µg/l	A-T-023w
Total Aliphatics (w) <sub>A</sub>	<5	<5	<5	<5	<5	<5		µg/l	A-T-022+23w
Aro >C5-C7 (w) <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	<1	<1		µg/l	A-T-022w
Aro >C7-C8 (w) <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	<1	<1		µg/l	A-T-022w
Aro >C8-C9 (w) <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	<1	<1		µg/l	A-T-022w
Aro >C9-C10 (w) <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	<1	<1		µg/l	A-T-022w
Aro >C10-C12 (w) <sub>A</sub> <sup>#</sup>	<5	<5	<5	<5	<5	<5		µg/l	A-T-023w
Aro >C12-C16 (w) <sub>A</sub> <sup>#</sup>	<5	<5	<5	<5	<5	<5		µg/l	A-T-023w
Aro >C16-C21 (w) <sub>A</sub> <sup>#</sup>	<5	<5	<5	<5	<5	<5		µg/l	A-T-023w
Aro >C21-C35 (w) <sub>A</sub> <sup>#</sup>	<5	<5	<5	<5	<5	<5		µg/l	A-T-023w
Total Aromatics (w) <sub>A</sub>	<5	<5	<5	<5	<5	<5		µg/l	A-T-022+23w
TPH (Ali & Aro) (w) <sub>A</sub>	<5	<5	<5	<5	<5	<5		µg/l	A-T-022+23w
BTEX - Benzene (w) <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	<1	<1		µg/l	A-T-022w
BTEX - Toluene (w) <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	<1	<1		µg/l	A-T-022w
BTEX - Ethyl Benzene (w) <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	<1	<1	 	µg/l	A-T-022w
BTEX - m & p Xylene (w) <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	<1	<1	 	µg/l	A-T-022w
BTEX - o Xylene (w) <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	<1	<1	 	µg/l	A-T-022w
MTBE (w) <sub>A</sub> <sup>#</sup>	<1	<1	<1	<1	<1	<1	 	µg/l	A-T-022w



#### REPORT NOTES

#### General:

This report shall not be reproduced, except in full, without written approval from Envirolab.

All samples contained within this report, and any received with the same delivery, will be disposed of one month after the date of this report.

Analytical results reflect the quality of the sample at the time of analysis only.

Opinions and interpretations expressed are outside the scope of our accreditation.

If results are in italic font they are associated with an AQC failure and there is insufficient sample to repeat the analysis. These are not accredited and are unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

#### Soil chemical analysis:

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

#### TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

#### Electrical Conductivity of water by Method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

#### Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.

Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliguot used.

#### Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample. Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

#### Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,

E = contains roots/twigs.

#### Key:

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Superscript "M" indicates method accredited to MCERTS.

Subscript "A" indicates analysis performed on the sample as received.

Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.


# APPENDIX K GEOTECHNICAL LABORATORY CERTIFICATES

# TESTING VERIFICATION CERTIFICATE



The test results included in this report are certified as:-

ISSUE STATUS: FINAL

In accordance with the Structural Soils Ltd Laboratory Quality Management System, results sheets and summaries of results issued by the laboratory are checked by an approved signatory. The integrity of the test data and results are ensured by control of the computer system employed by the laboratory as part of the Software Verification Program as detailed in the Laboratory Quality Manual.

This testing verification certificate covers all testing compiled on or before the following datetime: **02/11/2017 15:24:39**.

Testing reported after this date is not covered by this Verification Certificate.

Approved Signatory Mark Athorne (Laboratory Manager)

(Head Office) Bristol Laboratory Unit 1A, Princess Street Bedminster Bristol BS3 4AG

Castleford Laboratory The Potteries, Pottery Street Castleford West Yorkshire WF10 1NJ

Hemel Laboratory 18 Frogmore Road Hemel Hempstead Hertfordshire HP3 9RT Tonbridge Laboratory Anerley Court, Half Moon Lane Hildenborough Tonbridge TN11 9HU

A		Contract:	Job No:
	STRUCTURAL SOILS LTD	M1 Junction 15 Roade Bypass	782814
V			



#### STRUCTURAL SOILS LTD

#### **TEST REPORT**



Report No.	782814 R1	1774
Date	02-November-2017 Contract M1 Junction 15 Roade Bypass	
Client Address	RSK Environment Ltd Spring Lodge 172 Chester Road Helsby Cheshire WA6 0AR	
For the Atte	ntion of Michael Lawson	
Samples sub Testing Start Testing Com	mitted by client 29/09/2017 Client Reference 313583 red 02/10/2017 Client Order No. pleted 02/11/2017 Instruction Type Written	
Ukas Accred	ited Tests Underatken	
Non Ukas Ac	Moisture Content (oven drying method) BS1377:Part 2:1990,clause 3.2 (superseded)** Liquid Limit (one point method) BS1377:Part 2:1990,clause 4.4 Plastic Limit BS1377:Part 2:1990,clause 5.3 Plasticity Index Derivation BS1377:Part 2:1990,clause 5.4 Particle Size Distribution wet sieve method BS1377:Part 2:1990,clause 9.2 Dry density/moisture content relationship 4.5kg rammer method BS1377:Part 4:1990 clause 3.5/3.6	
	Particle Size Distribution sedimentation hydrometer method BS1377:Part 2: 1990,clause 9.5	
Tests Undert	taken at our Bristol Laboratory	
	Summary of Water Content Tests ISRM 2007 Point Load ISRM 2007 Unconfined Compressive Strength (in house method based on ISRM 2007) Permeability (triaxial cell method) BS1377:Part 6:1990,clause 6 Sulphate content (acid extract) BS1377:Part 3:1990,clause 5.2 Sulphate content (water extract) BS1377:Part 3:1990,clause 5.3 pH Value BS1377:Part 3:1990,clause 9.5	
* This clause Please Note: F Test were und	e of BS1377 is no longer the most up to date method due to the publication of ISO17892 Remaining samples will be retained for a period of one month from today and will then be disposed o lertaken on samples 'as received' unless otherwise stated.	f.
Opinions and	interpretations expressed in this report are outside the scope of accreditation for this laboratory.	

Structural Soils Ltd, The Potteries, Pottery Street, Castleford, WF10 1NJ Tel.01977 552255. E-mail mark.athorne@soils.co.uk

#### SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with clauses 3.2,4.3,4.4,5.3,5.4,7.2,8.2,8.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample					
TP12	1	В	1.00	10					Light brown very sandy slightly gravelly CLAY					
TP14	1	В	0.50	23					Brown slightly sandy slightly gravelly CLAY					
TP16	1	В	0.60	11	44	19	25	67	Brown slightly sandy slightly gravelly CLAY					
TP17	1	в	0.50	17	33	18	15	66	Light brown slightly sandy gravelly CLAY					
	•		0.00											
TP20	1	D	0.50	14	42	16	26	72	Brown slightly sandy slightly gravelly CLAY					
WS01	1	В	0.90	16	53	20	33	89	Dark brown slightly sandy slightly gravelly CLAY					
WS03	1	В	0.20	16					Light brown sandy slightly gravelly CLAY					
WS05	1	В	0.80	27	65	30	35	91	Grey sandy gravelly CLAY					
	STF		URAL	Contra	act:			 M1 Ju	Contract Ref: Inction 15 Roade Bypass 782814					



GINT\_LIBRARY\_V8\_06.GLB LibVersion: v8\_06\_018 PrJVersion: v8\_06 - Core+Geotech Lab-Castleford - 008 | Graph L - ALINE STANDARD - A4P | 782814 - M1 JUNCTION 15 ROADE BYPASS.GPJ - v8\_06. Structural Solis Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552256, Fax: 01977-552299, Web: www.solis.co.uk, Email: ask@solis.co.uk, [02/11/17 - 14:39 | MF1 |





GINT\_LIBRARY\_V8\_06.GLB LibVersion: v8\_06\_018 PrjVersion: v8\_06 - Core+Geotech Lab-Castleford - 008 | Graph L - PSD - A4P | 782814 - M1 JUNCTION 15 ROADE BYPASS.GPJ - v8\_06. Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk, | 02/11/17 - 14:39 | MF1 |









GINT\_LIBRARY\_V8\_06.GLB LibVersion: v8\_06\_018 PrjVersion: v8\_06 - Core+Geotech Lab-Castleford - 008 | Graph L - PSD - A4P | 782814 - M1 JUNCTION 15 ROADE BYPASS.GPJ - v8\_06. Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk, | 02/11/17 - 14:39 | MF1 |



GINT\_LIBRARY\_V8\_06.GLB LibVersion: v8\_06\_018 PrjVersion: v8\_06 - Core+Geotech Lab-Castleford - 008 | Graph L - PSD - A4P | 782814 - M1 JUNCTION 15 ROADE BYPASS.GPJ - v8\_06. Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk, | 02/11/17 - 14:39 | MF1 |





GINT\_LIBRARY\_V8\_06.GLB LibVersion: v8\_06\_018 PrjVersion: v8\_06 - Core+Geotech Lab-Castleford - 008 | Graph L - COMPACTIONS - A4P | 782814 - M1 JUNCTION 15 ROADE BYPASS.GPJ - v8\_06. Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk, | 02/11/17 - 14:40 | MF1 |

# SUMMARY OF WATER CONTENT TESTS RT08 Water Content of Rock (in accordance with ISRM 2007)

Exploratory Position ID	Sample Ref	Depth (m)	Sample Type	Water Content (%)	Lab	
BH02	2	11.15	С	4.7	в	

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1N	J), H = Hemel Hempstead (HP3 9RT), T = <sup>-</sup>	Tonbridge (TN11 9HU)
--	---	----------------------

Ċ



STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Contract:	
Roade Bypass 313583	

Compiled By



**EMY HOWARD** 

Date

01/11/17

RT03 Point Load Testing (in accordance with ISRM 2007)

Exploratory Position ID	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D <sub>e</sub> ) (mm)	Point Load (I <sub>s</sub> ) (MN/m <sup>2</sup> )	Size Factor (F)	Point Load Index (I <sub>s(50)</sub> ) (MN/m <sup>2</sup> )	Water Content (%)	Rock Type	Lab location
BH01	9.00	D	50	90	0.260	90	0.03	1.30	0.04 (🗸)	27	MUDSTONE	в
BH01	9.00	A	90	55	0.200	79	0.03	1.23	0.04 (🗸)	27	MUDSTONE	в
L I <sub>s</sub> (50) Mean Axial i I <sub>s</sub> (50) Mean Diame I <sub>a</sub> (50) Strength An ratio) <u>Note:</u> Size Correct	ests = 0.04 MN/m <sup>2</sup> etral tests = 0.04 MN/r isotropy Index = 1.07 ion Factor (F) calculat	n <sup>2</sup> (calculated ed using F	$\frac{ }{\text{Results}}$ d from highest and $= (D_e/50)^{0.45} \text{ (whe})$	l I lowest diametral ar ere D <sub>e</sub> is equivalent o	l Id axial I₅(50) core diameter).	Type of Test [NS] denotes N Point Load Ir Lab location: Tonbridge (T	<u>column:</u> , A = Ax Ion-standard Te Idex column: (✔ B = Bristol (BS3 N11 9HU)	l xial, D = Diam st. ) = included in 3 4AG), C = Ca	<u>Key</u> etral, I = Irregula mean calculatior stleford (WF10 *	nr, B = Block, L ns, ( <b>χ</b> ) = exclud INJ), H = Heme	 . = Parallel, P = Perpendicu ded from mean calculations el Hempstead (HP3 9RT), T	ular, =
ST	RUCTURALS				Compiled B	y			Date	Contra	ct Ref:	
	a Princess Str	eet		Ct .		EMY	HOWARD		01.11.17	7		
Alan	Bedminster Bristol BS3 4AG		Contract:		Roade	Bypass 313	3583				782814	

RT03 Point Load Testing (in accordance with ISRM 2007)

Exploratory Position ID	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D <sub>e</sub> ) (mm)	Point Load (I <sub>s</sub> ) (MN/m <sup>2</sup> )	Size Factor (F)	Point Load Index (I <sub>s(50)</sub> ) (MN/m <sup>2</sup> )	Water Content (%)	Rock Type	Lab location
BH01	11.83	D	80	87	2.095	87	0.28	1.28	0.36 (🗸)	9.5	LIMESTONE	в
BH01	11.83	A	87	88	1.345	99	0.14	1.36	0.19 (🗸)	9.5	LIMESTONE	в
$I_{s}(50)$ Mean Axial t $I_{s}(50)$ Mean Diame $I_{a}(50)$ Strength Ani ratio) <u>Note:</u> Size Correcti	ests = 0.19 MN/m <sup>2</sup> etral tests = 0.36 MN/r sotropy Index = 1.9 (c on Factor (F) calculat	n <sup>2</sup> calculated	$\frac{ }{\text{Results}}$ from highest and $F = (D_e/50)^{0.45}  (when$	l lowest diametral and ere D <sub>e</sub> is equivalent d	l d axial l₅(50) core diameter).	Type of Test [NS] denotes N Point Load Ir Lab location: Tonbridge (T	L column:, A = A: lon-standard Te idex column: (✔ B = Bristol (BS3 N11 9HU)	kial, D = Diam st. ) = included in 3 4AG), C = Ca	<u>Key</u> etral, I = Irregula mean calculatior stleford (WF10 *	nr, B = Block, L ns, ( <b>χ</b> ) = exclud INJ), H = Heme	 = Parallel, P = Perpendicu ded from mean calculations l Hempstead (HP3 9RT), T	ular, =
ST	RUCTURALS				Compiled B	у			Date	Contra	ct Ref:	
	a Princess Str	eet		Cto-		EMY	HOWARD		01.11.17	7		
Plan	Bedminster Bristol BS3 4AG		Contract:		Roade	Bypass 313	3583				782814	

RT03 Point Load Testing (in accordance with ISRM 2007)

Exploratory Position ID	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D <sub>e</sub> ) (mm)	Point Load (I <sub>s</sub> ) (MN/m <sup>2</sup> )	Size Factor (F)	Point Load Index (I <sub>s(50)</sub> ) (MN/m <sup>2</sup> )	Water Content (%)	Rock Type	Lab location
BH01	14.80	D	105	88	5.130	88	0.66	1.29	0.85 (🗸)	4.7	LIMESTONE	в
BH01	14.80	A	88	50	10.710	75	1.91	1.20	2.29 (√)	4.7	LIMESTONE	в
			Results						Kev			
$I_s(50)$ Mean Axial $I_s(50)$ Mean Diame $I_a(50)$ Strength An ratio) <u>Note:</u> Size Correct	tests = <b>2.29</b> MN/m <sup>2</sup> etral tests = <b>0.85</b> MN/r hisotropy Index = <b>2.68</b> tion Factor (F) calculat	n² (calculate ced using l	d from highest and = = $(D_e/50)^{0.45}$ (whe	l lowest diametral ar ere D <sub>e</sub> is equivalent d	id axial I₅(50) core diameter).	Type of Test [NS] denotes N Point Load Ir Lab location: Tonbridge (T	column:, $A = A$ : lon-standard Te idex column: ( $\checkmark$ B = Bristol (BS3 N11 9HU)	xial, D = Diam st. ) = included in 3 4AG), C = Ca	etral, I = Irregula mean calculatior istleford (WF10 ?	ar, B = Block, L ns, ( <b>χ</b> ) = exclud INJ), H = Heme	. = Parallel, P = Perpendicu ded from mean calculations el Hempstead (HP3 9RT), T	ılar, =
ST	RUCTURAL S	OILS			Compiled B	у			Date	Contra	ct Ref:	
10	1a Princess Str	eet		at .		EMY	HOWARD		01.11.17	7		
flon	Beaminster Bristol BS3 4AG		Contract:		Roade	Bypass 313		782814	AG			

RT03 Point Load Testing (in accordance with ISRM 2007)

Exploratory Position ID	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D <sub>e</sub> ) (mm)	Point Load (I <sub>s</sub> ) (MN/m <sup>2</sup> )	Size Factor (F)	Point Load Index (I <sub>s(50)</sub> ) (MN/m <sup>2</sup> )	Water Content (%)	Rock Type	Lab location
BH01	16.70	D	65	88	1.315	88	0.17	1.29	0.22 (√)	7.3	LIMESTONE	в
BH01	16.70	A	88	68	0.980	87	0.13	1.28	0.17 (✔)	7.3	LIMESTONE	в
$I_{s}(50)$ Mean Axial t $I_{s}(50)$ Mean Diame $I_{a}(50)$ Strength An ratio) <u>Note:</u> Size Correcti	tests = 0.17 MN/m <sup>2</sup> etral tests = 0.22 MN/r isotropy Index = 1.33 ion Factor (F) calculat	n <sup>2</sup> (calculated) ted using I	$\frac{ }{\text{Results}}$ d from highest and $= (D_e/50)^{0.45} \text{ (whe})$	l I lowest diametral ar ere D <sub>e</sub> is equivalent o	l nd axial I₅(50) core diameter).	Type of Test [NS] denotes N Point Load Ir Lab location: Tonbridge (T	L <u>column:</u> , A = A: Jon-standard Te Idex column: (✔ B = Bristol (BS3 N11 9HU)	l kial, D = Diam st. ) = included in 3 4AG), C = Ca	<u>Key</u> etral, I = Irregula mean calculatior stleford (WF10 *	nr, B = Block, L ns, ( <b>χ</b> ) = exclue INJ), H = Heme	I - = Parallel, P = Perpendicu ded from mean calculations el Hempstead (HP3 9RT), T	ular, =
ST	RUCTURALS				Compiled B	у			Date	Contra	ct Ref:	
	a Princess Str	eet		Cto-		EMY	HOWARD		01.11.17	7		
Alan	Bedminster Bristol BS3 4AG		Contract:		Roade	Bypass 313	3583				782814	

RT03 Point Load Testing (in accordance with ISRM 2007)

Exploratory Position ID	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D <sub>e</sub> ) (mm)	Point Load (I <sub>s</sub> ) (MN/m <sup>2</sup> )	Size Factor (F)	Point Load Index (I <sub>s(50)</sub> ) (MN/m <sup>2</sup> )	Water Content (%)	Rock Type	Lab location
BH01	23.80	D	95	87	15.510	87	2.05	1.28	2.63 (✔)	1.7	LIMESTONE	в
BH01	23.80	A	87	84	24.815	96	2.67	1.34	3.58 (√)	1.7	LIMESTONE	в
			Results						Kev			
$I_s(50)$ Mean Axial $I_s(50)$ Mean Diam $I_a(50)$ Strength Ar ratio) <u>Note:</u> Size Correct	tests = <b>3.58</b> MN/m <sup>2</sup> etral tests = <b>2.63</b> MN/r hisotropy Index = <b>1.36</b> tion Factor (F) calculat	n <sup>²</sup> (calculated ed using F	d from highest and = = $(D_e/50)^{0.45}$ (whe	l lowest diametral ar ere D <sub>e</sub> is equivalent d	id axial I₅(50) core diameter).	Type of Test [NS] denotes N Point Load Ir Lab location: Tonbridge (T	$\frac{\text{column:}}{\text{lon-standard Te}}, A = A; $	xial, D = Diam st. ) = included in 3 4AG), C = Ca	etral, I = Irregula mean calculatior istleford (WF10 ?	ar, Β = Block, L ns, ( <b>χ</b> ) = exclue INJ), Η = Heme	. = Parallel, P = Perpendicu ded from mean calculations el Hempstead (HP3 9RT), T	ılar, =
ST	RUCTURAL S	OILS			Compiled B	у			Date	Contra	ct Ref:	
10	1a Princess Str	eet		Ct .		EMY	HOWARD		01.11.17	7		
flan	Bedminster Bristol BS3 4AG		Contract:		Roade	Bypass 313	3583				782814	

RT03 Point Load Testing (in accordance with ISRM 2007)

Exploratory Position ID	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D <sub>e</sub> ) (mm)	Point Load (I <sub>s</sub> ) (MN/m <sup>2</sup> )	Size Factor (F)	Point Load Index (I <sub>s(50)</sub> ) (MN/m <sup>2</sup> )	Water Content (%)	Rock Type	Lab location
BH02	16.00	D	100	87	22.560	87	2.98	1.28	3.82 (√)	2.0	LIMESTONE	в
BH02	16.00	A	87	105	25.935	108	2.23	1.41	3.15 (√)	2.0	LIMESTONE	в
L I <sub>s</sub> (50) Mean Axial $I_{s}(50)$ Mean Diame I <sub>a</sub> (50) Strength An ratio) <u>Note:</u> Size Correct	nr, B = Block, L ns, ( <b>χ</b> ) = exclud INJ), H = Heme	L = Parallel, P = Perpendicu ded from mean calculations H Hempstead (HP3 9RT), T	] ılar, =									
► ST	RUCTURALS				Compiled E	Зу			Date	Contra	ct Ref:	
	a Princess Str	eet		Cot .		EMY	HOWARD		01.11.17	7		
Alan	Bedminster Bristol BS3 4AG		Contract:		Roade	e Bypass 313	3583				782814	AG

RT03 Point Load Testing (in accordance with ISRM 2007)

Exploratory Position ID	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D <sub>e</sub> ) (mm)	Point Load (I <sub>s</sub> ) (MN/m <sup>2</sup> )	Size Factor (F)	Point Load Index (I <sub>s(50)</sub> ) (MN/m <sup>2</sup> )	Water Content (%)	Rock Type	Lab location
BH02	18.30	D	78	87	1.330	87	0.18	1.28	0.23 (🗸)	6.6	LIMESTONE	в
BH02	18.30	A	87	74	1.990	91	0.24	1.31	0.32 (✔)	6.6	LIMESTONE	в
			Results						Kev			
I <sub>s</sub> (50) Mean Axial t I <sub>s</sub> (50) Mean Diame I <sub>a</sub> (50) Strength An ratio) <u>Note:</u> Size Correct	ar, B = Block, L ns, ( <b>χ</b> ) = exclud INJ), H = Heme	. = Parallel, P = Perpendicu ded from mean calculations el Hempstead (HP3 9RT), T	ılar, =									
ST	RUCTURAL S	OILS			Compiled B	у			Date	Contra	ct Ref:	
	a Princess Str	eet		at .		EMY	HOWARD		01.11.17	7		
Plan	Beaminster Bristol BS3 4AG		Contract:		Roade	Bypass 313	3583				782814	AG

RT03 Point Load Testing (in accordance with ISRM 2007)

Exploratory Position ID	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D <sub>e</sub> ) (mm)	Point Load (I <sub>s</sub> ) (MN/m <sup>2</sup> )	Size Factor (F)	Point Load Index (I <sub>s(50)</sub> ) (MN/m <sup>2</sup> )	Water Content (%)	Rock Type	Lab location
BH02	22.17	D	100	87	0.635	87	0.08	1.28	0.11 (✔)	13	LIMESTONE	в
BH02	22.17	A	87	44	0.705	70	0.14	1.16	0.17 (✔)	13	LIMESTONE	в
			Results						Kev			
$I_s(50)$ Mean Axial f $I_s(50)$ Mean Diame $I_a(50)$ Strength An ratio) <u>Note:</u> Size Correct	ar, B = Block, L ns, ( <b>χ</b> ) = exclud INJ), H = Heme	. = Parallel, P = Perpendicu ded from mean calculations el Hempstead (HP3 9RT), T	ılar, =									
ST	RUCTURAL S	OILS			Compiled B	у			Date	Contra	ct Ref:	
	a Princess Str	eet		at .		EMY	HOWARD		01.11.17	7		
flan	Beaminster Bristol BS3 4AG		Contract:		Roade	Bypass 313	3583				782814	AG

RT03 Point Load Testing (in accordance with ISRM 2007)

Exploratory Position ID	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D <sub>e</sub> ) (mm)	Point Load (I <sub>s</sub> ) (MN/m <sup>2</sup> )	Size Factor (F)	Point Load Index (I <sub>s(50)</sub> ) (MN/m <sup>2</sup> )	Water Content (%)	Rock Type	Lab location
BH02	25.05	D	85	87	1.470	87	0.19	1.28	0.25 (✔)	10	LIMESTONE	в
BH02	25.05	A	87	64	1.160	84	0.16	1.26	0.21 (✔)	10	LIMESTONE	в
												+
												+
												+
Results         I <sub>s</sub> (50) Mean Axial tests = <b>0.21</b> MN/m <sup>2</sup> I <sub>s</sub> (50) Mean Diametral tests = <b>0.25</b> MN/m <sup>2</sup> I <sub>s</sub> (50) Strength Anisotropy Index = <b>1.2</b> (calculated from highest and lowest diametral and axial I <sub>s</sub> (50)         Note: Size Correction Factor (F) calculated using F = $(D_e/50)^{0.45}$ (where D <sub>e</sub> is equivalent core diameter).											 _ = Parallel, P = Perpendicu ded from mean calculations el Hempstead (HP3 9RT), T	 ılar, =
ST	RUCTURALS				Compiled B	у			Date	Contra	ct Ref:	
	a Princess Str	eet		ett-		EMY	HOWARD		01.11.17	7		
Alan	Bedminster Bristol BS3 4AG		Contract:		Roade	Bypass 313	3583				782814	AG

RT03 Point Load Testing (in accordance with ISRM 2007)

Exploratory Position ID	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D <sub>e</sub> ) (mm)	Point Load (I <sub>s</sub> ) (MN/m <sup>2</sup> )	Size Factor (F)	Point Load Index (I <sub>s(50)</sub> ) (MN/m <sup>2</sup> )	Water Content (%)	Rock Type	Lab location
BH02	29.10	D	95	88	1.075	88	0.14	1.29	0.18 (✔)	8.3	MUDSTONE	в
BH02	29.10	A	88	77	0.585	93	0.07	1.32	0.09 (🗸)	8.3	MUDSTONE	В
$\frac{\text{Results}}{\text{I}_{s}(50) \text{ Mean Axial tests} = 0.09 \text{ MN/m}^{2}}$ $\frac{\text{I}_{s}(50) \text{ Mean Diametral tests} = 0.18 \text{ MN/m}^{2}}{\text{I}_{s}(50) \text{ Strength Anisotropy Index} = 2 (calculated from highest and lowest diametral and axial I_{s}(50) ratio)}{\text{Note:}}$ Size Correction Factor (F) calculated using F = (D_{e}/50)^{0.45} (where D_{e} is equivalent core diameter).} $\frac{\text{Key}}{\text{Type of Test column:}}, A = Axial, D = Diametral, I = Irregular, B = Distore Column:}{\text{Note:} Optimized Index column:}} (V) = included in mean calculations, Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ) = Torbridge (TN11 9HU)}$											= Parallel, P = Perpendici led from mean calculations I Hempstead (HP3 9RT), T	ular, =
ST	RUCTURAL S	OILS			Compiled By	4			Date	Contrac	ct Ref:	
	a Princess Str	eet		at .		EMY	HOWARD		01.11.17	7		
flon.	Beaminster Bristol BS3 4AG		Contract:		Roade	Bypass 313	3583				782814	AG

#### UNCONFINED COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1) RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Sample Type: C

Borehole: BH01

Sample Ref: 4

Depth (m): 14.80

Bulk Density (Mg/m<sup>3</sup>): **2.48** Length (mm): **234.73** Test Duration (mins:secs): **3:42** UCS (MPa): **6.0** 

Dry Density (Mg/m<sup>3</sup>): **2.37** Diameter (mm): **86.25** Stress Rate (kN/min): **12 5.0** Failure T Moisture Content (%): 4.7 Length/Diameter Ratio: 2.72 Load at Failure (kN): 35.0

Failure Type: Axial cleavage

Note: **Axis of loading parallel to core axis** Description: **Grey LIMESTONE** Specimen Preparation: **Specimen was not recored.** Sample tolerance checks: Straightness: **FAIL**. Flatness: **PASS**. Perpendicularity: **PASS**.



Front view (pre-test)



Rear view (pre-test)



Front view (post-test)



Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

	1a Princess Street Bedminster Bristol	Contract		EMY HOWARD Job No	01/11/17	
90	BS3 4AG	Roade Bypass 31358	3	782814	AGS	

#### UNCONFINED COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1) RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: BH02

Sample Ref: 3

Depth (m): 12.27

Bulk Density (Mg/m<sup>3</sup>): **2.49** Length (mm): **222.08** Test Duration (mins:secs): **6:58** UCS (MPa): **27.6** 

Dry Density (Mg/m<sup>3</sup>): **2.37** Moistu Diameter (mm): **86.06** Length/D Stress Rate (kN/min): **12** Load at Failure Type: **Axial cleavage** 

Sample Type: C

Moisture Content (%): **5.0** Length/Diameter Ratio: **2.58** Load at Failure (kN): **160.6** 

Note: **Axis of loading parallel to core axis** Description: **Grey LIMESTONE** Specimen Preparation: **Specimen was not recored.** Sample tolerance checks: Straightness: **FAIL**. Flatness: **PASS**. Perpendicularity: **PASS**.



Front view (pre-test)



Rear view (pre-test)



Front view (post-test)

Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

•	STRUCTURAL SOILS	Compi	led By		Date
<i>(ll</i> )	1a Princess Street	Ctt.		EMY HOWARD	01/11/17
(d))	Bedminster	Contract		Job No	-
Mr.	Bristol BS3 4AG	Roade Bypass 31358	3	782814	AGS

#### SUMMARY OF CHEMICAL ANALYSES

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Acid Soluble Sulphate (% SO <sub>4</sub> )	Aqueous Extract Sulphate (mg/I SO <sub>4</sub> )	pН	Total Sulphur (%)	Description				
BH01	1	С	9.00	0.06	290	9.04	0.70	Dark brownish grey MUDSTONE				
BH01	4	С	14.80	0.41	652	6.63	1.44	Grey LIMESTONE				
BH02	3	С	12.27	0.19	239	7.44	0.13	Grey LIMESTONE				
BH02	7		18 30	0.20	158	8 20	0.70					
DI 102			10.50	0.20	100	0.29	0.70					
BH03	1	С	14.02	0.42	530	7.85	1.39	Grey MUDSTONE				
BH04	1	С	12.00	0.23	260	8.25	0.54	Grey MUDSTONE				
BH05	1	С	12.30	0.03	119	8.35	0.40	Grey MUDSTONE				
OTES'-	Chemical	tests were	undertake	n by Enviro	lab							
<u> </u>	STRUC	TURAI	SOILS				Со	Date Date	Contract Re	əf:		
` <i>ا</i> لا	1a Pri	ncess S	Street		C	<i>v</i>		EMY HOWARD 01.11.17				
JUU JUU	Be	dminste Bristol S3 4AC	er	Contract:				Roade Bypass 313583	782814			



# APPENDIX L GAS AND GROUNDWATER MONITORING RESULTS

	Wea	ather	Ground (	<u>Conditions</u>	Wind Con	ditions <u>Air Ter</u>	nperature (°C)	<u>Equi</u>	pment Use	d & Remar	<u>ks</u>			
Round 2	Clou	udy	Da	mp	Mediu	Im	12	GA5	000 + Diprr	neter				
Exploratory Position ID	Pipe Ref	Pipe Diameter	Monitoring Round / Test Number	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring	Water Depth (mbgl)	рН	Redox (mV)	Conduc- tivity (uS/cm)	Temp- erature (°C)	Dissolved Oxygen (mg/l)	Remarks
BH01	1	50	2 / 1	20.00	19.50	10.00 to 20.00	05/10/2017 10:07	I 17.17	9.00	318	4379	11.2	4.2	General Remarks: Samples taken.
BH02	1	50	2 / 1	30.00	29.02	20.00 to 30.00	05/10/2017 09:20	20.15	7.84	306	1650	11.2	3.7	General Remarks: Samples taken cloudy grey and no odour.
BH04	1	50	2 / 1	11.00	10.87	7.00 to 11.00	06/10/2017	9.92						General Remarks: Samples taken but well ran dry before readings could be taken.
BH05	1	50	2 / 1	12.00	9.78	8.00 to 12.00	05/10/2017 13:40	6.92	7.84	274	2338	12.0	4.1	General Remarks: Samples taken very cloudy grey and no odour.
WS02	1	50	2 / 1	5.00	5.00	3.00 to 5.00	05/10/2017 10:50	) 2.77						General Remarks: Samples taken started off clear but became
WS10	1	50	2 / 1	4.00	4.04	2.00 to 4.00	05/10/2017 15:30	3.22						take readings due to slow recharge General Remarks: Samples taken clear and no odour. Unable to take readings due to well running dry.
y: NDA denote	es 'no dat	a available	e'.				I							
RSK Environment Ltd			(	Compiled By		Date 02/11/17		Checked By	1		Date	Contra	act Ref: <b>313583</b>	
Humber Road Coventry CV3 4AQ						I	Roade Bypass						Page:	1 of 1

GINT\_LIBRARY\_V8\_06.GLB : E - WATER QUALITY - GENERAL - SMALL : 313583 - ROADE BYPASS.GPJ : 02/11/17 12:30 : RS5 :

[Pressures]	Previous	During	<u>Start</u>	<u>End</u>
Round 1 Round 2 Round 3 Round 4	- - -	Fluctuating Fluctuating Rising Fluctuating	1004 1001 1007 1002	1003 1003 1009 993

Weather: Cloudy + Ground: Wet + Wind: Light + Air Temp: 15DegC GA5000 + Dipmeter + Weather: Cloudy + Ground: Damp + Wind: Medium + Air Temp: 12DegC Weather: Clear + Ground: Dry + Wind: Light + Air Temp: 15DegC

Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydroge Sulphide (ppm)
BH01	1	50	1	20.00		10.00 to 20.00	28/09/2017 09:05:00	1001	1001	-0.1 <sub>(I)</sub>	-	-	-	-	-	-	-
BH01	1	50	1			10.00 to 20.00	30 secs	-	-	-0.1 <sub>(SS)</sub>	-	-	-	-	-	-	-
BH01	1	50	1 (2)	20.00		10.00 to 20.00	28/09/2017 09:06:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
BH01	1	50	1 (2)			10.00 to 20.00	15 secs	-	-	-	-	0.1	0.0	21.0	0.0	1	0
BH01	1	50	1 (2)			10.00 to 20.00	30 secs	-	-	-	-	0.1	0.0	21.0	0.0	1	0
BH01	1	50	1 (2)			10.00 to 20.00	60 secs	-	-	-	-	0.1	0.0	21.0	0.0	1	0
BH01	1	50	1 (2)			10.00 to 20.00	90 secs	-	-	-	-	0.1	0.0	20.9	0.0	1	0
BH01	1	50	1 (2)			10.00 to 20.00	120 secs	-	-	-	-	0.1	0.0	21.0	0.0	1	0
BH01	1	50	1 (2)			10.00 to 20.00	180 secs	-	-	-	-	0.1	0.0	21.0	0.0	1	0
BH01	1	50	1 (2)			10.00 to 20.00	240 secs	-	-	-	-	0.1	0.0	21.0	0.0	1	0
BH01	1	50	1 (2)			10.00 to 20.00	300 secs	-	-	-	-	0.1	0.0	20.9	0.0	1	0
BH01	1	50	1 (3)	20.00	19.62	10.00 to 20.00	28/09/2017 09:12:00	-	-	-	16.53	-	-	-	-	-	-
BH01	1	50	2	20.00		10.00 to 20.00	05/10/2017 09:52:00	1001	999	0.0(1)	-	-	-	-	-	-	-
BH01	1	50	2			10.00 to 20.00	30 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
BH01	1	50	2 (2)	20.00		10.00 to 20.00	05/10/2017 09:53:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
BH01	1	50	2 (2)			10.00 to 20.00	15 secs	-	-	-	-	0.1	0.0	20.9	0.0	0	0
BH01	1	50	2 (2)			10.00 to 20.00	30 secs	-	-	-	-	0.1	0.0	20.9	0.0	0	0
BH01	1	50	2 (2)			10.00 to 20.00	60 secs	-	-	-	-	0.1	0.0	20.9	0.0	0	0
y: I = Initial, P	= Peal	k, SS = St	eady State. N	ote: LEL = Lo	wer Explosive Compiled B	e Limit = 5% v/v.	Date		Chec	cked By			Date	Contra	act Ref:	I	I
SK R	SK E A	bbey F	ment Ltd Park	<b>N</b> Contracti	DStrews	e	26/10/17			<b>y</b>				Bagai		31358	3
	пц	CV3 4	try	Contract:			Roade	Bypass	;					Page:		<b>1</b> of	48

[Pressures] Previous During

End Equipment Used & Remarks

Exploratory Position	Pipe	Pipe diameter	Monitoring Round	Reported Installation	Measured Installation	Response Zone	Date & Time	Borehole Pressure	Atmos Pressure	Gas Flow	Water Depth	Carbon Dioxide	Methane	Oxygen	LEL	Carbon Monoxide	Hydroge Sulphide
ID	rei	(mm)		Depth (m)	Depth (mbgl)		(elapsed time)	(mb)	(mb)	(l/hr)	(mbgl)	(% / vol)	(% / vol)	(% / vol)	(%)	(ppm)	(ppm)
BH01	1	50	2 (2)			10.00 to 20.00	90 secs	-	-	-	-	0.1	0.0	20.9	0.0	0	0
BH01	1	50	2 (2)			10.00 to 20.00	120 secs	-	-	-	-	0.1	0.0	20.9	0.0	0	0
BH01	1	50	2 (2)			10.00 to 20.00	180 secs	-	-	-	-	0.1	0.0	21.0	0.0	0	0
BH01	1	50	2 (2)			10.00 to 20.00	240 secs	-	-	-	-	0.1	0.0	21.0	0.0	0	0
BH01	1	50	2 (2)			10.00 to 20.00	300 secs	-	-	-	-	0.1	0.0	21.0	0.0	0	0
BH01	1	50	2 (3)	20.00	19.50	10.00 to 20.00	05/10/2017 09:59:00	-	-	-	17.17	-	-	-	-	-	-
BH01	1	50	3	20.00		10.00 to 20.00	13/10/2017 09:55:00	-	-	0.0 <sub>(I)</sub>	-	-	-	-	-	-	-
BH01	1	50	3			10.00 to 20.00	30 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
BH01	1	50	3 (2)	20.00		10.00 to 20.00	13/10/2017 09:56:00	-	-	-	-	0.1	0.0	20.9	-	0	0
BH01	1	50	3 (2)			10.00 to 20.00	60 secs	-	-	-	-	0.1	0.0	20.9	-	0	0
BH01	1	50	3 (2)			10.00 to 20.00	90 secs	-	-	-	-	0.1	0.0	20.9	-	0	0
BH01	1	50	3 (2)			10.00 to 20.00	120 secs	-	-	-	-	0.1	0.0	20.9	-	0	0
BH01	1	50	3 (2)			10.00 to 20.00	150 secs	-	-	-	-	0.1	0.0	20.9	-	0	0
BH01	1	50	3 (2)			10.00 to 20.00	240 secs	-	-	-	-	0.1	0.0	20.9	-	0	0
BH01	1	50	3 (2)			10.00 to 20.00	255 secs	-	-	-	-	0.1	0.0	20.9	-	0	0
BH01	1	50	3 (2)			10.00 to 20.00	270 secs	-	-	-	-	0.1	0.0	20.9	-	0	0
BH01	1	50	3 (3)	20.00	19.50	10.00 to 20.00	13/10/2017 10:00:45	-	-	-	17.37	-	-	-	-	-	-
BH01	1	50	4	20.00		10.00 to 20.00	19/10/2017 10:21:00	-	-	0.2	-	-	-	-	-	-	-

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

<u>Start</u>

	RSK Environment I td	Compiled By	Date	Checked By	Date	Contract Ref:				
DCK	Abbey Park	Mostreuxer	26/10/17							
	Humber Road	Contract:	Page:							
	Coventry CV3 4AQ		Roade	Bypass		:	2 (	of 4	48	AGS

[Pressures] Previous During

<u>Start</u>

<u>End</u>

Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
BH01	1	50	4			10.00 to 20.00	15 secs	-	-	0.1 <sub>(SS)</sub>	-	-	-	-	-	-	-	
BH01	1	50	4 (2)	20.00		10.00 to 20.00	19/10/2017 10:21:30	-	-	-	-	0.1	0.0	20.9	-	0	0	
BH01	1	50	4 (2)			10.00 to 20.00	30 secs	-	-	-	-	0.2	0.0	20.7	-	0	0	
BH01	1	50	4 (2)			10.00 to 20.00	90 secs	-	-	-	-	0.1	0.0	20.7	-	0	0	
BH01	1	50	4 (2)			10.00 to 20.00	120 secs	-	-	-	-	0.1	0.0	20.8	-	0	0	
BH01	1	50	4 (2)			10.00 to 20.00	150 secs	-	-	-	-	0.1	0.0	20.8	-	0	0	
BH01	1	50	4 (2)			10.00 to 20.00	180 secs	-	-	-	-	0.1	0.0	20.8	-	0	0	
BH01	1	50	4 (2)			10.00 to 20.00	210 secs	-	-	-	-	0.1	0.0	20.8	-	0	0	
BH01	1	50	4 (2)			10.00 to 20.00	270 secs	-	-	-	-	0.1	0.0	20.8	-	0	0	
BH01	1	50	4 (2)			10.00 to 20.00	330 secs	-	-	-	-	0.1	0.0	20.8	-	0	0	
BH01	1	50	4 (3)	20.00	19.50	10.00 to 20.00	19/10/2017 10:32:00	-	-	-	17.45	-	-	-	-	-	-	
BH02	1	50	1	30.00		20.00 to 30.00	28/09/2017	1003	1003	0.0 <sub>(I)</sub>	-	-	-	-	-	-	-	
BH02	1	50	1			20.00 to 30.00	30 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-	
BH02	1	50	1 (2)	30.00		20.00 to 30.00	28/09/2017 00:01:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0	
BH02	1	50	1 (2)			20.00 to 30.00	15 secs	-	-	-	-	0.2	0.0	20.6	0.0	1	0	
BH02	1	50	1 (2)			20.00 to 30.00	30 secs	-	-	-	-	0.1	0.0	20.4	0.0	1	0	
BH02	1	50	1 (2)			20.00 to 30.00	60 secs	-	-	-	-	0.1	0.0	20.4	0.0	2	0	
ey: I = Initial, F	= Pea	k, SS = St	eady State. No	ote: LEL = Lo	wer Explosiv	e Limit = 5% v/v.												
		Inviron	montilita		Compiled E	Sy.	Date		Chec	ked By			Date	Contra	act Ref:			
Abbey Park			Park	n	DStrews	es	26/10/17							313583				
	Ηι	Imber F Coven CV3 44	Road try AQ	Contract:	ract: Roade Bypass									Page:		<b>3</b> of	48	

[Pressures] Previous During

<u>Start</u>

End Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH02	1	50	1 (2)			20.00 to 30.00	90 secs	-	-	-	-	0.1	0.0	20.3	0.0	2	0
BH02	1	50	1 (2)			20.00 to 30.00	120 secs	-	-	-	-	0.1	0.0	20.3	0.0	2	0
BH02	1	50	1 (2)			20.00 to 30.00	180 secs	-	-	-	-	0.1	0.0	20.2	0.0	2	0
BH02	1	50	1 (2)			20.00 to 30.00	240 secs	-	-	-	-	0.1	0.0	20.2	0.0	2	0
BH02	1	50	1 (2)			20.00 to 30.00	300 secs	-	-	-	-	0.1	0.0	20.1	0.0	2	0
BH02	1	50	1 (3)	30.00	29.10	20.00 to 30.00	28/09/2017 00:07:00	-	-	-	20.21	-	-	-	-	-	-
BH02	1	50	2	30.00		20.00 to 30.00	05/10/2017 09:00:00	1003	1003	0.0 <sub>(I)</sub>	-	-	-	-	-	-	-
BH02	1	50	2			20.00 to 30.00	30 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
BH02	1	50	2 (2)	30.00		20.00 to 30.00	05/10/2017 09:01:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
BH02	1	50	2 (2)			20.00 to 30.00	15 secs	-	-	-	-	0.1	0.0	20.6	0.0	1	0
BH02	1	50	2 (2)			20.00 to 30.00	30 secs	-	-	-	-	0.1	0.0	20.4	0.0	1	0
BH02	1	50	2 (2)			20.00 to 30.00	60 secs	-	-	-	-	0.1	0.0	20.4	0.0	1	0
BH02	1	50	2 (2)			20.00 to 30.00	90 secs	-	-	-	-	0.1	0.0	20.4	0.0	1	0
BH02	1	50	2 (2)			20.00 to 30.00	120 secs	-	-	-	-	0.1	0.0	20.4	0.0	1	0
BH02	1	50	2 (2)			20.00 to 30.00	180 secs	-	-	I	-	0.1	0.0	20.3	0.0	1	0
BH02	1	50	2 (2)			20.00 to 30.00	240 secs	-	-	-	-	0.1	0.0	20.2	0.0	1	0
BH02	1	50	2 (2)			20.00 to 30.00	300 secs	-	-	-	-	0.1	0.0	20.2	0.0	1	0
BH02	1	50	2 (3)	30.00	29.02	20.00 to 30.00	05/10/2017 09:07:00	-	-	-	20.15	-	-	-	-	-	-
Key: I = Initial, P	y: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.																

	RSK Environment I td	Compiled By							
DCK	Abbey Park	Mostreuxer	MDStrackje 26/10/17						
	Humber Road	Contract:	Page:						
	Coventry CV3 4AQ		4	of	48	AGS			

[Pressures] Previous During

Start

End Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH02	1	50	3	30.00		20.00 to 30.00	13/10/2017 09:45:00	1007	1007	0.1 <sub>(l)</sub>	-	-	-	-	-	-	-
BH02	1	50	3			20.00 to 30.00	30 secs	-	-	0.1 <sub>(SS)</sub>	-	-	-	-	-	-	-
BH02	1	50	3 (2)	30.00		20.00 to 30.00	13/10/2017 09:46:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
BH02	1	50	3 (2)			20.00 to 30.00	15 secs	-	-	-	-	0.4	0.0	19.5	0.0	1	0
BH02	1	50	3 (2)			20.00 to 30.00	30 secs	-	-	-	-	0.4	0.0	18.2	0.0	1	0
BH02	1	50	3 (2)			20.00 to 30.00	60 secs	-	-	-	-	0.4	0.0	18.4	0.0	1	0
BH02	1	50	3 (2)			20.00 to 30.00	93 secs	-	-	-	-	0.4	0.0	18.7	0.0	1	0
BH02	1	50	3 (2)			20.00 to 30.00	120 secs	-	-	-	-	0.4	0.0	18.8	0.0	1	0
BH02	1	50	3 (2)			20.00 to 30.00	180 secs	-	-	-	-	0.3	0.0	19.4	0.0	1	0
BH02	1	50	3 (2)			20.00 to 30.00	240 secs	-	-	-	-	0.2	0.0	19.7	0.0	1	0
BH02	1	50	3 (2)			20.00 to 30.00	300 secs	-	-	-	-	0.2	0.0	20.0	0.0	1	0
BH02	1	50	3 (3)	30.00	28.90	20.00 to 30.00	13/10/2017 09:52:00	-	-	-	20.15	-	-	-	-	-	-
BH02	1	50	4	30.00		20.00 to 30.00	19/10/2017 09:58:00	993	993	0.0 <sub>(I)</sub>	-	-	-	-	-	-	-
BH02	1	50	4			20.00 to 30.00	15 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
BH02	1	50	4 (2)	30.00		20.00 to 30.00	19/10/2017 09:58:30	-	-	-	-	0.1	0.0	20.1	-	0	0
BH02	1	50	4 (2)			20.00 to 30.00	30 secs	-	-	-	-	0.3	0.0	19.7	-	0	0
BH02	1	50	4 (2)			20.00 to 30.00	60 secs	-	-	-	-	0.4	0.0	16.9	-	0	0
BH02	1	50	4 (2)			20.00 to 30.00	90 secs	-	-	-	-	0.3	0.0	16.8	-	0	0
Key: I = Initial, P	Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.												Date	Contr	act Ref:		

#### 

[Pressures] Previous During

End Equipment Used & Remarks

Start

orehole Atmos essurePressur (mb) (mb)	orehole At PressurePre (mb) (I	Gas Flow (I/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
	-	-	-	0.3	0.0	17.8	-	0	0
	-	-	-	0.3	0.0	18.0	-	0	0
	-	-	-	0.3	0.0	18.2	-	0	0
	-	-	-	0.3	0.0	18.5	-	0	0
	-	-	-	0.2	0.0	18.7	-	0	0
	-	-	20.12	-	-	-	-	-	-
1004 1004	1004 1	0.0 <sub>(l)</sub>	-	-	-	-	-	-	-
	-	0.0 <sub>(SS</sub>	) -	-	-	-	-	-	-
	-	-	-	0.0	0.0	20.9	0.0	0	0
	-	-	-	0.2	0.0	20.2	0.0	10	0
	-	-	-	0.3	0.0	19.1	0.0	10	0
	-	-	-	0.3	0.0	19.0	0.0	10	0
	-	-	-	0.3	0.0	19.0	0.0	9	0
	-	-	-	0.3	0.0	19.0	0.0	9	0
	-	-	-	0.3	0.0	19.0	0.0	9	0
	-	-	-	0.3	0.0	19.0	0.0	9	0
	-	-	-	0.3	0.0	19.0	0.0	9	0
-	-	-	 	 	-     -     0.3       -     -     0.3       -     -     0.3       -     -     0.3	-     -     0.3     0.0       -     -     0.3     0.0       -     -     0.3     0.0       -     -     0.3     0.0	-         -         0.3         0.0         19.0           -         -         0.3         0.0         19.0           -         -         0.3         0.0         19.0           -         -         0.3         0.0         19.0	-         -         0.3         0.0         19.0         0.0           -         -         0.3         0.0         19.0         0.0           -         -         0.3         0.0         19.0         0.0           -         -         0.3         0.0         19.0         0.0	-         -         0.3         0.0         19.0         0.0         9           -         -         0.3         0.0         19.0         0.0         9           -         -         0.3         0.0         19.0         0.0         9           -         -         0.3         0.0         19.0         0.0         9

#### Contract Ref: Compiled By Date Checked By Date RSK Environment Ltd Mostrauger 313583 Abbey Park Humber Road 26/10/17 Contract: Page: Coventry **Roade Bypass** 6 of 48 AGS CV3 4AQ
[Pressures] Previous During Start

Equipment Used & Remarks

<u>End</u>

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydroger Sulphide (ppm)
BH03	1	50	1 (3)	15.00	14.34	8.00 to 15.00	28/09/2017 10:18:00	-	-	-	12.33	-	-	-	-	-	-
BH03	1	50	2	15.00		8.00 to 15.00	06/10/2017 10:41:00	1001	1001	0.0 <sub>(I)</sub>	-	-	-	-	-	-	-
BH03	1	50	2			8.00 to 15.00	30 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
BH03	1	50	2 (2)	15.00		8.00 to 15.00	06/10/2017 10:42:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
BH03	1	50	2 (2)			8.00 to 15.00	15 secs	-	-	-	-	0.6	0.0	20.5	0.0	2	0
BH03	1	50	2 (2)			8.00 to 15.00	30 secs	-	-	-	-	0.6	0.0	20.2	0.0	2	0
BH03	1	50	2 (2)			8.00 to 15.00	60 secs	-	-	-	-	0.6	0.0	20.1	0.0	2	0
BH03	1	50	2 (2)			8.00 to 15.00	90 secs	-	-	-	-	0.6	0.0	20.1	0.0	2	0
BH03	1	50	2 (2)			8.00 to 15.00	120 secs	-	-	-	-	0.6	0.0	20.1	0.0	1	0
BH03	1	50	2 (2)			8.00 to 15.00	180 secs	-	-	-	-	0.6	0.0	20.0	0.0	1	0
BH03	1	50	2 (2)			8.00 to 15.00	240 secs	-	-	-	-	0.6	0.0	20.0	0.0	1	0
BH03	1	50	2 (2)			8.00 to 15.00	300 secs	-	-	-	-	0.6	0.0	20.0	0.0	1	0
BH03	1	50	2 (3)	15.00	14.25	8.00 to 15.00	06/10/2017 10:48:00	-	-	-	12.38	-	-	-	-	-	-
BH03	1	50	3	15.00		8.00 to 15.00	13/10/2017 10:25:00	-	-	0.0 <sub>(I)</sub>	-	-	-	-	-	-	-
BH03	1	50	3			8.00 to 15.00	30 secs	-	-	0.1 <sub>(SS)</sub>	-	-	-	-	-	-	-
BH03	1	50	3			8.00 to 15.00	60 secs	-	-	-	-	0.1	0.0	20.9	-	0	0
BH03	1	50	3			8.00 to 15.00	180 secs	-	-	-	-	0.2	0.0	20.8	-	0	0
BH03	1	50	3			8.00 to 15.00	210 secs	-	-	-	-	0.2	0.0	20.7	-	0	0
y: I = Initial, P	= Peał	k, SS = Ste	eady State. No	ote: LEL = Lo	wer Explosiv	e Limit = 5% v/v.								Quete	t D - f		
R	SK E	nviron	ment Ltd		Compiled E	у У	Date		Cheo	cked By			Date		act Ref:		_
	A	bbey F	Park	n	Dstrewy	S	26/10/17									31358	3
	Hu	Imber F Covent	Road try	Contract:		·	Roade	Bypass	;					Page:		<b>7</b> of	48

[Pressures] Previous During

End Equipment Used & Remarks

<u>Start</u>

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydroge Sulphide (ppm)
BH03	1	50	3			8.00 to 15.00	225 secs	-	-	-	-	0.2	0.0	20.7	-	0	0
BH03	1	50	3			8.00 to 15.00	240 secs	-	-	-	-	0.2	0.0	20.6	-	0	0
BH03	1	50	3			8.00 to 15.00	270 secs	-	-	-	-	0.2	0.0	20.6	-	0	0
BH03	1	50	3			8.00 to 15.00	300 secs	-	-	-	-	0.2	0.0	20.6	-	0	0
BH03	1	50	3			8.00 to 15.00	360 secs	-	-	-	-	0.3	0.0	20.5	-	0	0
BH03	1	50	3			8.00 to 15.00	420 secs	-	-	-	-	0.3	0.0	20.4	-	0	0
BH03	1	50	3			8.00 to 15.00	480 secs	-	-	-	-	0.1	0.0	20.6	-	0	0
BH03	1	50	3		14.30	8.00 to 15.00	540 secs	-	-	-	12.55	-	-	-	-	-	-
BH03	1	50	4	15.00		8.00 to 15.00	18/10/2017 10:29:00	1002	1002	0.0 <sub>(I)</sub>	-	-	-	-	-	-	-
BH03	1	50	4			8.00 to 15.00	30 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
BH03	1	50	4 (2)	15.00		8.00 to 15.00	18/10/2017 10:30:00	-	-	-	-	0.1	0.0	20.9	-	0	0
BH03	1	50	4 (2)			8.00 to 15.00	60 secs	-	-	-	-	0.3	0.0	20.9	-	0	0
BH03	1	50	4 (2)			8.00 to 15.00	90 secs	-	-	-	-	0.3	0.0	20.8	-	0	0
BH03	1	50	4 (2)			8.00 to 15.00	105 secs	-	-	-	-	0.3	0.0	20.8	-	0	0
BH03	1	50	4 (2)			8.00 to 15.00	120 secs	-	-	-	-	0.3	0.0	20.8	-	0	0
BH03	1	50	4 (2)			8.00 to 15.00	150 secs	-	-	-	-	0.3	0.0	20.8	-	0	0
BH03	1	50	4 (2)			8.00 to 15.00	180 secs	-	-	-	-	0.3	0.0	20.8	-	0	0
BH03	1	50	4 (2)			8.00 to 15.00	240 secs	-	-	-	-	0.3	0.0	20.8	-	0	0

	PSK Environment I td	Compiled By	Date	Checked By	Date	Contract Ref:			
DCK	Abbey Park	Mostreukjer	26/10/17				3135	83	
	Humber Road	Contract:			•	Page:			
	Coventry		Roade	Bypass		8	of	48	
									AUU

[Pressures] Previous During Start

Equipment Used & Remarks

<u>End</u>

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydroger Sulphide (ppm)
BH03	1	50	4 (2)			8.00 to 15.00	300 secs	-	-	-	-	0.3	0.0	20.8	-	0	0
BH03	1	50	4 (3)	15.00	14.25	8.00 to 15.00	18/10/2017 10:40:00	-	-	-	12.56	-	-	-	-	-	-
BH04	1	50	1	11.00		7.00 to 11.00	28/09/2017 12:48:00	1004	1004	0.0(1)	-	-	-	-	-	-	-
BH04	1	50	1			7.00 to 11.00	30 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
BH04	1	50	1 (2)	11.00		7.00 to 11.00	28/09/2017 12:49:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
BH04	1	50	1 (2)			7.00 to 11.00	15 secs	-	-	-	-	0.1	0.0	20.7	0.0	0	0
BH04	1	50	1 (2)			7.00 to 11.00	30 secs	-	-	-	-	0.1	0.0	20.7	0.0	0	0
BH04	1	50	1 (2)			7.00 to 11.00	60 secs	-	-	-	-	0.1	0.0	20.7	0.0	0	0
BH04	1	50	1 (2)			7.00 to 11.00	90 secs	-	-	-	-	0.1	0.0	20.6	0.0	0	0
BH04	1	50	1 (2)			7.00 to 11.00	120 secs	-	-	-	-	0.1	0.0	20.6	0.0	0	0
BH04	1	50	1 (2)			7.00 to 11.00	180 secs	-	-	-	-	0.1	0.0	20.6	0.0	0	0
BH04	1	50	1 (2)			7.00 to 11.00	240 secs	-	-	-	-	0.1	0.0	20.5	0.0	0	0
BH04	1	50	1 (2)			7.00 to 11.00	300 secs	-	-	-	-	0.1	0.0	20.5	0.0	0	0
BH04	1	50	1 (3)	11.00	11.00	7.00 to 11.00	28/09/2017 12:55:00	-	-	-	10.12	-	-	-	-	-	-
BH04	1	50	2	11.00		7.00 to 11.00	06/10/2017 13:05:00	1003	1003	-0.1 <sub>(l)</sub>	-	-	-	-	-	-	-
BH04	1	50	2			7.00 to 11.00	30 secs	-	-	-0.1 <sub>(SS)</sub>	-	-	-	-	-	-	-
BH04	1	50	2 (2)	11.00		7.00 to 11.00	06/10/2017 13:06:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
y: I = Initial, F	P = Peal	k, SS = Ste	eady State. N	ote: LEL = Lo	ower Explosiv	e Limit = 5% v/v.											
R		nviron	ment I td		Compiled E	3y	Date		Cheo	ked By			Date	Contra	act Ref:		
SK "		bbey F	Park	n	DStreak	s	26/10/17									31358	3
	Hu	Imber F Covent	Road try AO	Contract:			Roade	Bypass	i					Page:		<b>9</b> of	48

[Pressures] Previous During

<u>Start</u>

End Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH04	1	50	2 (2)			7.00 to 11.00	15 secs	-	-	-	-	0.8	0.0	20.2	0.0	0	0
BH04	1	50	2 (2)			7.00 to 11.00	30 secs	-	-	-	-	0.8	0.0	20.1	0.0	0	0
BH04	1	50	2 (2)			7.00 to 11.00	60 secs	-	-	-	-	0.9	0.0	20.0	0.0	0	0
BH04	1	50	2 (2)			7.00 to 11.00	90 secs	-	-	-	-	0.9	0.0	20.0	0.0	0	0
BH04	1	50	2 (2)			7.00 to 11.00	120 secs	-	-	-	-	0.9	0.0	20.0	0.0	0	0
BH04	1	50	2 (2)			7.00 to 11.00	180 secs	-	-	-	-	0.9	0.0	20.0	0.0	0	0
BH04	1	50	2 (2)			7.00 to 11.00	240 secs	-	-	-	-	0.9	0.0	20.0	0.0	0	0
BH04	1	50	2 (2)			7.00 to 11.00	300 secs	-	-	-	-	0.9	0.0	20.0	0.0	0	0
BH04	1	50	2 (3)	11.00	10.87	7.00 to 11.00	06/10/2017 13:12:00	-	-	-	9.92	-	-	-	-	-	-
BH04	1	50	3	11.00		7.00 to 11.00	13/10/2017 12:37:00	1010	1010	0.0 <sub>(I)</sub>	-	-	-	-	-	-	-
BH04	1	50	3			7.00 to 11.00	15 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
BH04	1	50	3 (2)	11.00		7.00 to 11.00	13/10/2017 12:37:30	-	-	-	-	0.1	0.0	20.9	-	0	0
BH04	1	50	3 (2)			7.00 to 11.00	30 secs	-	-	-	-	0.1	0.0	20.9	-	0	0
BH04	1	50	3 (2)			7.00 to 11.00	60 secs	-	-	-	-	0.1	0.0	20.9	-	0	0
BH04	1	50	3 (2)			7.00 to 11.00	90 secs	-	-	-	-	0.1	0.0	20.9	-	0	0
BH04	1	50	3 (2)			7.00 to 11.00	120 secs	-	-	-	-	0.1	0.0	20.9	-	0	0
BH04	1	50	3 (2)			7.00 to 11.00	150 secs	-	-	-	-	0.1	0.0	20.9	-	0	0
BH04	1	50	3 (2)			7.00 to 11.00	210 secs	-	-	-	-	0.1	0.0	20.9	-	0	0
Key: I = Initial, F	e Pea	k, SS = St	eady State. No	ote: LEL = Lo	ower Explosiv	e Limit = 5% v/v.											
R		nviron	ment I td		Compiled E	Зу	Date		Cheo	cked By			Date	Cont	ract Ref:		
11				LA.												24250	<b>っ</b>

RSK Environment Ltd	Complied By	Duic	Offeetted By	Dute				
Abbey Park	Mostreukjer	26/10/17				31358	3	
Humber Road	Contract:				Page:			
Coventry		Roade	Bypass		10	of	48	
CV3 4AQ								AGS

[Pressures] Previous During

<u>Start</u>

End Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH04	1	50	3 (2)			7.00 to 11.00	270 secs	-	-	-	-	0.1	0.0	20.9	-	0	0
BH04	1	50	3 (2)			7.00 to 11.00	330 secs	-	-	-	-	0.1	0.0	20.9	-	0	0
BH04	1	50	3 (2)			7.00 to 11.00	345 secs	-	-	-	-	0.1	0.0	20.9	-	0	0
BH04	1	50	3 (2)			7.00 to 11.00	360 secs	-	-	-	-	0.1	0.0	20.9	-	0	0
BH04	1	50	3 (2)			7.00 to 11.00	390 secs	-	-	-	-	0.1	0.0	20.9	-	0	0
BH04	1	50	3 (2)			7.00 to 11.00	450 secs	-	-	-	-	0.1	0.0	20.9	-	0	0
BH04	1	50	3 (2)			7.00 to 11.00	480 secs	-	-	-	-	0.1	0.0	20.9	-	0	0
BH04	1	50	3 (3)	11.00	9.44	7.00 to 11.00	13/10/2017 12:47:00	-	-	-	9.44	-	-	-	-	-	-
BH04	1	50	4	11.00		7.00 to 11.00	19/10/2017 12:27:00	993	993	0.0 <sub>(I)</sub>	-	-	-	-	-	-	-
BH04	1	50	4			7.00 to 11.00	30 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
BH04	1	50	4 (2)	11.00		7.00 to 11.00	19/10/2017 12:28:00	-	-	-	-	0.1	0.0	20.9	-	0	0
BH04	1	50	4 (2)			7.00 to 11.00	60 secs	-	-	-	-	0.3	0.0	20.8	-	0	0
BH04	1	50	4 (2)			7.00 to 11.00	90 secs	-	-	-	-	0.3	0.0	20.6	-	0	0
BH04	1	50	4 (2)			7.00 to 11.00	105 secs	-	-	-	-	0.3	0.0	20.6	-	0	0
BH04	1	50	4 (2)			7.00 to 11.00	120 secs	-	-	-	-	0.3	0.0	20.6	-	0	0
BH04	1	50	4 (2)			7.00 to 11.00	150 secs	-	-	-	-	0.3	0.0	20.6	-	0	0
BH04	1	50	4 (2)			7.00 to 11.00	180 secs	-	-	-	-	0.3	0.0	20.6	-	0	0
BH04	1	50	4 (2)			7.00 to 11.00	240 secs	-	-	-	-	0.3	0.0	20.6	-	0	0
Key: I = Initial, P	= Pea	k, SS = Ste	eady State. N	ote: LEL = Lo	wer Explosive	e Limit = 5% v/v.											
R	SK F	nviron	ment I td		Compiled B	Зу	Date		Chec	ked By			Date	Cont	ract Ref:		

#### RSK Environment Ltd Abbey Park Humber Road Coventry CV3 4AQ Compiled By Date Contract Ref: Image: Compiled By Date Checked By Date Contract Ref: Image: Compiled By Image: Contract Ref: Coventry CV3 4AQ Image: Contract Ref: Image: Contract Ref: Image: Contract Ref: Image: Contract Ref: Image: Coventry CV3 4AQ Image: Contract Ref: Image: Contract Ref: Image: Contract Ref: Image: Contract Ref: Image: Coventry CV3 4AQ Image: Contract Ref: Image: Contract Ref: Image: Contract Ref: Image: Contrac

[Pressures] Previous During Start

Equipment Used & Remarks

<u>End</u>

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydroge Sulphid (ppm)
BH04	1	50	4 (2)			7.00 to 11.00	300 secs	-	-	-	-	0.3	0.0	20.6	-	0	0
BH04	1	50	4 (3)	11.00	9.40	7.00 to 11.00	19/10/2017 12:36:00	-	-	-	9.40	-	-	-	-	-	-
BH05	1	50	1	12.00		8.00 to 12.00	28/09/2017	1008	1008	-0.1 <sub>(l)</sub>	-	-	-	-	-	-	-
BH05	1	50	1			8.00 to 12.00	30 secs	-	-	-0.1 <sub>(SS)</sub>	-	-	-	-	-	-	-
BH05	1	50	1 (2)	12.00		8.00 to 12.00	28/09/2017 00:01:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
BH05	1	50	1 (2)			8.00 to 12.00	15 secs	-	-	-	-	0.4	0.0	19.2	0.0	45	0
BH05	1	50	1 (2)			8.00 to 12.00	30 secs	-	-	-	-	0.4	0.0	18.3	0.0	61	0
BH05	1	50	1 (2)			8.00 to 12.00	60 secs	-	-	-	-	0.5	0.0	18.3	0.0	63	0
BH05	1	50	1 (2)			8.00 to 12.00	90 secs	-	-	-	-	0.5	0.0	18.3	0.0	63	0
BH05	1	50	1 (2)			8.00 to 12.00	120 secs	-	-	-	-	0.5	0.0	18.3	0.0	63	0
BH05	1	50	1 (2)			8.00 to 12.00	180 secs	-	-	-	-	0.5	0.0	18.3	0.0	63	0
BH05	1	50	1 (2)			8.00 to 12.00	240 secs	-	-	-	-	0.5	0.0	18.3	0.0	63	0
BH05	1	50	1 (2)			8.00 to 12.00	300 secs	-	-	-	-	0.5	0.0	18.3	0.0	63	0
BH05	1	50	1 (3)	12.00	9.78	8.00 to 12.00	28/09/2017 00:07:00	-	-	-	6.85	-	-	-	-	-	-
BH05	1	50	2	12.00		8.00 to 12.00	05/10/2017 12:55:00	1007	1008	-0.2 <sub>(l)</sub>	-	-	-	-	-	-	-
BH05	1	50	2			8.00 to 12.00	30 secs	-	-	-0.2 <sub>(SS)</sub>	-	-	-	-	-	-	-
BH05	1	50	2 (2)	12.00		8.00 to 12.00	05/10/2017 12:56:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
y: I = Initial, P	' = Peak	k, SS = Ste	eady State. No	ote: LEL = Lo	wer Explosive Compiled B	e Limit = 5% v/v.	Date		Cheo	cked By			Date	Contr	act Ref:	21259	2
<b>SK</b>	A Hu	bbey P Imber F Covent	Park Road try AQ	Contract:	DStreuxj		26/10/17 Roade	Bypass	;					Page:	: •	<b>12</b> of	3 48

[Pressures] Previous During

<u>Start</u>

End Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxyger (% / vol	n LEL ) (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
BH05	1	50	2 (2)			8.00 to 12.00	15 secs	-	-	-	-	0.3	0.0	20.1	0.0	14	0
BH05	1	50	2 (2)			8.00 to 12.00	30 secs	-	-	-	-	0.4	0.0	19.3	0.0	18	0
BH05	1	50	2 (2)			8.00 to 12.00	60 secs	-	-	-	-	0.4	0.0	19.2	0.0	19	0
BH05	1	50	2 (2)			8.00 to 12.00	90 secs	-	-	-	-	0.4	0.0	19.2	0.0	19	0
BH05	1	50	2 (2)			8.00 to 12.00	120 secs	-	-	-	-	0.4	0.0	19.1	0.0	19	0
BH05	1	50	2 (2)			8.00 to 12.00	180 secs	-	-	-	-	0.4	0.0	19.1	0.0	19	0
BH05	1	50	2 (2)			8.00 to 12.00	240 secs	-	-	-	-	0.4	0.0	19.1	0.0	20	0
BH05	1	50	2 (2)			8.00 to 12.00	300 secs	-	-	-	-	0.4	0.0	19.1	0.0	20	0
BH05	1	50	2 (3)	12.00	9.78	8.00 to 12.00	05/10/2017 13:02:00	-	-	-	6.92	-	-	-	-	-	-
BH05	1	50	3	12.00		8.00 to 12.00	13/10/2017 11:05:00	1006	1007	-2.7 <sub>(I)</sub>	-	-	-	-	-	-	-
BH05	1	50	3			8.00 to 12.00	240 secs	-	-	-0.2	-	-	-	-	-	-	-
BH05	1	50	3 (2)	12.00		8.00 to 12.00	13/10/2017 11:10:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
BH05	1	50	3 (2)			8.00 to 12.00	15 secs	-	-	-	-	0.3	0.0	20.5	0.0	4	0
BH05	1	50	3 (2)			8.00 to 12.00	30 secs	-	-	-	-	0.4	0.0	20.2	0.0	6	0
BH05	1	50	3 (2)			8.00 to 12.00	60 secs	-	-	I	-	0.5	0.0	20.0	0.0	7	0
BH05	1	50	3 (2)			8.00 to 12.00	90 secs	-	-	I	-	0.5	0.0	20.0	0.0	7	0
BH05	1	50	3 (2)			8.00 to 12.00	120 secs	-	-	-	-	0.5	0.0	20.0	0.0	7	0
BH05	1	50	3 (2)			8.00 to 12.00	180 secs	-	-	I	-	0.5	0.0	20.0	0.0	7	0
Key: I = Initial, P	= Pea	k, SS = Ste	eady State. N	ote: LEL = Lo	wer Explosiv	e Limit = 5% v/v.											
D	2K F	nviron	ment I td		Compiled E	3y	Date		Chec	ked By			Date	Cor	ntract Ref:		
Г	RSK Environment Ltd															24250	<b>^</b>

# RSK Environment Ltd Abbey Park Abbey Park MDStrawler Humber Road Contract: Coventry CV3 4AQ

[Pressures] Previous During Start

<u>End</u>

Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydroger Sulphide (ppm)
BH05	1	50	3 (2)			8.00 to 12.00	240 secs	-	-	-	-	0.5	0.0	20.0	0.0	7	0
BH05	1	50	3 (2)			8.00 to 12.00	300 secs	-	-	-	-	0.5	0.0	20.0	0.0	7	0
BH05	1	50	3 (3)	12.00	9.84	8.00 to 12.00	13/10/2017 11:16:00	-	-	-	7.06	-	-	-	-	-	-
BH05	1	50	4	12.00		8.00 to 12.00	19/10/2017 11:46:00	1000	996	0.0 <sub>(I)</sub>	-	-	-	-	-	-	-
BH05	1	50	4			8.00 to 12.00	15 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
BH05	1	50	4 (2)	12.00		8.00 to 12.00	19/10/2017 11:46:30	-	-	-	-	0.1	0.0	20.9	-	0	0
BH05	1	50	4 (2)			8.00 to 12.00	15 secs	-	-	-	-	0.5	0.0	20.5	-	4	0
BH05	1	50	4 (2)			8.00 to 12.00	30 secs	-	-	-	-	0.5	0.0	19.9	-	5	0
BH05	1	50	4 (2)			8.00 to 12.00	60 secs	-	-	-	-	0.5	0.0	19.9	-	6	0
BH05	1	50	4 (2)			8.00 to 12.00	90 secs	-	-	-	-	0.5	0.0	19.9	-	6	0
BH05	1	50	4 (2)			8.00 to 12.00	120 secs	-	-	-	-	0.5	0.0	19.9	-	6	0
BH05	1	50	4 (2)			8.00 to 12.00	150 secs	-	-	-	-	0.5	0.0	19.9	-	6	0
BH05	1	50	4 (2)			8.00 to 12.00	210 secs	-	-	-	-	0.5	0.0	19.9	-	6	0
BH05	1	50	4 (3)	12.00	9.80	8.00 to 12.00	19/10/2017 11:52:00	-	-	-	7.10	-	-	-	-	-	-
WS01	1	50	1	2.50		1.50 to 2.50	28/09/2017 09:24:00	1001	1001	0.0(1)	-	-	-	-	-	-	-
WS01	1	50	1			1.50 to 2.50	30 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS01	1	50	1 (2)	2.50		1.50 to 2.50	28/09/2017 09:25:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
ey: I = Initial, F	P = Pea	k, SS = Ste	eady State. No	ote: LEL = Lo	wer Explosiv	e Limit = 5% v/v.		1		1							
R	SK E	Inviron	ment Ltd		Compiled E	Зу	Date		Cheo	cked By			Date	Contr	act Ref:		
SK	A Hu	bbey F Imber F	Park Road	Contract:	DStreaks	s	26/10/17							Page:		31358	3
		Covent CV3 4/	try AQ				Roade	Bypass	5						-	<b>I4</b> of	48

[Pressures] Previous During

<u>Start</u>

<u>End</u>

Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydroger Sulphide (ppm)
WS01	1	50	1 (2)			1.50 to 2.50	15 secs	-	-	-	-	1.1	0.0	12.2	0.0	2	0
WS01	1	50	1 (2)			1.50 to 2.50	30 secs	-	-	-	-	1.0	0.0	10.6	0.0	2	0
WS01	1	50	1 (2)			1.50 to 2.50	60 secs	-	-	-	-	1.0	0.0	10.3	0.0	2	0
WS01	1	50	1 (2)			1.50 to 2.50	90 secs	-	-	-	-	1.0	0.0	10.2	0.0	2	0
WS01	1	50	1 (2)			1.50 to 2.50	120 secs	-	-	-	-	1.1	0.0	10.1	0.0	1	0
WS01	1	50	1 (2)			1.50 to 2.50	180 secs	-	-	-	-	1.1	0.0	10.1	0.0	1	0
WS01	1	50	1 (2)			1.50 to 2.50	240 secs	-	-	-	-	1.0	0.0	10.1	0.0	1	0
WS01	1	50	1 (2)			1.50 to 2.50	300 secs	-	-	-	-	1.0	0.0	10.1	0.0	1	0
WS01	1	50	1 (3)	2.50	2.48	1.50 to 2.50	28/09/2017 09:31:00	-	-	-	DRY	-	-	-	-	-	-
WS01	1	50	2	2.50		1.50 to 2.50	05/10/2017 07:30:00	1001	1001	0.0 <sub>(I)</sub>	-	-	-	-	-	-	-
WS01	1	50	2			1.50 to 2.50	30 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS01	1	50	2 (2)	2.50		1.50 to 2.50	05/10/2017 07:31:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS01	1	50	2 (2)			1.50 to 2.50	15 secs	-	-	-	-	1.7	0.0	12.9	0.0	1	0
WS01	1	50	2 (2)			1.50 to 2.50	30 secs	-	-	-	-	1.7	0.0	5.1	0.0	1	0
WS01	1	50	2 (2)			1.50 to 2.50	60 secs	-	-	-	-	1.7	0.0	4.4	0.0	1	0
WS01	1	50	2 (2)			1.50 to 2.50	90 secs	-	-	-	-	1.7	0.0	4.3	0.0	0	0
WS01	1	50	2 (2)			1.50 to 2.50	120 secs	-	-	-	-	1.7	0.0	4.3	0.0	0	0
WS01	1	50	2 (2)			1.50 to 2.50	180 secs	-	-	-	-	1.7	0.0	4.3	0.0	0	0
y: I = Initial, P	= Peal	k, SS = Ste	eady State. No	ote: LEL = Lo	wer Explosiv	e Limit = 5% v/v.		· · · · · · · · · · · · · · · · · · ·									
R	SK F	nviron	ment Ltd		Compiled E	\$y	Date		Cheo	ked By			Date	Contra	act Ref:		
SK	A	bbey F Imber F	Park Road	Contract:	DStreaks	s	26/10/17							Page:		31358	3
	(	Covent	try				Roade	Bypass	;						•	<b>15</b> of	48

[Pressures] Previous During

<u>Start</u>

End Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
WS01	1	50	2 (2)			1.50 to 2.50	240 secs	-	-	-	-	1.7	0.0	4.2	0.0	0	0
WS01	1	50	2 (2)			1.50 to 2.50	300 secs	-	-	-	-	1.7	0.0	4.2	0.0	0	0
WS01	1	50	2 (3)	2.50	2.48	1.50 to 2.50	05/10/2017 07:37:00	-	-	-	DRY	-	-	-	-	-	-
WS01	1	50	3	2.50		1.50 to 2.50	13/10/2017 10:00:00	1007	1007	0.2 <sub>(I)</sub>	-	-	-	-	-	-	-
WS01	1	50	3			1.50 to 2.50	30 secs	-	-	0.2 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS01	1	50	3 (2)	2.50		1.50 to 2.50	13/10/2017 10:01:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS01	1	50	3 (2)			1.50 to 2.50	15 secs	-	-	-	-	1.7	0.0	13.1	0.0	0	0
WS01	1	50	3 (2)			1.50 to 2.50	30 secs	-	-	-	-	1.7	0.0	3.6	0.0	0	0
WS01	1	50	3 (2)			1.50 to 2.50	60 secs	-	-	-	-	1.7	0.0	3.0	0.0	0	0
WS01	1	50	3 (2)			1.50 to 2.50	90 secs	-	-	-	-	1.7	0.0	2.9	0.0	0	0
WS01	1	50	3 (2)			1.50 to 2.50	120 secs	-	-	-	-	1.7	0.0	2.9	0.0	0	0
WS01	1	50	3 (2)			1.50 to 2.50	180 secs	-	-	-	-	1.7	0.0	2.9	0.0	0	0
WS01	1	50	3 (2)			1.50 to 2.50	240 secs	-	-	-	-	1.7	0.0	2.8	0.0	0	0
WS01	1	50	3 (2)			1.50 to 2.50	300 secs	-	-	-	-	1.7	0.0	2.8	0.0	0	0
WS01	1	50	3 (3)	2.50	2.48	1.50 to 2.50	13/10/2017 10:07:00	-	-	-	DRY	-	-	-	-	-	-
WS01	1	50	4	2.50		1.50 to 2.50	19/10/2017 10:38:00	-	-	0.1 <sub>(I)</sub>	-	-	-	-	-	-	-
WS01	1	50	4			1.50 to 2.50	30 secs	-	-	0.1 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS01	1	50	4 (2)	2.50		1.50 to 2.50	19/10/2017 10:38:45	-	-	-	-	0.1	0.0	20.9	-	0	-
(ey: I = Initial, P	= Pea	k, SS = Ste	eady State. N	ote: LEL = Lo	wer Explosiv	e Limit = 5% v/v.		1									

	PSK Environment I td	Compiled By	Date	Checked By	Date	Contract Ref:			
DCK	Abbey Park	Mostreukje	26/10/17			;	31358	3	
	Humber Road	Contract:				Page:			
	Coventry CV3 4AQ		Roade	Bypass		16	of	48	AGS

[Pressures] Previous During

<u>Start</u>

<u>End</u>

Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydroge Sulphide (ppm)
WS01	1	50	4 (2)			1.50 to 2.50	15 secs	-	-	-	-	1.8	0.0	17.0	-	0	0
WS01	1	50	4 (2)			1.50 to 2.50	45 secs	-	-	-	-	1.7	0.0	5.8	-	0	0
WS01	1	50	4 (2)			1.50 to 2.50	75 secs	-	-	-	-	1.7	0.0	4.8	-	0	0
WS01	1	50	4 (2)			1.50 to 2.50	105 secs	-	-	-	-	1.7	0.0	4.5	-	0	0
WS01	1	50	4 (2)			1.50 to 2.50	135 secs	-	-	-	-	1.7	0.0	4.4	-	0	0
WS01	1	50	4 (2)			1.50 to 2.50	195 secs	-	-	-	-	1.7	0.0	4.1	-	0	0
WS01	1	50	4 (2)			1.50 to 2.50	255 secs	-	-	-	-	1.7	0.0	4.0	-	0	0
WS01	1	50	4 (2)			1.50 to 2.50	315 secs	-	-	-	-	1.7	0.0	3.9	-	0	0
WS01	1	50	4 (2)			1.50 to 2.50	375 secs	-	-	-	-	1.7	0.0	3.9	-	0	0
WS01	1	50	4 (3)	2.50	2.48	1.50 to 2.50	19/10/2017 10:48:00	-	-	-	DRY	-	-	-	-	-	-
WS02	1	50	1	5.00		3.00 to 5.00	02/09/2017 10:02:00	1004	1004	0.1 <sub>(l)</sub>	-	-	-	-	-	-	-
WS02	1	50	1			3.00 to 5.00	30 secs	-	-	0.1 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS02	1	50	1 (2)	5.00		3.00 to 5.00	02/09/2017 10:03:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS02	1	50	1 (2)			3.00 to 5.00	15 secs	-	-	-	-	1.7	0.0	17.6	0.0	2	0
WS02	1	50	1 (2)			3.00 to 5.00	30 secs	-	-	-	-	1.6	0.0	15.8	0.0	2	0
WS02	1	50	1 (2)			3.00 to 5.00	60 secs	-	-	-	-	1.6	0.0	15.8	0.0	2	0
WS02	1	50	1 (2)			3.00 to 5.00	93 secs	-	-	-	-	1.6	0.0	15.8	0.0	2	0
y: I = Initial, P	= Peal	k, SS = Ste	eady State. No	ote: LEL = Lo	ower Explosiv	e Limit = 5% v/v.	Data		Choo	wood By			Data	Contra	act Ref		
R	SK E A	nviron bbey F	ment Ltd Park	n	Dstrewy	e l	26/10/17		Chec	neu by			Dale			31358	3
	Hu	Imber F Covent CV3 44	Road try AQ	Contract:			Roade	Bypass	;					Page:		17 of	48

AGS

[Pressures] Previous During

<u>Start</u>

<u>End</u>

Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogei Sulphide (ppm)
WS02	1	50	1 (2)			3.00 to 5.00	120 secs	-	-	-	-	1.6	0.0	15.8	0.0	2	0
WS02	1	50	1 (2)			3.00 to 5.00	180 secs	-	-	-	-	1.6	0.0	15.8	0.0	2	0
WS02	1	50	1 (2)			3.00 to 5.00	240 secs	-	-	-	-	1.6	0.0	15.8	0.0	2	0
WS02	1	50	1 (2)			3.00 to 5.00	300 secs	-	-	-	-	1.6	0.0	15.8	0.0	2	0
WS02	1	50	1 (3)	5.00	4.98	3.00 to 5.00	02/09/2017 10:09:00	-	-	-	1.18	-	-	-	-	-	-
WS02	1	50	2	5.00		3.00 to 5.00	05/10/2017 10:25:00	1018	1005	15.4 <sub>(I)</sub>	-	-	-	-	-	-	-
WS02	1	50	2			3.00 to 5.00	420 secs	-	-	0.2 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS02	1	50	2 (2)	5.00		3.00 to 5.00	05/10/2017 10:33:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS02	1	50	2 (2)			3.00 to 5.00	15 secs	-	-	-	-	2.1	0.0	18.6	0.0	0	0
WS02	1	50	2 (2)			3.00 to 5.00	30 secs	-	-	-	-	2.1	0.0	17.7	0.0	0	0
WS02	1	50	2 (2)			3.00 to 5.00	60 secs	-	-	-	-	2.1	0.0	17.6	0.0	0	0
WS02	1	50	2 (2)			3.00 to 5.00	90 secs	-	-	-	-	2.1	0.0	17.6	0.0	0	0
WS02	1	50	2 (2)			3.00 to 5.00	120 secs	-	-	-	-	2.1	0.0	17.6	0.0	0	0
WS02	1	50	2 (2)			3.00 to 5.00	180 secs	-	-	-	-	2.1	0.0	17.6	0.0	0	0
WS02	1	50	2 (2)			3.00 to 5.00	240 secs	-	-	-	-	2.1	0.0	17.6	0.0	0	0
WS02	1	50	2 (2)			3.00 to 5.00	300 secs	-	-	-	-	2.1	0.0	17.6	0.0	0	0
WS02	1	50	2 (3)	5.00	5.00	3.00 to 5.00	05/10/2017 10:39:00	-	-	-	2.77	-	-	-	-	-	-
WS02	1	50	3	5.00		3.00 to 5.00	13/10/2017 10:18:00	1051	1009	18.2 <sub>(I)</sub>	-	-	-	-	-	-	-
y: I = Initial, P	= Peal	k, SS = Ste	eady State. No	ote: LEL = Lo	wer Explosiv	e Limit = 5% v/v.											
R	SK E	nviron	ment I td		Compiled E	Зу	Date		Cheo	cked By			Date	Contr	act Ref:		
<b>SK</b>	A A	bbey F	Park	<b>N</b>	DStrews	s	26/10/17							Page		31358	3
	T IC	CV3 4	try				Roade	Bypass	5					rage.		<b>18</b> of	48

GINT\_LIBRARY\_V8\_06.GLB : E - GAS MON - STANDARD - 6B - A4L : 313583 - ROADE BYPASS.GPJ : 26/10/17 09:44 : MS4 :

[Pressures] Previous During

<u>Start</u>

<u>End</u>

Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
WS02	1	50	3			3.00 to 5.00	30 secs	-	-	0.3 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS02	1	50	3 (2)	5.00		3.00 to 5.00	13/10/2017 10:19:00	-	-	-	-	0.1	0.0	20.9	-	0	0
WS02	1	50	3 (2)			3.00 to 5.00	30 secs	-	-	-	-	1.9	0.0	20.1	-	1	0
WS02	1	50	3 (2)			3.00 to 5.00	60 secs	-	-	-	-	2.2	0.0	19.4	-	1	0
WS02	1	50	3 (2)			3.00 to 5.00	90 secs	-	-	-	-	2.2	0.0	17.5	-	1	0
WS02	1	50	3 (2)			3.00 to 5.00	105 secs	-	-	-	-	2.2	0.0	17.3	-	1	0
WS02	1	50	3 (2)			3.00 to 5.00	120 secs	-	-	I	-	2.2	0.0	17.3	-	1	0
WS02	1	50	3 (2)			3.00 to 5.00	150 secs	-	-	-	-	2.2	0.0	17.3	-	1	0
WS02	1	50	3 (2)			3.00 to 5.00	180 secs	-	-	-	-	2.1	0.0	17.4	-	1	0
WS02	1	50	3 (3)	5.00	4.98	3.00 to 5.00	13/10/2017 10:24:00	-	-	-	3.05	-	-	-	-	-	-
WS02	1	50	4	5.00		3.00 to 5.00	18/10/2017 10:12:00	1002	1002	17.8 <sub>(I)</sub>	-	-	-	-	-	-	-
WS02	1	50	4			3.00 to 5.00	30 secs	-	-	0.2 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS02	1	50	4 (2)	5.00		3.00 to 5.00	18/10/2017 10:16:00	-	-	-	-	0.1	0.0	20.9	-	0	0
WS02	1	50	4 (2)			3.00 to 5.00	60 secs	-	-	-	-	2.2	0.0	20.1	-	0	0
WS02	1	50	4 (2)			3.00 to 5.00	90 secs	-	-	-	-	2.1	0.0	17.7	-	0	0
WS02	1	50	4 (2)			3.00 to 5.00	120 secs	-	-	-	-	2.1	0.0	17.3	-	0	0
WS02	1	50	4 (2)			3.00 to 5.00	150 secs	-	-	-	-	2.1	0.0	17.3	-	0	0
WS02	1	50	4 (2)			3.00 to 5.00	180 secs	-	-	-	-	2.1	0.0	17.3	-	0	0
y: I = Initial, F	e Pea	k, SS = St	eady State. No	ote: LEL = Lc	ower Explosiv	e Limit = 5% v/v.	I						1			1	
D		nviron	ment I td		Compiled E	Зу	Date		Chec	ked By			Date	Contr	act Ref:		
<b>SK</b>	ок L А	bbey F	Park	M	DStrews	s	26/10/17									31358	3
	ΗL	Coveni	koad try AQ	Contract:			Roade	Bypass	i					Page:		<b>19</b> of	48

[Pressures] Previous During

<u>Start</u>

<u>End</u>

Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogei Sulphide (ppm)
WS02	1	50	4 (2)			3.00 to 5.00	240 secs	-	-	-	-	2.1	0.0	17.3	-	0	0
WS02	1	50	4 (2)			3.00 to 5.00	300 secs	-	-	-	-	2.1	0.0	17.3	-	0	0
WS02	1	50	4 (2)			3.00 to 5.00	360 secs	-	-	-	-	2.1	0.0	17.3	-	0	0
WS02	1	50	4 (3)	5.00		3.00 to 5.00	18/10/2017 10:23:00	-	-	-	-	-	-	-	-	-	-
WS03	1	50	1	3.00		1.00 to 3.00	28/09/2017 12:37:00	1005	1005	0.0(1)	-	_	-	-	-	-	_
WS03	1	50	1			1.00 to 3.00	30 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS03	1	50	1 (2)	3.00		1.00 to 3.00	28/09/2017 12:38:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS03	1	50	1 (2)			1.00 to 3.00	15 secs	-	-	-	-	2.2	0.0	18.6	0.0	0	1
WS03	1	50	1 (2)			1.00 to 3.00	30 secs	-	-	-	-	2.1	0.0	18.2	0.0	0	1
WS03	1	50	1 (2)			1.00 to 3.00	60 secs	-	-	-	-	2.1	0.0	18.2	0.0	0	1
WS03	1	50	1 (2)			1.00 to 3.00	90 secs	-	-	-	-	2.1	0.0	18.2	0.0	0	1
WS03	1	50	1 (2)			1.00 to 3.00	120 secs	-	-	-	-	2.1	0.0	18.2	0.0	0	1
WS03	1	50	1 (2)			1.00 to 3.00	180 secs	-	-	-	-	2.1	0.0	18.2	0.0	0	1
WS03	1	50	1 (2)			1.00 to 3.00	240 secs	-	-	-	-	2.1	0.0	18.2	0.0	0	1
WS03	1	50	1 (2)			1.00 to 3.00	300 secs	-	-	-	-	2.1	0.0	18.2	0.0	0	1
WS03	1	50	1 (3)	3.00	3.00	1.00 to 3.00	28/09/2017 12:44:00	-	-	-	DRY	-	-	-	-	-	-
WS03	1	50	2	3.00		1.00 to 3.00	06/10/2017 12:30:00	1003	1003	0.3 <sub>(I)</sub>	-	-	-	-	-	-	-
y: I = Initial, P	= Peal	k, SS = Ste	eady State. N	ote: LEL = Lc	ower Explosiv	e Limit = 5% v/v.	•										
R	SK E	nviron	ment Ltd		Compiled E	3y	Date		Cheo	cked By		_	Date	Contra	act Ref:		
SK	A	bbey F	Park	n	DStrews	S	26/10/17									31358	3
	Hu	mber F Coveni CV3 47	≺oad try ∖Q	Contract:			Roade	Bypass	5					Page:	:	20 of	48

AGS

[Pressures] Previous During

<u>Start</u>

<u>End</u>

Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
WS03	1	50	2			1.00 to 3.00	30 secs	-	-	0.3 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS03	1	50	2 (2)	3.00		1.00 to 3.00	06/10/2017 12:31:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS03	1	50	2 (2)			1.00 to 3.00	15 secs	-	-	-	-	2.4	0.0	19.3	0.0	0	0
WS03	1	50	2 (2)			1.00 to 3.00	30 secs	-	-	-	-	2.3	0.0	18.8	0.0	0	0
WS03	1	50	2 (2)			1.00 to 3.00	60 secs	-	-	-	-	2.2	0.0	18.7	0.0	0	0
WS03	1	50	2 (2)			1.00 to 3.00	90 secs	-	-	-	-	2.2	0.0	18.7	0.0	0	0
WS03	1	50	2 (2)			1.00 to 3.00	120 secs	-	-	-	-	2.2	0.0	18.7	0.0	0	0
WS03	1	50	2 (2)			1.00 to 3.00	180 secs	-	-	-	-	2.2	0.0	18.7	0.0	0	0
WS03	1	50	2 (2)			1.00 to 3.00	240 secs	-	-	-	-	2.2	0.0	18.6	0.0	0	0
WS03	1	50	2 (2)			1.00 to 3.00	300 secs	-	-	-	-	2.2	0.0	18.6	0.0	0	0
WS03	1	50	2 (3)	3.00	2.99	1.00 to 3.00	06/10/2017 12:37:00	-	-	-	DRY	-	-	-	-	-	-
WS03	1	50	3	3.00		1.00 to 3.00	13/10/2017 11:50:00	1009	1009	0.0 <sub>(I)</sub>	-	-	-	-	-	-	-
WS03	1	50	3			1.00 to 3.00	30 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS03	1	50	3 (2)	3.00		1.00 to 3.00	13/10/2017 11:51:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS03	1	50	3 (2)			1.00 to 3.00	15 secs	-	-	-	-	2.1	0.0	20.0	0.0	0	0
WS03	1	50	3 (2)			1.00 to 3.00	30 secs	-	-	-	-	2.1	0.0	19.3	0.0	0	0
WS03	1	50	3 (2)			1.00 to 3.00	60 secs	-	-	-	-	2.1	0.0	19.2	0.0	0	0
WS03	1	50	3 (2)			1.00 to 3.00	90 secs	-	-	-	-	2.1	0.0	19.2	0.0	0	0
y: I = Initial, F	P = Pea	k, SS = Ste	eady State. No	ote: LEL = Lo	wer Explosive	e Limit = 5% v/v.											
D		Inviron	ment I td		Compiled B	Sy	Date		Chec	ked By			Date	Contr	act Ref:		
SK	ок с А н	bbey F	Park	<b>N</b>	DStrewg	s	26/10/17							Page		31358	3
	110	Coveni CV3 4/	try AQ	Contract:			Roade	Bypass	5					Fage	2	<b>21</b> of	48

[Pressures] Previous During

<u>Start</u>

<u>End</u>

Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydroger Sulphide (ppm)
WS03	1	50	3 (2)			1.00 to 3.00	120 secs	-	-	-	-	2.1	0.0	19.3	0.0	0	0
WS03	1	50	3 (2)			1.00 to 3.00	180 secs	-	-	-	-	2.1	0.0	19.3	0.0	0	0
WS03	1	50	3 (2)			1.00 to 3.00	240 secs	-	-	-	-	2.1	0.0	19.3	0.0	0	0
WS03	1	50	3 (2)			1.00 to 3.00	300 secs	-	-	-	-	2.1	0.0	19.3	0.0	0	0
WS03	1	50	3 (3)	3.00	3.02	1.00 to 3.00	13/10/2017 11:57:00	-	-	-	DRY	-	-	-	-	-	-
WS03	1	50	4	3.00		1.00 to 3.00	19/10/2017 12:39:00	993	993	0.0 <sub>(I)</sub>	-	-	-	-	-	-	-
WS03	1	50	4			1.00 to 3.00	30 secs	993	993	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS03	1	50	4 (2)	3.00		1.00 to 3.00	19/10/2017 12:40:00	-	-	-	-	0.1	0.0	20.9	-	0	0
WS03	1	50	4 (2)			1.00 to 3.00	30 secs	-	-	-	-	1.9	0.0	20.5	-	0	0
WS03	1	50	4 (2)			1.00 to 3.00	45 secs	-	-	-	-	1.8	0.0	19.7	-	0	0
WS03	1	50	4 (2)			1.00 to 3.00	60 secs	-	-	-	-	1.8	0.0	19.6	-	0	0
WS03	1	50	4 (2)			1.00 to 3.00	90 secs	-	-	-	-	1.8	0.0	19.6	-	0	0
WS03	1	50	4 (2)			1.00 to 3.00	120 secs	-	-	-	-	1.8	0.0	19.6	-	0	0
WS03	1	50	4 (2)			1.00 to 3.00	180 secs	-	-	-	-	1.8	0.0	19.6	-	0	0
WS03	1	50	4 (2)			1.00 to 3.00	240 secs	-	-	-	-	1.8	0.0	19.6	-	0	0
WS03	1	50	4 (2)			1.00 to 3.00	300 secs	-	-	-	-	1.8	0.0	19.6	-	0	0
WS03	1	50	4 (2)			1.00 to 3.00	360 secs	-	-	-	-	1.8	0.0	19.6	-	0	0
WS03	1	50	4 (3)	3.00	3.00	1.00 to 3.00	19/10/2017 12:50:00	-	-	-	3.00	-	-	-	-	-	-
ey: I = Initial, P	= Peal	k, SS = Ste	eady State. No	ote: LEL = Lo	wer Explosiv	e Limit = 5% v/v.				-							
D		nviron	ment I td		Compiled E	Зу	Date		Cheo	cked By			Date	Contra	act Ref:		
	A	bbey F	Park	n	DStreak	S	26/10/17									31358	3
SN	Hu	imbér F Covent CV3 44	Road try AQ	Contract:			Roade	Bypass	;			I		Page:	2	22 of	48

AGS

[Pressures] Previous During

<u>Start</u>

End

Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydroge Sulphide (ppm)
WS04	1	50	1	2.00		1.00 to 2.00	28/09/2017 13:25:00	-	-	0.1 <sub>(I)</sub>	-	-	-	-	-	-	-
WS04	1	50	1			1.00 to 2.00	30 secs	-	-	0.1 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS04	1	50	1 (2)	2.00		1.00 to 2.00	28/09/2017 13:26:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS04	1	50	1 (2)			1.00 to 2.00	15 secs	-	-	-	-	1.2	0.0	19.4	0.0	0	0
WS04	1	50	1 (2)			1.00 to 2.00	30 secs	-	-	-	-	1.2	0.0	19.5	0.0	0	0
WS04	1	50	1 (2)			1.00 to 2.00	60 secs	-	-	-	-	1.1	0.0	19.4	0.0	0	0
WS04	1	50	1 (2)			1.00 to 2.00	90 secs	-	-	-	-	1.1	0.0	19.4	0.0	0	0
WS04	1	50	1 (2)			1.00 to 2.00	120 secs	-	-	-	-	1.1	0.0	19.4	0.0	0	0
WS04	1	50	1 (2)			1.00 to 2.00	180 secs	-	-	-	-	1.1	0.0	19.4	0.0	0	0
WS04	1	50	1 (2)			1.00 to 2.00	240 secs	-	-	-	-	1.1	0.0	19.4	0.0	0	0
WS04	1	50	1 (2)			1.00 to 2.00	300 secs	-	-	-	-	1.1	0.0	19.4	0.0	0	0
WS04	1	50	1 (3)	2.00	2.10	1.00 to 2.00	28/09/2017 13:32:00	-	-	-	DRY	-	-	-	-	-	-
WS04	1	50	2	2.00		1.00 to 2.00	06/10/2017 14:20:00	1008	1008	0.0 <sub>(I)</sub>	-	-	-	-	-	-	-
WS04	1	50	2			1.00 to 2.00	30 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS04	1	50	2 (2)	2.00		1.00 to 2.00	06/10/2017 14:21:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS04	1	50	2 (2)			1.00 to 2.00	15 secs	-	-	-	-	0.1	0.0	20.7	0.0	1	0
WS04	1	50	2 (2)			1.00 to 2.00	30 secs	-	-	-	-	0.2	0.0	20.6	0.0	0	0
ey: I = Initial, F	9 = Pea	k, SS = St	eady State. No	ote: LEL = Lo	wer Explosiv	e Limit = 5% v/v.											
R	RSK Environment Lt				Compiled E	Зу	Date		Cheo	cked By			Date	Contr	act Ref:		
<b>SK</b>	A	bbey F	Park	n	DStreak	s	26/10/17									31358	3
	Ηu	imber F	≺oad	Contract:										Page	:		

**Roade Bypass** 

23 of 48

AGS

Coventry

CV3 4AQ

[Pressures] Previous During

<u>Start</u>

<u>End</u>

Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydroger Sulphide (ppm)
WS04	1	50	2 (2)			1.00 to 2.00	60 secs	-	-	-	-	0.2	0.0	20.5	0.0	0	0
WS04	1	50	2 (2)			1.00 to 2.00	90 secs	-	-	-	-	0.2	0.0	20.5	0.0	0	0
WS04	1	50	2 (2)			1.00 to 2.00	120 secs	-	-	-	-	0.3	0.0	20.4	0.0	0	0
WS04	1	50	2 (2)			1.00 to 2.00	180 secs	-	-	-	-	0.5	0.0	20.2	0.0	0	0
WS04	1	50	2 (2)			1.00 to 2.00	240 secs	-	-	-	-	0.6	0.0	20.0	0.0	0	0
WS04	1	50	2 (2)			1.00 to 2.00	300 secs	-	-	-	-	0.8	0.0	19.8	0.0	0	0
WS04	1	50	2 (2)			1.00 to 2.00	360 secs	-	-	-	-	1.0	0.0	19.7	0.0	0	0
WS04	1	50	2 (2)			1.00 to 2.00	420 secs	-	-	-	-	1.0	0.0	19.7	0.0	0	0
WS04	1	50	2 (3)	2.00	2.12	1.00 to 2.00	06/10/2017 14:29:00	-	-	-	1.90	-	-	-	-	-	-
WS04	1	50	3	2.00		1.00 to 2.00	13/10/2017 11:20:00	1007	1007	0.0 <sub>(I)</sub>	-	-	-	-	-	-	-
WS04	1	50	3			1.00 to 2.00	30 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS04	1	50	3 (2)	2.00		1.00 to 2.00	13/10/2017 11:21:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS04	1	50	3 (2)			1.00 to 2.00	15 secs	-	-	-	-	1.3	0.0	20.4	0.0	1	0
WS04	1	50	3 (2)			1.00 to 2.00	30 secs	-	-	-	-	1.3	0.0	19.8	0.0	0	0
WS04	1	50	3 (2)			1.00 to 2.00	60 secs	-	-	-	-	1.3	0.0	19.8	0.0	0	0
WS04	1	50	3 (2)			1.00 to 2.00	90 secs	-	-	-	-	1.3	0.0	19.8	0.0	0	0
WS04	1	50	3 (2)			1.00 to 2.00	120 secs	-	-	-	-	1.3	0.0	19.8	0.0	0	0
WS04	1	50	3 (2)			1.00 to 2.00	180 secs	-	-	-	-	1.3	0.0	19.8	0.0	0	0
y: I = Initial, P	= Peal	k, SS = Ste	eady State. No	ote: LEL = Lc	ower Explosiv	e Limit = 5% v/v.											
R	SK E	Inviron	ment Ltd		Compiled E	Зу	Date		Chec	ked By			Date	Contra	act Ref:		
SK	A Hu	bbey F Imber F	Park Road	Contract:	DStrews	e	26/10/17							Page:		31358	3
	(	Covent CV3 44	try \Q				Roade	Bypass	i						2	24 of	48

[Pressures] Previous During

<u>Start</u>

End Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
WS04	1	50	3 (2)			1.00 to 2.00	240 secs	-	-	-	-	1.3	0.0	19.8	0.0	0	0
WS04	1	50	3 (2)			1.00 to 2.00	300 secs	-	-	-	-	1.3	0.0	19.8	0.0	0	0
WS04	1	50	3 (3)	2.00	2.10	1.00 to 2.00	13/10/2017 11:27:00	-	-	-	1.87	-	-	-	-	-	-
WS04	1	50	4	2.00		1.00 to 2.00	19/10/2017 12:03:00	995	995	0.0 <sub>(I)</sub>	-	-	-	-	-	-	-
WS04	1	50	4			1.00 to 2.00	15 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS04	1	50	4 (2)	2.00		1.00 to 2.00	19/10/2017 12:03:30	-	-	-	-	0.1	0.0	20.9	-	0	0
WS04	1	50	4 (2)			1.00 to 2.00	30 secs	-	-	-	-	1.3	0.0	20.6	-	0	0
WS04	1	50	4 (2)			1.00 to 2.00	45 secs	-	-	-	-	1.2	0.0	19.9	-	0	0
WS04	1	50	4 (2)			1.00 to 2.00	60 secs	-	-	-	-	1.2	0.0	19.9	-	0	0
WS04	1	50	4 (2)			1.00 to 2.00	90 secs	-	-	-	-	1.2	0.0	19.9	-	0	0
WS04	1	50	4 (2)			1.00 to 2.00	105 secs	-	-	-	-	1.2	0.0	19.9	-	0	0
WS04	1	50	4 (2)			1.00 to 2.00	150 secs	-	-	-	-	1.2	0.0	19.9	-	0	0
WS04	1	50	4 (2)			1.00 to 2.00	210 secs	-	-	-	-	1.2	0.0	19.9	-	0	0
WS04	1	50	4 (2)			1.00 to 2.00	270 secs	-	-	-	-	1.2	0.0	19.9	-	0	0
WS04	1	50	4 (3)	2.00	2.10	1.00 to 2.00	19/10/2017 12:09:00	-	-	-	1.87	-	-	-	-	-	-
WS05	1	50	1	4.00		2.00 to 4.00	28/09/2017	1008	1008	-0.1 <sub>(I)</sub>	-	-	-	-	-	-	-
WS05	1	50	1			2.00 to 4.00	30 secs	-	-	-0.1 <sub>(SS)</sub>	-	-	-	-	-	-	-
Key: I = Initial, F	P = Pea	k, SS = St	eady State. N	ote: LEL = Lo	wer Explosiv	e Limit = 5% v/v.											
	DSK Environment I t				Compiled E	3y	Date		Chec	ked By			Date	Contr	act Ref:		
SK "	Abbey Park				DStrews	s	26/10/17									31358	3
	Ηu	imber f	≺oad	Contract:										Page:			

**Roade Bypass** 

**25** of **48** 

AGS

GINT\_LIBRARY\_V8\_06.GLB : E - GAS MON - STANDARD - 6B - A4L : 313583 - ROADE BYPASS.GPJ : 26/10/17 09:44 : MS4 :

Coventry

CV3 4AQ

[Pressures] Previous During

End Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
WS05	1	50	1 (2)	4.00		2.00 to 4.00	28/09/2017 00:01:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS05	1	50	1 (2)			2.00 to 4.00	15 secs	-	-	-	-	0.3	0.0	20.1	0.0	2	0
WS05	1	50	1 (2)			2.00 to 4.00	30 secs	-	-	-	-	0.3	0.0	19.7	0.0	2	0
WS05	1	50	1 (2)			2.00 to 4.00	60 secs	-	-	-	-	0.4	0.0	19.7	0.0	2	0
WS05	1	50	1 (2)			2.00 to 4.00	90 secs	-	-	-	-	0.4	0.0	19.6	0.0	2	0
WS05	1	50	1 (2)			2.00 to 4.00	120 secs	-	-	-	-	0.4	0.0	19.5	0.0	2	0
WS05	1	50	1 (2)			2.00 to 4.00	180 secs	-	-	-	-	0.5	0.0	19.4	0.0	1	0
WS05	1	50	1 (2)			2.00 to 4.00	240 secs	-	-	-	-	0.6	0.0	19.3	0.0	2	0
WS05	1	50	1 (2)			2.00 to 4.00	300 secs	-	-	-	-	0.6	0.0	19.2	0.0	1	0
WS05	1	50	1 (3)	4.00	4.07	2.00 to 4.00	28/09/2017 00:07:00	-	-	-	DRY	-	-	-	-	-	-
WS05	1	50	2	4.00		2.00 to 4.00	06/10/2017 13:10:00	1008	1008	0.0 <sub>(I)</sub>	-	-	-	-	-	-	-
WS05	1	50	2			2.00 to 4.00	30 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS05	1	50	2 (2)	4.00		2.00 to 4.00	06/10/2017 13:11:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS05	1	50	2 (2)			2.00 to 4.00	15 secs	-	-	-	-	0.8	0.0	20.0	0.0	1	0
WS05	1	50	2 (2)			2.00 to 4.00	30 secs	-	-	-	-	0.8	0.0	19.0	0.0	0	0
WS05	1	50	2 (2)			2.00 to 4.00	60 secs	-	-	-	-	0.8	0.0	18.8	0.0	0	0
WS05	1	50	2 (2)			2.00 to 4.00	90 secs	-	-	-	-	0.8	0.0	18.8	0.0	0	0
WS05	1	50	2 (2)			2.00 to 4.00	120 secs	-	-	-	-	0.9	0.0	18.7	0.0	0	0

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

<u>Start</u>

	PSK Environment I td	Compiled By	Date	Checked By	Date	Contract Ref:			
DCK	Abbey Park	Mostrewige	26/10/17			3	813583		
	Humber Road	Contract:			•	Page:			
	Coventry CV3 4AQ		Roade	Bypass		26	of 4	8	AGS

Hydrogen Sulphide

(ppm)

-

[Pressures] Previous During

End Equipment Used & Remarks

Start

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)
WS05	1	50	2 (2)			2.00 to 4.00	180 secs	-	-	-	-	0.9	0.0	18.6	0.0	0
WS05	1	50	2 (2)			2.00 to 4.00	240 secs	-	-	-	-	0.9	0.0	18.6	0.0	0
WS05	1	50	2 (2)			2.00 to 4.00	300 secs	-	-	-	-	0.9	0.0	18.6	0.0	0
WS05	1	50	2 (3)	4.00	4.10	2.00 to 4.00	06/10/2017 13:17:00	-	-	-	3.99	-	-	-	-	-
WS05	1	50	3	4.00		2.00 to 4.00	13/10/2017 11:12:00	-	-	0.0 <sub>(l)</sub>	-	-	-	-	-	-
WS05	1	50	3			2.00 to 4.00	30 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-
WS05	1	50	3 (2)	4.00		2.00 to 4.00	13/10/2017 11:13:00	-	-	-	-	0.1	0.0	20.9	-	0
WS05	1	50	3 (2)			2.00 to 4.00	60 secs	-	-	-	-	1.7	0.0	19.6	-	0
WS05	1	50	3 (2)			2.00 to 4.00	120 secs	-	-	-	-	1.6	0.0	17.3	-	0
WS05	1	50	3 (2)			2.00 to 4.00	150 secs	-	-	-	-	1.6	0.0	17.2	-	0
WS05	1	50	3 (2)			2.00 to 4.00	180 secs	-	-	-	-	1.6	0.0	17.1	-	0
WS05	1	50	3 (2)			2.00 to 4.00	210 secs	-	-	-	-	1.6	0.0	17.1	-	0
WS05	1	50	3 (2)			2.00 to 4.00	240 secs	-	-	-	-	1.6	0.0	17.1	-	0
WS05	1	50	3 (2)			2.00 to 4.00	300 secs	-	-	-	-	1.6	0.0	17.1	-	0
WS05	1	50	3 (2)			2.00 to 4.00	360 secs	-	-	-	-	1.6	0.0	17.1	-	0
WS05	1	50	3 (3)	4.00	4.10	2.00 to 4.00	13/10/2017 11:21:00	-	-	-	3.97	-	-	-	-	-
WS05	1	50	4	4.00		2.00 to 4.00	19/10/2017 11:53:00	995	995	0.0 <sub>(I)</sub>	-	-	-	-	-	-
WS05	1	50	4			2.00 to 4.00	15 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-		-	-

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

	PSK Environment I td	Compiled By	Date	Checked By	Date	Contract Ref:			
DCK	Abbey Park	Mostreukje	26/10/17			;	313583	3	
	Humber Road	Contract:	•		•	Page:			
	Coventry CV3 4AQ		Roade	Bypass		27	of	48	AGS

[Pressures] Previous During

<u>Start</u>

<u>End</u>

Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydroge Sulphid (ppm)
WS05	1	50	4 (2)	4.00		2.00 to 4.00	19/10/2017 11:53:30	-	-	-	-	0.1	0.0	20.9	-	0	0
WS05	1	50	4 (2)			2.00 to 4.00	30 secs	-	-	-	-	1.8	0.0	19.2	-	0	0
WS05	1	50	4 (2)			2.00 to 4.00	90 secs	-	-	-	-	1.7	0.0	17.3	-	0	0
WS05	1	50	4 (2)			2.00 to 4.00	120 secs	-	-	-	-	1.7	0.0	17.2	-	0	0
WS05	1	50	4 (2)			2.00 to 4.00	150 secs	-	-	-	-	1.7	0.0	17.2	-	0	0
WS05	1	50	4 (2)			2.00 to 4.00	180 secs	-	-	-	-	1.7	0.0	17.2	-	0	0
WS05	1	50	4 (2)			2.00 to 4.00	210 secs	-	-	-	-	1.7	0.0	17.2	-	0	0
WS05	1	50	4 (2)			2.00 to 4.00	270 secs	-	-	-	-	1.7	0.0	17.2	-	0	0
WS05	1	50	4 (2)			2.00 to 4.00	330 secs	-	-	-	-	1.7	0.0	17.2	-	0	0
WS05	1	50	4 (3)	4.00	4.07	2.00 to 4.00	19/10/2017 12:00:00	-	-	-	3.95	-	-	-	-	-	-
WS06	1	50	1	4.00		2.00 to 4.00	28/09/2017	1020	1008	19.4 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS06	1	50	1			2.00 to 4.00	240 secs	-	-	0.2	-	-	-	-	-	-	-
WS06	1	50	1 (2)	4.00		2.00 to 4.00	28/09/2017 00:04:30	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS06	1	50	1 (2)			2.00 to 4.00	15 secs	-	-	-	-	1.2	0.0	18.5	0.0	2	0
WS06	1	50	1 (2)			2.00 to 4.00	30 secs	-	-	-	-	1.2	0.0	17.9	0.0	2	0
WS06	1	50	1 (2)			2.00 to 4.00	60 secs	-	-	-	-	1.2	0.0	17.9	0.0	2	0
WS06	1	50	1 (2)			2.00 to 4.00	90 secs	-	-	-	-	1.2	0.0	17.9	0.0	2	0
y: I = Initial, P	= Peal	k, SS = St	eady State. No	ote: LEL = Lo	ower Explosiv	e Limit = 5% v/v.	Date		Cher	cked By			Date	Contra	act Ref:		
R	SK E A	nviron bbey F	ment Ltd Park	n	DStrewy	es la	26/10/17		0.100				2010			31358	3
	Hu	Imber F Covent CV3 44	Road try AQ	Contract:		·	Roade	Bypass	;			·		Page:	2	28 of	48

AGS

[Pressures] Previous During

<u>Start</u>

<u>End</u>

Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
WS06	1	50	1 (2)			2.00 to 4.00	120 secs	-	-	-	-	1.2	0.0	17.9	0.0	2	0
WS06	1	50	1 (2)			2.00 to 4.00	180 secs	-	-	-	-	1.2	0.0	17.9	0.0	2	0
WS06	1	50	1 (2)			2.00 to 4.00	240 secs	-	-	-	-	1.2	0.0	17.8	0.0	2	0
WS06	1	50	1 (2)			2.00 to 4.00	300 secs	-	-	-	-	1.2	0.0	17.8	0.0	2	0
WS06	1	50	1 (3)	4.00	4.18	2.00 to 4.00	28/09/2017 00:10:30	-	-	-	2.45	-	-	-	-	-	-
WS06	1	50	2	4.00		2.00 to 4.00	05/10/2017 12:40:00	1009	1008	2.2 <sub>(I)</sub>	-	-	-	-	-	-	-
WS06	1	50	2			2.00 to 4.00	120 secs	-	-	0.1 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS06	1	50	2 (2)	4.00		2.00 to 4.00	05/10/2017 12:43:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS06	1	50	2 (2)			2.00 to 4.00	15 secs	-	-	-	-	1.1	0.0	19.3	0.0	2	0
WS06	1	50	2 (2)			2.00 to 4.00	30 secs	-	-	-	-	1.1	0.0	18.4	0.0	2	0
WS06	1	50	2 (2)			2.00 to 4.00	60 secs	-	-	-	-	1.1	0.0	18.3	0.0	2	0
WS06	1	50	2 (2)			2.00 to 4.00	90 secs	-	-	-	-	1.1	0.0	18.2	0.0	2	0
WS06	1	50	2 (2)			2.00 to 4.00	120 secs	-	-	-	-	1.1	0.0	18.2	0.0	2	0
WS06	1	50	2 (2)			2.00 to 4.00	180 secs	-	-	-	-	1.1	0.0	18.2	0.0	2	0
WS06	1	50	2 (2)			2.00 to 4.00	240 secs	-	-	-	-	1.1	0.0	18.2	0.0	2	0
WS06	1	50	2 (2)			2.00 to 4.00	300 secs	-	-	-	-	1.1	0.0	18.3	0.0	2	0
WS06	1	50	2 (3)	4.00	4.18	2.00 to 4.00	05/10/2017 12:49:00	-	-	-	2.36	-	-	-	-	-	-
WS06	1	50	3	4.00		2.00 to 4.00	13/10/2017 10:55:00	1007	1007	-1.1 <sub>(l)</sub>	-	-	-	-	-	-	-
y: I = Initial, F	e Pea	k, SS = Ste	eady State. No	ote: LEL = Lo	wer Explosiv	e Limit = 5% v/v.										1	
D		nviron	mont   td		Compiled E	Sy	Date		Chec	ked By			Date	Contr	act Ref:		
SK	ок с А ⊔	bbey F	Park	N	DStrews	s	26/10/17							Daga		31358	3
	п	Covent CV3 4/	try AQ	Contract:			Roade	Bypass	i					Page	2	<b>29</b> of	48

[Pressures] Previous During

<u>Start</u>

<u>End</u>

Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydroger Sulphid∉ (ppm)
WS06	1	50	3		1	2.00 to 4.00	30 secs	- '	-	-0.1 <sub>(SS)</sub>	, –	-	-	-	-	-	-
WS06	1	50	3 (2)	4.00		2.00 to 4.00	13/10/2017 10:56:00	- '	-	-	-	0.0	0.0	20.9	0.0	0	0
WS06	1	50	3 (2)			2.00 to 4.00	15 secs	'				0.9	0.0	19.7	0.0	2	0
WS06	1	50	3 (2)			2.00 to 4.00	30 secs	'				1.0	0.0	18.8	0.0	3	0
WS06	1	50	3 (2)			2.00 to 4.00	60 secs	'				1.0	0.0	18.7	0.0	3	0
WS06	1	50	3 (2)			2.00 to 4.00	90 secs					1.0	0.0	18.7	0.0	3	0
WS06	1	50	3 (2)			2.00 to 4.00	120 secs	'				1.0	0.0	18.7	0.0	3	0
WS06	1	50	3 (2)			2.00 to 4.00	180 secs	'		-		1.0	0.0	18.6	0.0	3	0
WS06	1	50	3 (2)			2.00 to 4.00	240 secs	- '	-	-	-	1.0	0.0	18.6	0.0	3	0
WS06	1	50	3 (2)		1	2.00 to 4.00	300 secs	- '	-	-	-	1.0	0.0	18.6	0.0	3	0
WS06	1	50	3 (3)	4.00	4.17	2.00 to 4.00	13/10/2017 11:02:00				2.40		-				
WS06	1	50	4	4.00		2.00 to 4.00	19/10/2017 11:35:00	996	996	0.1 <sub>(I)</sub>		-	-			-	-
WS06	1	50	4			2.00 to 4.00	30 secs	'		0.1 <sub>(SS)</sub>							
WS06	1	50	4 (2)	4.00		2.00 to 4.00	19/10/2017 11:36:00	'		-		0.1	0.0	20.9		0	0
WS06	1	50	4 (2)			2.00 to 4.00	15 secs	'		-		1.4	0.0	20.2		0	0
WS06	1	50	4 (2)			2.00 to 4.00	30 secs			-		1.4	0.0	18.7		0	0
WS06	1	50	4 (2)			2.00 to 4.00	60 secs	-		-		1.4	0.0	18.6		0	0
WS06	1	50	4 (2)		I	2.00 to 4.00	90 secs	- '	-	-	-	1.4	0.0	18.6	-	0	0
y: I = Initial, P	' = Peai	k, SS = Ste Environ	eady State. No	ote: LEL = Lc	ower Explosiv	e Limit = 5% v/v.	Date		Che	cked By			Date	Contr	act Ref:		
SK	Abbey Park Humber Road Coventry				DStreaks	S	26/10/17 Roade	Bypass						Page:	: ;	31358 30 of	3 48

[Pressures] Previous During

End Equipment Used & Remarks

Start

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydroger Sulphide (ppm)
WS06	1	50	4 (2)			2.00 to 4.00	120 secs	-	-	-	-	1.4	0.0	18.6	-	0	0
WS06	1	50	4 (2)			2.00 to 4.00	180 secs	-	-	-	-	1.4	0.0	18.7	-	0	0
WS06	1	50	4 (2)			2.00 to 4.00	240 secs	-	-	-	-	1.3	0.0	18.7	-	0	0
WS06	1	50	4 (2)			2.00 to 4.00	300 secs	-	-	-	-	1.3	0.0	18.7	-	0	0
WS06	1	50	4 (2)			2.00 to 4.00	360 secs	-	-	-	-	1.3	0.0	18.8	-	0	0
WS06	1	50	4 (3)	4.00	4.29	2.00 to 4.00	19/10/2017 11:43:00	-	-	-	2.62	-	-	-	-	-	-
WS07	1	50	1	2.50		1.00 to 2.50	28/09/2017	1008	1008	-0.1 <sub>(I)</sub>	-	-	-	-	-	-	-
WS07	1	50	1			1.00 to 2.50	30 secs	-	-	-0.1 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS07	1	50	1 (2)	2.50		1.00 to 2.50	28/09/2017 00:01:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS07	1	50	1 (2)			1.00 to 2.50	15 secs	-	-	-	-	1.4	0.0	17.2	0.0	1	0
WS07	1	50	1 (2)			1.00 to 2.50	30 secs	-	-	-	-	1.4	0.0	14.0	0.0	0	0
WS07	1	50	1 (2)			1.00 to 2.50	60 secs	-	-	-	-	1.4	0.0	13.7	0.0	0	0
WS07	1	50	1 (2)			1.00 to 2.50	90 secs	-	-	-	-	1.4	0.0	13.7	0.0	0	0
WS07	1	50	1 (2)			1.00 to 2.50	120 secs	-	-	-	-	1.4	0.0	13.7	0.0	0	0
WS07	1	50	1 (2)			1.00 to 2.50	180 secs	-	-	-	-	1.4	0.0	13.6	0.0	0	0
WS07	1	50	1 (2)			1.00 to 2.50	240 secs	-	-	-	-	1.4	0.0	13.5	0.0	0	0
WS07	1	50	1 (2)			1.00 to 2.50	300 secs	-	-	-	-	1.4	0.0	13.5	0.0	0	0

Contract Ref: Compiled By Date Checked By Date RSK Environment Ltd Mostrewije 313583 Abbey Park Humber Road 26/10/17 Contract: Page: Coventry **Roade Bypass 31** of **48** AGS CV3 4AQ

[Pressures] Previous During

<u>Start</u>

<u>End</u>

Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydroge Sulphid (ppm)
WS07	1	50	1 (3)	2.50	2.53	1.00 to 2.50	28/09/2017 00:07:00	-	-	-	1.91	-	-	-	-	-	-
WS07	1	50	2	2.50		1.00 to 2.50	05/10/2017 12:25:00	1008	1008	0.1 <sub>(l)</sub>	-	-	-	-	-	-	-
WS07	1	50	2			1.00 to 2.50	30 secs	-	-	0.1 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS07	1	50	2 (2)	2.50		1.00 to 2.50	05/10/2017 12:26:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS07	1	50	2 (2)			1.00 to 2.50	15 secs	-	-	-	-	1.8	0.0	17.3	0.0	0	0
WS07	1	50	2 (2)			1.00 to 2.50	30 secs	-	-	-	-	1.8	0.0	12.9	0.0	0	0
WS07	1	50	2 (2)			1.00 to 2.50	60 secs	-	-	-	-	1.8	0.0	12.5	0.0	0	0
WS07	1	50	2 (2)			1.00 to 2.50	90 secs	-	-	-	-	1.8	0.0	12.5	0.0	0	0
WS07	1	50	2 (2)			1.00 to 2.50	120 secs	-	-	-	-	1.8	0.0	12.5	0.0	0	0
WS07	1	50	2 (2)			1.00 to 2.50	180 secs	-	-	-	-	1.8	0.0	12.5	0.0	0	0
WS07	1	50	2 (2)			1.00 to 2.50	240 secs	-	-	-	-	1.8	0.0	12.4	0.0	0	0
WS07	1	50	2 (2)			1.00 to 2.50	300 secs	-	-	-	-	1.8	0.0	12.5	0.0	0	0
WS07	1	50	2 (3)	2.50	2.54	1.00 to 2.50	05/10/2017 12:32:00	-	-	-	1.94	-	-	-	-	-	-
WS07	1	50	3	2.50		1.00 to 2.50	13/10/2017 10:45:00	1007	1007	0.0 <sub>(l)</sub>	-	-	-	-	-	-	-
WS07	1	50	3			1.00 to 2.50	30 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS07	1	50	3 (2)	2.50		1.00 to 2.50	13/10/2017 10:46:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS07	1	50	3 (2)			1.00 to 2.50	15 secs	-	-	-	-	1.8	0.0	18.1	0.0	0	0
WS07	1	50	3 (2)			1.00 to 2.50	30 secs	-	-	-	-	1.9	0.0	15.4	0.0	0	0
y: I = Initial, P	= Peak	k, SS = St	eady State. No ment Ltd	ote: LEL = Lo	wer Explosiv Compiled E	e Limit = 5% v/v. By	Date		Chec	cked By			Date	Contra	act Ref:		
	A	bbey F	Park	n	DStrews	S	26/10/17									31358	3
	Hu	mber I Coven	Road try	Contract:			Roade	Bypass	;			I		Page:	3	<b>32</b> of	48

AGS

[Pressures] Previous During

End Equipment Used & Remarks

<u>Start</u>

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydroger Sulphide (ppm)
WS07	1	50	3 (2)			1.00 to 2.50	60 secs	-	-	-	-	1.9	0.0	15.1	0.0	0	0
WS07	1	50	3 (2)			1.00 to 2.50	90 secs	-	-	-	-	1.9	0.0	15.0	0.0	0	0
WS07	1	50	3 (2)			1.00 to 2.50	120 secs	-	-	-	-	1.9	0.0	15.0	0.0	0	0
WS07	1	50	3 (2)			1.00 to 2.50	180 secs	-	-	-	-	1.9	0.0	15.1	0.0	0	0
WS07	1	50	3 (2)			1.00 to 2.50	240 secs	-	-	-	-	1.9	0.0	15.1	0.0	0	0
WS07	1	50	3 (2)			1.00 to 2.50	300 secs	-	-	-	-	1.9	0.0	15.1	0.0	0	0
WS07	1	50	3 (3)	2.50	2.54	1.00 to 2.50	13/10/2017 10:52:00	-	-	-	2.05	-	-	-	-	-	-
WS07	1	50	4	2.50		1.00 to 2.50	19/10/2017 11:26:00	996	996	0.3 <sub>(I)</sub>	-	-	-	-	-	-	-
WS07	1	50	4			1.00 to 2.50	15 secs	-	-	0.3 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS07	1	50	4 (2)	2.50		1.00 to 2.50	19/10/2017 11:26:30	-	-	-	-	0.1	0.0	20.8	-	0	0
WS07	1	50	4 (2)			1.00 to 2.50	30 secs	-	-	-	-	1.9	0.0	19.5	-	0	0
WS07	1	50	4 (2)			1.00 to 2.50	60 secs	-	-	-	-	1.8	0.0	17.1	-	0	0
WS07	1	50	4 (2)			1.00 to 2.50	90 secs	-	-	-	-	1.8	0.0	17.1	-	0	0
WS07	1	50	4 (2)			1.00 to 2.50	120 secs	-	-	-	-	1.8	0.0	17.1	-	0	0
WS07	1	50	4 (2)			1.00 to 2.50	150 secs	-	-	-	-	1.8	0.0	17.1	-	0	0
WS07	1	50	4 (2)			1.00 to 2.50	210 secs	-	-	-	-	1.8	0.0	17.1	-	0	0
WS07	1	50	4 (2)			1.00 to 2.50	270 secs	-	-	-	-	1.8	0.0	17.2	-	0	0
WS07	1	50	4 (2)			1.00 to 2.50	330 secs	-	-	-	-	1.8	0.0	17.2	-	0	0

	PSK Environment I td	Compiled By	Date	Checked By	Date	Contract Ref:			
DCK	Abbey Park	Mostreukje	26/10/17			3	13583	3	
	Humber Road	Contract:		•		Page:			
	Coventry CV3 4AQ		Roade	Bypass		33	of	48	AGS

[Pressures] Previous During

<u>Start</u>

<u>End</u>

Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
WS07	1	50	4 (3)	2.50	2.54	1.00 to 2.50	19/10/2017 11:33:00	-	-	-	2.07	-	-	-	-	-	-
WS08	1	50	1	3.00		1.00 to 3.00	28/09/2017	1008	1008	0.0 <sub>(I)</sub>	-	-	-	-	-	-	-
WS08	1	50	1			1.00 to 3.00	30 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS08	1	50	1 (2)	3.00		1.00 to 3.00	28/09/2017 00:01:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS08	1	50	1 (2)			1.00 to 3.00	15 secs	-	-	-	-	2.4	0.0	18.0	0.0	2	0
WS08	1	50	1 (2)			1.00 to 3.00	30 secs	-	-	-	-	2.4	0.0	15.3	0.0	0	0
WS08	1	50	1 (2)			1.00 to 3.00	60 secs	-	-	-	-	2.5	0.0	15.1	0.0	0	0
WS08	1	50	1 (2)			1.00 to 3.00	90 secs	-	-	-	-	2.5	0.0	15.0	0.0	0	0
WS08	1	50	1 (2)			1.00 to 3.00	120 secs	-	-	-	-	2.4	0.0	15.0	0.0	0	0
WS08	1	50	1 (2)			1.00 to 3.00	180 secs	-	-	-	-	2.4	0.0	14.9	0.0	0	0
WS08	1	50	1 (2)			1.00 to 3.00	240 secs	-	-	-	-	2.4	0.0	14.8	0.0	0	0
WS08	1	50	1 (2)			1.00 to 3.00	300 secs	-	-	-	-	2.4	0.0	14.8	0.0	0	0
WS08	1	50	1 (3)	3.00	3.10	1.00 to 3.00	28/09/2017 00:07:00	-	-	-	2.65	-	-	-	-	-	-
WS08	1	50	2	3.00		1.00 to 3.00	05/10/2017 12:15:00	1008	1008	0.0 <sub>(I)</sub>	-	-	-	-	-	-	-
WS08	1	50	2			1.00 to 3.00	30 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS08	1	50	2 (2)	3.00		1.00 to 3.00	05/10/2017 12:16:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS08	1	50	2 (2)			1.00 to 3.00	15 secs	-	-	-	-	1.8	0.0	20.1	0.0	1	0
y: I = Initial, P	' = Pea	k, SS = Ste	eady State. No	ote: LEL = Lo	wer Explosive	e Limit = 5% v/v.											
D	SK F	Inviron	ment I td		Compiled B	y .	Date		Cheo	cked By			Date	Contra	act Ref:		
SK <sup>n</sup>	Δ	bbey F	Park	n	DStrews	e	26/10/17									31358	3
	Ηι	Imber F Covent	Road try ∆O	Contract:			Roade	Bypass						Page:	3	<b>34</b> of	48

[Pressures] Previous During

<u>Start</u>

<u>End</u>

Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
WS08	1	50	2 (2)			1.00 to 3.00	30 secs	-	-	-	-	1.8	0.0	19.5	0.0	0	0
WS08	1	50	2 (2)			1.00 to 3.00	60 secs	-	-	-	-	1.8	0.0	19.4	0.0	0	0
WS08	1	50	2 (2)			1.00 to 3.00	90 secs	-	-	-	-	1.8	0.0	19.4	0.0	0	0
WS08	1	50	2 (2)			1.00 to 3.00	120 secs	-	-	-	-	1.8	0.0	19.4	0.0	0	0
WS08	1	50	2 (2)			1.00 to 3.00	180 secs	-	-	-	-	1.8	0.0	19.4	0.0	0	0
WS08	1	50	2 (2)			1.00 to 3.00	240 secs	-	-	-	-	1.8	0.0	19.4	0.0	0	0
WS08	1	50	2 (2)			1.00 to 3.00	300 secs	-	-	-	-	1.8	0.0	19.4	0.0	0	0
WS08	1	50	2 (3)	3.00	3.09	1.00 to 3.00	05/10/2017 12:22:00	-	-	-	2.66	-	-	-	-	-	-
WS08	1	50	3	3.00		1.00 to 3.00	13/10/2017 13:35:00	1007	1007	0.0 <sub>(I)</sub>	-	-	-	-	-	-	-
WS08	1	50	3			1.00 to 3.00	30 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS08	1	50	3 (2)	3.00		1.00 to 3.00	13/10/2017 13:36:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS08	1	50	3 (2)			1.00 to 3.00	15 secs	-	-	-	-	1.8	0.0	19.7	0.0	0	0
WS08	1	50	3 (2)			1.00 to 3.00	30 secs	-	-	I	-	1.8	0.0	18.9	0.0	0	0
WS08	1	50	3 (2)			1.00 to 3.00	60 secs	-	-	-	-	1.8	0.0	18.8	0.0	0	0
WS08	1	50	3 (2)			1.00 to 3.00	90 secs	-	-	-	-	1.9	0.0	18.8	0.0	0	0
WS08	1	50	3 (2)			1.00 to 3.00	120 secs	-	-	-	-	1.9	0.0	18.8	0.0	0	0
WS08	1	50	3 (2)			1.00 to 3.00	180 secs	-	-	-	-	1.9	0.0	18.8	0.0	0	0
WS08	1	50	3 (2)			1.00 to 3.00	240 secs	-	-	-	-	1.9	0.0	18.8	0.0	0	0
ey: I = Initial, P	= Peal	k, SS = Ste	eady State. No	ote: LEL = Lc	wer Explosiv	e Limit = 5% v/v.											
R	SKE	nviron	ment I td		Compiled E	Sy	Date		Cheo	ked By			Date	Contra	act Ref:		
<b>SK</b>		bbey F	Park	M	DStrews	S	26/10/17									31358	3
	HU	Coveni	koad try AQ	Contract:			Roade	Bypass	i					Page:	3	<b>35</b> of	48

[Pressures] Previous During

<u>Start</u>

<u>End</u>

Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydroge Sulphid (ppm)
WS08	1	50	3 (2)			1.00 to 3.00	300 secs	-	-	-	-	1.9	0.0	18.8	0.0	0	0
WS08	1	50	3 (3)	3.00	3.09	1.00 to 3.00	13/10/2017 13:42:00	-	-	-	2.68	-	-	-	-	-	-
WS08	1	50	4	3.00		1.00 to 3.00	19/10/2017 11:17:00	996	996	0.1 <sub>(l)</sub>	-		-	-	-	-	-
WS08	1	50	4			1.00 to 3.00	15 secs	-	-	0.1 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS08	1	50	4 (2)	3.00		1.00 to 3.00	19/10/2017 11:17:30	-	-	-	-	0.1	0.0	20.9	-	0	0
WS08	1	50	4 (2)			1.00 to 3.00	30 secs	-	-	-	-	2.3	0.0	18.3	-	1	0
WS08	1	50	4 (2)			1.00 to 3.00	60 secs	-	-	-	-	2.1	0.0	16.9	-	1	0
WS08	1	50	4 (2)			1.00 to 3.00	90 secs	-	-	-	-	2.1	0.0	16.9	-	1	0
WS08	1	50	4 (2)			1.00 to 3.00	120 secs	-	-	-	-	2.1	0.0	17.0	-	1	0
WS08	1	50	4 (2)			1.00 to 3.00	150 secs	-	-	-	-	2.1	0.0	17.0	-	1	0
WS08	1	50	4 (2)			1.00 to 3.00	210 secs	-	-	_	-	2.1	0.0	17.1	-	1	0
WS08	1	50	4 (2)			1.00 to 3.00	270 secs	-	-	-	-	2.1	0.0	17.2	-	1	0
WS08	1	50	4 (2)			1.00 to 3.00	330 secs	-	-	-	-	2.1	0.0	17.3	-	1	0
WS08	1	50	4 (3)	3.00	3.09	1.00 to 3.00	19/10/2017 11:24:00	-	-	-	2.70	-	-	-	-	-	-
WS09	1	50	1	3.00		1.00 to 3.00	28/09/2017 13:13:00	1006	1006	0.1 <sub>(I)</sub>	-	-	-	-	-	-	-
WS09	1	50	1			1.00 to 3.00	30 secs	-	-	0.1 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS09	1	50	1 (2)	3.00		1.00 to 3.00	28/09/2017 13:14:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
⊻: I = Initial, P R	Initial, P = Peak, SS = Steady State. Note: LEL = I RSK Environment Ltd Abbey Park			ote: LEL = Lo	wer Explosive Compiled E	e Limit = 5% v/v.	Date		Cheo	cked By			Date	Contr	act Ref:	31358	3
<b>SK</b>	Abbey Park Humber Road Coventry				Detectory		Roade	Bypass	;					Page:	:	<b>36</b> of	48

GINT\_LIBRARY\_V8\_06.GLB : E - GAS MON - STANDARD - 6B - A4L : 313583 - ROADE BYPASS.GPJ : 26/10/17 09:46 : MS4 :

[Pressures] Previous During

<u>Start</u>

<u>End</u>

Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
WS09	1	50	1 (2)			1.00 to 3.00	15 secs	-	-	-	-	1.0	0.0	19.6	0.0	0	0
WS09	1	50	1 (2)			1.00 to 3.00	30 secs	-	-	-	-	0.9	0.0	19.4	0.0	0	0
WS09	1	50	1 (2)			1.00 to 3.00	60 secs	-	-	-	-	0.9	0.0	19.4	0.0	0	0
WS09	1	50	1 (2)			1.00 to 3.00	90 secs	-	-	-	-	0.9	0.0	19.4	0.0	0	0
WS09	1	50	1 (2)			1.00 to 3.00	120 secs	-	-	-	-	0.9	0.0	19.4	0.0	0	0
WS09	1	50	1 (2)			1.00 to 3.00	180 secs	-	-	-	-	0.9	0.0	19.4	0.0	0	0
WS09	1	50	1 (2)			1.00 to 3.00	240 secs	-	-	-	-	0.9	0.0	19.5	0.0	0	0
WS09	1	50	1 (2)			1.00 to 3.00	300 secs	-	-	-	-	0.9	0.0	19.5	0.0	0	0
WS09	1	50	1 (3)	3.00	3.07	1.00 to 3.00	28/09/2017 13:20:00	-	-	-	DRY	-	-	-	-	-	-
WS09	1	50	2	3.00		1.00 to 3.00	06/10/2017 12:47:00	1003	1003	0.0 <sub>(I)</sub>	-	-	-	-	-	-	-
WS09	1	50	2			1.00 to 3.00	30 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS09	1	50	2 (2)	3.00		1.00 to 3.00	06/10/2017 12:48:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS09	1	50	2 (2)			1.00 to 3.00	15 secs	-	-	-	-	0.5	0.0	20.3	0.0	0	0
WS09	1	50	2 (2)			1.00 to 3.00	30 secs	-	-	-	-	0.5	0.0	20.2	0.0	0	0
WS09	1	50	2 (2)			1.00 to 3.00	60 secs	-	-	-	-	0.5	0.0	20.2	0.0	0	1
WS09	1	50	2 (2)			1.00 to 3.00	90 secs	-	-	-	-	0.5	0.0	20.2	0.0	0	1
WS09	1	50	2 (2)			1.00 to 3.00	120 secs	-	-	-	-	0.5	0.0	20.2	0.0	0	1
WS09	1	50	2 (2)			1.00 to 3.00	180 secs	-	-	-	-	0.5	0.0	20.2	0.0	0	1
ey: I = Initial, P	= Peal	k, SS = Ste	eady State. No	ote: LEL = Lo	wer Explosiv	e Limit = 5% v/v.											
R	SKE	nviron	ment I td		Compiled E	y .	Date		Chec	ked By			Date	Contra	act Ref:		
SK		bbey F	Park	M	DStrews	S	26/10/17							Decre		31358	3
	пι	CV3 4	try	Contract:			Roade	Bypass	i					Page:		<b>37</b> of	48

[Pressures] Previous During

End Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrog Sulphic (ppm)
WS09	1	50	2 (2)			1.00 to 3.00	240 secs	-	-	-	-	0.5	0.0	20.2	0.0	0	1
WS09	1	50	2 (2)			1.00 to 3.00	300 secs	-	-	-	-	0.5	0.0	20.2	0.0	0	1
WS09	1	50	2 (3)	3.00	3.07	1.00 to 3.00	06/10/2017 12:54:00	-	-	-	DRY	-	-	-	-	-	-
WS09	1	50	3	3.00		1.00 to 3.00	13/10/2017 11:45:00	1010	1010	0.0 <sub>(I)</sub>	-	-	-	-	-	-	-
WS09	1	50	3			1.00 to 3.00	30 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS09	1	50	3 (2)	3.00		1.00 to 3.00	13/10/2017 11:46:00	-	-	-	-	0.1	0.0	20.9	-	0	0
WS09	1	50	3 (2)			1.00 to 3.00	60 secs	-	-	-	-	0.6	0.0	20.8	-	0	0
WS09	1	50	3 (2)			1.00 to 3.00	90 secs	-	-	-	-	0.5	0.0	20.4	-	0	0
WS09	1	50	3 (2)			1.00 to 3.00	120 secs	-	-	-	-	0.5	0.0	20.4	-	0	0
WS09	1	50	3 (2)			1.00 to 3.00	180 secs	-	-	-	-	0.5	0.0	20.4	-	0	0
WS09	1	50	3 (2)			1.00 to 3.00	210 secs	-	-	-	-	0.5	0.0	20.4	-	0	0
WS09	1	50	3 (2)			1.00 to 3.00	240 secs	-	-	-	-	0.5	0.0	20.4	-	0	0
WS09	1	50	3 (2)			1.00 to 3.00	300 secs	-	-	-	-	0.5	0.0	20.4	-	0	0
WS09	1	50	3 (2)			1.00 to 3.00	360 secs	-	-	-	-	0.5	0.0	20.4	-	0	0
WS09	1	50	3 (2)			1.00 to 3.00	420 secs	-	-	-	-	0.5	0.0	20.4	-	0	0
WS09	1	50	3 (3)	3.00	3.09	1.00 to 3.00	13/10/2017 11:56:00	-	-	-	3.09	-	-	-	-	-	-
WS09	1	50	4	3.00		1.00 to 3.00	19/10/2017 12:13:00	994	994	0.0 <sub>(I)</sub>	-	-	-	-	-	-	-
WS09	1	50	4			1.00 to 3.00	30 secs	-	-	0.0(55)	-	-	-	-	-	-	-

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

<u>Start</u>

	PSK Environment I td	Compiled By	Date	Checked By	Date	Contract Ref:			
DCK	Abbey Park	Mostreukje	26/10/17				313583		
	Humber Road	Contract:	•		•	Page:			
	Coventry CV3 4AQ		Roade	Bypass		38	of	48	AGS

[Pressures] Previous During

<u>Start</u>

<u>End</u>

Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydroger Sulphide (ppm)
WS09	1	50	4 (2)	3.00		1.00 to 3.00	19/10/2017 12:13:45	-	-	-	-	0.1	0.0	20.9	-	0	0
WS09	1	50	4 (2)			1.00 to 3.00	15 secs	-	-	-	-	1.0	0.0	20.3	-	0	0
WS09	1	50	4 (2)			1.00 to 3.00	75 secs	-	-	-	-	1.0	0.0	18.5	-	0	0
WS09	1	50	4 (2)			1.00 to 3.00	105 secs	-	-	-	-	1.0	0.0	18.5	-	0	0
WS09	1	50	4 (2)			1.00 to 3.00	135 secs	-	-	-	-	1.0	0.0	18.5	-	0	0
WS09	1	50	4 (2)			1.00 to 3.00	165 secs	-	-	-	-	1.0	0.0	18.5	-	0	0
WS09	1	50	4 (2)			1.00 to 3.00	195 secs	-	-	-	-	1.0	0.0	18.5	-	0	0
WS09	1	50	4 (2)			1.00 to 3.00	255 secs	-	-	-	-	1.0	0.0	18.5	-	0	0
WS09	1	50	4 (2)			1.00 to 3.00	315 secs	-	-	-	-	1.0	0.0	18.5	-	0	0
WS09	1	50	4 (3)	3.00	3.08	1.00 to 3.00	19/10/2017 12:21:00	-	-	-	3.08	-	-	-	-	-	-
WS10	1	50	1	4.00		2.00 to 4.00	28/09/2017	1006	1006	0.0(1)	-	-	-	-	-	-	-
WS10	1	50	1			2.00 to 4.00	30 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS10	1	50	1 (2)	4.00		2.00 to 4.00	28/09/2017 00:01:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS10	1	50	1 (2)			2.00 to 4.00	15 secs	-	-	-	-	2.5	0.0	17.5	0.0	1	0
WS10	1	50	1 (2)			2.00 to 4.00	30 secs	-	-	-	-	2.5	0.0	14.8	0.0	1	0
WS10	1	50	1 (2)			2.00 to 4.00	60 secs	-	-	-	-	2.5	0.0	14.5	0.0	1	0
WS10	1	50	1 (2)			2.00 to 4.00	90 secs	-	-	-	-	2.5	0.0	14.5	0.0	1	0
y: I = Initial, P	= Peal	k, SS = Ste	eady State. No	ote: LEL = Lo	wer Explosive	e Limit = 5% v/v.											
R	SK F	nviron	ment I td		Compiled B	3y	Date		Chec	ked By			Date	Contra	act Ref:		
SK		bbey F	Park	<b>M</b> Contract:	MDStreukje 26/10/17								Bagar		31358	3	
	пu	CV3 4	try	Contract:			Roade	Bypass	i					Page:	3	<b>39</b> of	48

[Pressures] Previous During Start

End Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
WS10	1	50	1 (2)			2.00 to 4.00	120 secs	-	-	-	-	2.5	0.0	14.6	0.0	1	0
WS10	1	50	1 (2)			2.00 to 4.00	180 secs	-	-	-	-	2.5	0.0	14.6	0.0	1	0
WS10	1	50	1 (2)			2.00 to 4.00	240 secs	-	-	-	-	2.5	0.0	14.6	0.0	1	0
WS10	1	50	1 (2)			2.00 to 4.00	300 secs	-	-	-	-	2.5	0.0	14.6	0.0	1	0
WS10	1	50	1 (3)	4.00	4.03	2.00 to 4.00	28/09/2017 00:07:00	-	-	-	3.23	-	-	-	-	-	-
WS10	1	50	2	4.00		2.00 to 4.00	05/10/2017 10:10:00	1005	1005	0.0 <sub>(I)</sub>	-	-	-	-	-	-	-
WS10	1	50	2			2.00 to 4.00	30 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS10	1	50	2 (2)	4.00		2.00 to 4.00	05/10/2017 10:11:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS10	1	50	2 (2)			2.00 to 4.00	15 secs	-	-	-	-	2.6	0.0	18.0	0.0	0	0
WS10	1	50	2 (2)			2.00 to 4.00	30 secs	-	-	-	-	2.6	0.0	14.7	0.0	0	0
WS10	1	50	2 (2)			2.00 to 4.00	60 secs	-	-	-	-	2.7	0.0	14.2	0.0	0	0
WS10	1	50	2 (2)			2.00 to 4.00	90 secs	-	-	-	-	2.7	0.0	14.1	0.0	0	0
WS10	1	50	2 (2)			2.00 to 4.00	120 secs	-	-	-	-	2.7	0.0	14.1	0.0	0	0
WS10	1	50	2 (2)			2.00 to 4.00	180 secs	-	-	-	-	2.7	0.0	14.1	0.0	0	0
WS10	1	50	2 (2)			2.00 to 4.00	240 secs	-	-	-	-	2.7	0.0	14.0	0.0	0	0
WS10	1	50	2 (2)			2.00 to 4.00	300 secs	-	-	-	-	2.7	0.0	14.0	0.0	0	0
WS10	1	50	2 (3)	4.00	4.04	2.00 to 4.00	05/10/2017 10:17:00	-	-	-	3.22	-	-	-	-	-	-
WS10	1	50	3	4.00		2.00 to 4.00	13/10/2017 10:36:00	1010	1010	0.0	-	-	-	-	-	-	-

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

	PSK Environment I td	Compiled By	Date	Checked By	Date	Contract Ref:			
DCK	Abbey Park	Mostrewiger	26/10/17			3	813583	3	
	Humber Road	Contract:			•	Page:			
	Coventry CV3 4AQ		Roade	Bypass		40	of	48	AGS

[Pressures] Previous During

<u>Start</u>

<u>End</u>

Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydroger Sulphide (ppm)
WS10	1	50	3			2.00 to 4.00	30 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS10	1	50	3 (2)	4.00		2.00 to 4.00	13/10/2017 10:37:00	-	-	-	-	0.1	0.0	20.9	-	0	0
WS10	1	50	3 (2)			2.00 to 4.00	60 secs	-	-	-	-	0.9	0.0	20.3	-	0	0
WS10	1	50	3 (2)			2.00 to 4.00	75 secs	-	-	-	-	1.0	0.0	19.1	-	0	0
WS10	1	50	3 (2)			2.00 to 4.00	90 secs	-	-	-	-	1.4	0.0	18.4	-	0	0
WS10	1	50	3 (2)			2.00 to 4.00	120 secs	-	-	-	-	1.9	0.0	17.5	-	0	0
WS10	1	50	3 (2)			2.00 to 4.00	150 secs	-	-	-	-	2.2	0.0	16.8	-	0	0
WS10	1	50	3 (2)			2.00 to 4.00	240 secs	-	-	-	-	2.5	0.0	16.2	-	0	0
WS10	1	50	3 (2)			2.00 to 4.00	300 secs	-	-	-	-	2.5	0.0	16.0	-	0	0
WS10	1	50	3 (2)			2.00 to 4.00	360 secs	-	-	-	-	2.6	0.0	16.0	-	0	0
WS10	1	50	3 (2)			2.00 to 4.00	390 secs	-	-	-	-	2.6	0.0	16.0	-	0	0
WS10	1	50	3 (2)			2.00 to 4.00	420 secs	-	-	-	-	2.6	0.0	16.0	-	0	0
WS10	1	50	3 (2)			2.00 to 4.00	435 secs	-	-	-	-	2.6	0.0	16.0	-	0	0
WS10	1	50	3 (2)			2.00 to 4.00	450 secs	-	-	-	-	2.6	0.0	16.0	-	0	0
WS10	1	50	3 (2)			2.00 to 4.00	480 secs	-	-	-	-	2.6	0.0	16.0	-	0	0
WS10	1	50	3 (2)			2.00 to 4.00	510 secs	-	-	-	-	2.6	0.0	16.0	-	0	0
WS10	1	50	3 (2)			2.00 to 4.00	540 secs	-	-	-	-	2.6	0.0	16.1	-	0	0
WS10	1	50	3 (2)			2.00 to 4.00	600 secs	-	-	-	-	2.6	0.0	16.2	-	0	0
ey: I = Initial, F	e Peal	k, SS = Sti	eady State. No	ote: LEL = Lo	wer Explosiv	e Limit = 5% v/v.								Queste	t D - fr		
R	SK E	Inviron	ment Ltd		Compiled E	Зу	Date		Chec	ked By			Date	Contra	act Ref:		
CV	A	bbey F	Park	n	DStrewky	er	26/10/17									31358	3
	Hu	imber F Coven	Road try	Contract:			Roade	Bypass	i					Page:	4	<b>11</b> of	48

AGS

CV3 4AQ

[Pressures] Previous During

<u>Start</u>

End Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
WS10	1	50	3 (2)			2.00 to 4.00	660 secs	-	-	-	-	2.5	0.0	16.3	-	0	0
WS10	1	50	3 (2)			2.00 to 4.00	720 secs	-	-	-	-	2.5	0.0	16.4	-	0	0
WS10	1	50	3 (3)	4.00	4.04	2.00 to 4.00	13/10/2017 10:53:00	-	-	-	3.15	-	-	-	-	-	-
WS10	1	50	4	4.00		2.00 to 4.00	18/10/2017 10:44:00	1002	1002	0.3 <sub>(I)</sub>	-	-	-	-	-	-	-
WS10	1	50	4			2.00 to 4.00	30 secs	-	-	0.2 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS10	1	50	4 (2)	4.00		2.00 to 4.00	18/10/2017 10:44:45	-	-	-	-	0.1	0.0	20.9	-	0	-
WS10	1	50	4 (2)			2.00 to 4.00	15 secs	-	-	-	-	2.5	0.0	20.3	-	0	0
WS10	1	50	4 (2)			2.00 to 4.00	45 secs	-	-	-	-	2.5	0.0	18.0	-	0	0
WS10	1	50	4 (2)			2.00 to 4.00	75 secs	-	-	-	-	2.5	0.0	17.7	-	0	0
WS10	1	50	4 (2)			2.00 to 4.00	105 secs	-	-	-	-	2.6	0.0	17.7	-	0	0
WS10	1	50	4 (2)			2.00 to 4.00	135 secs	-	-	-	-	2.6	0.0	17.7	-	0	0
WS10	1	50	4 (2)			2.00 to 4.00	195 secs	-	-	-	-	2.6	0.0	17.7	-	0	0
WS10	1	50	4 (2)			2.00 to 4.00	255 secs	-	-	-	-	2.6	0.0	17.7	-	0	0
WS10	1	50	4 (2)			2.00 to 4.00	315 secs	-	-	-	-	2.6	0.0	17.8	-	0	0
WS10	1	50	4 (3)	4.00	4.04	2.00 to 4.00	18/10/2017 10:55:00	-	-	-	2.75	-	-	-	-	-	-
WS11	1	50	1	5.00		3.00 to 5.00	28/09/2017	1003	1003	0.0(1)	-	_	-	-	-	-	-
WS11	1	50	1			3.00 to 5.00	30 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
(ey: I = Initial, F	P = Pea	k, SS = Ste	eady State. No	ote: LEL = Lo	wer Explosiv	e Limit = 5% v/v.				-							
D	DSK Environment I td		Compiled By		Зу	Date		Cheo	ked By			Date	Contra	act Ref:			
<b>SK</b>	Α	bbey P	ark	n	DStrewy	e	26/10/17									31358	3
	Ηι	imber F	Road	Contract:										Page:			

**Roade Bypass** 

42 of 48

AGS

Coventry

CV3 4AQ
Hydrogen Sulphide

(ppm)

[Pressures] Previous During

End Equipment Used & Remarks

-																
	_					1							1			
Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)
WS11	1	50	1 (2)	5.00		3.00 to 5.00	28/09/2017 00:01:00	-	-	-	-	0.0	0.0	20.9	0.0	0
WS11	1	50	1 (2)			3.00 to 5.00	15 secs	-	-	-	-	3.9	0.0	19.1	0.0	1
WS11	1	50	1 (2)			3.00 to 5.00	30 secs	-	-	-	-	4.0	0.0	14.6	0.0	1
WS11	1	50	1 (2)			3.00 to 5.00	60 secs	-	-	-	-	4.0	0.0	13.8	0.0	0
WS11	1	50	1 (2)			3.00 to 5.00	90 secs	-	-	-	-	4.0	0.0	13.7	0.0	0
WS11	1	50	1 (2)			3.00 to 5.00	120 secs	-	-	-	-	4.0	0.0	13.7	0.0	0
WS11	1	50	1 (2)			3.00 to 5.00	180 secs	-	-	-	-	4.0	0.0	13.6	0.0	0
WS11	1	50	1 (2)			3.00 to 5.00	240 secs	-	-	-	-	4.0	0.0	13.6	0.0	0
WS11	1	50	1 (2)			3.00 to 5.00	300 secs	-	-	-	-	4.0	0.0	13.6	0.0	0
WS11	1	50	1 (3)	5.00	4.48	3.00 to 5.00	28/09/2017 00:07:00	-	-	-	DRY	-	-	-	-	-
WS11	1	50	2	5.00		3.00 to 5.00	05/10/2017 08:40:00	1003	1003	0.0 <sub>(I)</sub>	-	-	-	-	-	-
WS11	1	50	2			3.00 to 5.00	30 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-
WS11	1	50	2 (2)	5.00		3.00 to 5.00	05/10/2017 08:41:00	-	-	-	-	0.0	0.0	20.9	0.0	0
WS11	1	50	2 (2)			3.00 to 5.00	15 secs	-	-	-	-	1.5	0.0	20.2	0.0	0
WS11	1	50	2 (2)			3.00 to 5.00	30 secs	-	-	-	-	1.5	0.0	19.7	0.0	0
WS11	1	50	2 (2)			3.00 to 5.00	60 secs	-	-	-	-	1.5	0.0	19.6	0.0	0
WS11	1	50	2 (2)			3.00 to 5.00	90 secs	-	-	-	-	1.5	0.0	19.6	0.0	0
WS11	1	50	2 (2)			3.00 to 5.00	120 secs	-	-	-	-	1.4	0.0	19.6	0.0	0

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

Start

	PSK Environment I td	Compiled By	Date	Checked By	Date	Contract Ref:			
DCK	Abbey Park	Mostrewsjer	26/10/17			3	13583		
	Humber Road	Contract:				Page:			
	Coventry CV3 4AQ		Roade	Bypass		43	of	48	AGS

GINT\_LIBRARY\_V8\_06.GLB : E - GAS MON - STANDARD - 6B - A4L : 313583 - ROADE BYPASS.GPJ : 26/10/17 09:46 : MS4 :

[Pressures] Previous During

End Equipment Used & Remarks

<u>Start</u>

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)
WS11	1	50	2 (2)			3.00 to 5.00	180 secs	-	-	-	-	1.4	0.0	19.7	0.0	0	0
WS11	1	50	2 (2)			3.00 to 5.00	240 secs	-	-	-	-	1.3	0.0	19.8	0.0	0	0
WS11	1	50	2 (2)			3.00 to 5.00	300 secs	-	-	-	-	1.2	0.0	19.9	0.0	0	0
WS11	1	50	2 (3)	5.00	4.52	3.00 to 5.00	05/10/2017 08:47:00	-	-	-	DRY	-	-	-	-	-	-
WS11	1	50	3	5.00		3.00 to 5.00	13/10/2017 10:00:00	1007	1007	0.0 <sub>(l)</sub>	-	-	-	-	-	-	-
WS11	1	50	3			3.00 to 5.00	30 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS11	1	50	3 (2)	5.00		3.00 to 5.00	13/10/2017 10:01:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS11	1	50	3 (2)			3.00 to 5.00	15 secs	-	-	-	-	0.1	0.0	21.2	0.0	1	0
WS11	1	50	3 (2)			3.00 to 5.00	30 secs	-	-	-	-	0.1	0.0	21.2	0.0	0	0
WS11	1	50	3 (2)			3.00 to 5.00	60 secs	-	-	-	-	0.1	0.0	21.2	0.0	0	0
WS11	1	50	3 (2)			3.00 to 5.00	90 secs	-	-	-	-	0.1	0.0	21.3	0.0	0	0
WS11	1	50	3 (2)			3.00 to 5.00	120 secs	-	-	-	-	0.1	0.0	21.3	0.0	0	0
WS11	1	50	3 (2)			3.00 to 5.00	180 secs	-	-	-	-	0.1	0.0	21.3	0.0	0	0
WS11	1	50	3 (2)			3.00 to 5.00	240 secs	-	-	-	-	0.1	0.0	21.3	0.0	0	0
WS11	1	50	3 (2)			3.00 to 5.00	300 secs	-	-	-	-	0.1	0.0	21.3	0.0	0	0
WS11	1	50	3 (3)	5.00	4.53	3.00 to 5.00	13/10/2017 10:07:00	-	-	-	DRY	-	-	-	-	-	-
WS11	1	50	4	5.00		3.00 to 5.00	19/10/2017 09:49:00	993	993	0.3 <sub>(I)</sub>	-	-	-	-	-	-	-
WS11	1	50	4			3.00 to 5.00	30 secs	-	-	0.2 <sub>(SS)</sub>	-	-	-	-	-	-	-

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

	RSK Environment I td	Compiled By	Date	Checked By	Date	Contract Ref:			
DCK	Abbey Park	Mostrewige	26/10/17			:	81358	3	
	Humber Road	Contract:	Page:						
	Coventry CV3 4AQ		Roade	Bypass		44	of	48	AGS

GINT\_LIBRARY\_V8\_06.GLB : E - GAS MON - STANDARD - 6B - A4L : 313583 - ROADE BYPASS.GPJ : 26/10/17 09:46 : MS4 :

[Pressures] Previous During

<u>Start</u>

<u>End</u>

Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydroge Sulphide (ppm)
WS11	1	50	4 (2)	5.00		3.00 to 5.00	19/10/2017 09:50:00	-	-	-	-	0.1	0.0	20.9	-	0	0
WS11	1	50	4 (2)			3.00 to 5.00	30 secs	-	-	-	-	1.8	0.0	20.6	-	0	0
WS11	1	50	4 (2)			3.00 to 5.00	60 secs	-	-	-	-	1.7	0.0	19.5	-	0	0
WS11	1	50	4 (2)			3.00 to 5.00	90 secs	-	-	-	-	1.7	0.0	19.2	-	0	0
WS11	1	50	4 (2)			3.00 to 5.00	120 secs	-	-	-	-	1.7	0.0	19.2	-	0	0
WS11	1	50	4 (2)			3.00 to 5.00	150 secs	-	-	-	-	1.7	0.0	19.2	-	0	0
WS11	1	50	4 (2)			3.00 to 5.00	180 secs	-	-	-	-	1.7	0.0	19.2	-	0	0
WS11	1	50	4 (2)			3.00 to 5.00	240 secs	-	-	-	-	1.7	0.0	19.1	-	0	0
WS11	1	50	4 (2)			3.00 to 5.00	300 secs	-	-	-	-	1.7	0.0	19.1	-	0	0
WS11	1	50	4 (3)	5.00	4.53	3.00 to 5.00	19/10/2017 09:56:00	-	-	-	4.53	-	-	-	-	-	-
WS12	1	50	1	5.00		3.00 to 5.00	28/09/2017 08:53:00	1001	1001	0.0 <sub>(I)</sub>	-	-	-	-	-	-	-
WS12	1	50	1			3.00 to 5.00	30 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS12	1	50	1 (2)	5.00		3.00 to 5.00	28/09/2017 08:54:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS12	1	50	1 (2)			3.00 to 5.00	15 secs	-	-	-	-	4.1	0.0	17.2	0.0	1	0
WS12	1	50	1 (2)			3.00 to 5.00	30 secs	-	-	-	-	3.7	0.0	16.0	0.0	1	0
WS12	1	50	1 (2)			3.00 to 5.00	60 secs	-	-	-	-	3.8	0.0	15.7	0.0	1	0
WS12	1	50	1 (2)			3.00 to 5.00	90 secs	-	-	-	-	3.8	0.0	15.6	0.0	1	0
ey: I = Initial, P	= Peał	k, SS = Ste	eady State. No	ote: LEL = Lo	wer Explosiv	e Limit = 5% v/v.		1									
R	RSK Environment Ltd				Compiled By Date Checked By   MDSHraukup 26/10/17						Date		act Ret:	31358	3		
SK	Hu	imber F Covent	Road try	Contract:	1 2 3 F C C L J		Roade	Bypass	;					Page:	2	15 of	48

AGS

GINT\_LIBRARY\_V8\_06.GLB : E - GAS MON - STANDARD - 6B - A4L : 313583 - ROADE BYPASS.GPJ : 26/10/17 09:47 : MS4 :

[Pressures] Previous During Start

End Equipment Used & Remarks

WS12 1			Depth (m)	Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Pressure (mb)	Pressure (mb)	Flow (l/hr)	Depth (mbgl)	Dioxide (% / vol)	(% / vol)	(% / vol)	LEL (%)	Monoxide (ppm)	Hydrogen Sulphide (ppm)
	50	1 (2)			3.00 to 5.00	120 secs	-	-	-	-	3.8	0.0	15.6	0.0	1	0
WS12 1	50	1 (2)			3.00 to 5.00	180 secs	-	-	-	-	3.9	0.0	15.5	0.0	1	0
WS12 1	50	1 (2)			3.00 to 5.00	240 secs	-	-	-	-	3.9	0.0	15.5	0.0	1	0
WS12 1	50	1 (2)			3.00 to 5.00	300 secs	-	-	-	-	3.9	0.0	15.4	0.0	1	0
WS12 1	50	1 (3)	5.00	5.06	3.00 to 5.00	28/09/2017 09:00:00	-	-	-	3.58	-	-	-	-	-	-
WS12 1	50	2	5.00		3.00 to 5.00	05/10/2017 08:52:00	999	999	0.0 <sub>(l)</sub>	-	-	-	-	-	-	-
WS12 1	50	2			3.00 to 5.00	30 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS12 1	50	2 (2)	5.00		3.00 to 5.00	05/10/2017 08:53:00	-	-	-	-	0.0	0.0	20.9	0.0	0	0
WS12 1	50	2 (2)			3.00 to 5.00	15 secs	-	-	-	-	7.9	0.0	13.9	0.0	1	0
WS12 1	50	2 (2)			3.00 to 5.00	30 secs	-	-	-	-	7.5	0.0	12.4	0.0	1	0
WS12 1	50	2 (2)			3.00 to 5.00	60 secs	-	-	-	-	7.6	0.0	12.0	0.0	1	0
WS12 1	50	2 (2)			3.00 to 5.00	90 secs	-	-	-	-	7.7	0.0	11.9	0.0	1	0
WS12 1	50	2 (2)			3.00 to 5.00	120 secs	-	-	-	-	7.7	0.0	11.9	0.0	1	0
WS12 1	50	2 (2)			3.00 to 5.00	180 secs	-	-	-	-	7.7	0.0	11.8	0.0	1	0
WS12 1	50	2 (2)			3.00 to 5.00	240 secs	-	-	-	-	7.7	0.0	11.8	0.0	1	0
WS12 1	50	2 (2)			3.00 to 5.00	300 secs	-	-	-	-	7.7	0.0	11.8	0.0	1	0
WS12 1	50	2 (3)	5.00	5.07	3.00 to 5.00	05/10/2017 08:59:00	-	-	-	4.80	-	-	-	-	-	-
WS12 1	50	3	5.00		3.00 to 5.00	13/10/2017 09:43:00	1008	1008	0.1 <sub>(l)</sub>	-	-	-	-	-	-	-

Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

	PSK Environment I td	Compiled By	Date	Checked By	Date	Contract Ref:			
DCK	Abbey Park	Mostreukje	26/10/17			3	13583		
	Humber Road	Contract:	Page:						
	Coventry CV3 4AQ		Roade	Bypass		46	of 4	18	AGS

GINT\_LIBRARY\_V8\_06.GLB : E - GAS MON - STANDARD - 6B - A4L : 313583 - ROADE BYPASS.GPJ : 26/10/17 09:47 : MS4 :

[Pressures] Previous During

<u>Start</u>

End Equipment Used & Remarks

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydroger Sulphide (ppm)
WS12	1	50	3			3.00 to 5.00	30 secs	-	-	0.1 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS12	1	50	3 (2)	5.00		3.00 to 5.00	13/10/2017 09:44:00	-	-	-	-	0.1	0.0	20.8	-	0	0
WS12	1	50	3 (2)			3.00 to 5.00	60 secs	-	-	-	-	9.1	0.0	17.0	-	0	0
WS12	1	50	3 (2)			3.00 to 5.00	90 secs	-	-	-	-	8.5	0.0	12.3	-	0	0
WS12	1	50	3 (2)			3.00 to 5.00	120 secs	-	-	-	-	8.7	0.0	11.4	-	0	0
WS12	1	50	3 (2)			3.00 to 5.00	150 secs	-	-	-	-	8.8	0.0	11.3	-	0	0
WS12	1	50	3 (2)			3.00 to 5.00	180 secs	-	-	-	-	8.8	0.0	11.2	-	0	0
WS12	1	50	3 (2)			3.00 to 5.00	240 secs	-	-	-	-	8.8	0.0	11.2	-	0	0
WS12	1	50	3 (2)			3.00 to 5.00	300 secs	-	-	-	-	8.8	0.0	11.2	-	0	0
WS12	1	50	3 (2)			3.00 to 5.00	360 secs	-	-	-	-	8.8	0.0	11.2	-	0	0
WS12	1	50	3 (2)			3.00 to 5.00	420 secs	-	-	-	-	8.8	0.0	11.2	-	0	0
WS12	1	50	3 (3)	5.00	5.08	3.00 to 5.00	13/10/2017 09:51:30	-	-	-	4.64	-	-	-	-	-	-
WS12	1	50	4	5.00		3.00 to 5.00	19/10/2017 10:13:00	994	994	0.1 <sub>(I)</sub>	-	-	-	-	-	-	-
WS12	1	50	4			3.00 to 5.00	15 secs	-	-	0.0 <sub>(SS)</sub>	-	-	-	-	-	-	-
WS12	1	50	4 (2)	5.00		3.00 to 5.00	19/10/2017 10:13:30	-	-	-	-	0.1	0.0	20.8	-	0	0
WS12	1	50	4 (2)			3.00 to 5.00	30 secs	-	-	-	-	8.7	0.0	18.1	-	1	0
WS12	1	50	4 (2)			3.00 to 5.00	60 secs	-	-	-	-	8.1	0.0	12.6	-	1	0
WS12	1	50	4 (2)			3.00 to 5.00	90 secs	-	-	-	-	8.4	0.0	11.4	-	1	0
əy: I = Initial, F	P = Pea	k, SS = Ste	eady State. No	ote: LEL = Lo	wer Explosive	e Limit = 5% v/v.		1							t D - f		
R	SK E	Inviron	ment Ltd		Compiled B	Зу	Date		Chec	ked By		_	Date	Contra	act Ref:		
<b>CI</b>	Abbey Park			n	Distreaky	es	26/10/17									31358	3
	Humber Road					•								Page:			

**Roade Bypass** 

**47** of **48** 

AGS

Coventry

CV3 4AQ

[Pressures] Previous During Start

End

Equipment Used & Remarks

Pipe Reported Measured Borehole Atmos Carbon LEL Carbon Monitoring Gas Water Methane Hydrogen Exploratory Oxygen Pipe Date & Time Installation Installation Pressure Pressure Monoxide Sulphide Position diameter Round Flow Depth Dioxide Response Zone ref of Monitoring ID (mm) Depth Depth (mb) (mb) (l/hr)(mbgl) (% / vol) (% / vol) (% / vol) (%) (ppm) (ppm) (elapsed time) (m) (mbgl) WS12 4 (2) 3.00 to 5.00 0.0 11.3 1 0 1 50 120 secs 8.4 ---------WS12 1 50 4 (2) 3.00 to 5.00 150 secs 8.4 0.0 11.3 0 0 ---------WS12 4 (2) 0.0 11.2 0 1 50 3.00 to 5.00 210 secs 8.4 0 --------WS12 1 50 4 (2) 11.2 3.00 to 5.00 270 secs 8.4 0.0 0 0 ---\_ ----WS12 1 50 4 (2) 3.00 to 5.00 8.4 0.0 11.2 0 0 330 secs ----\_ ----WS12 50 4 (3) 4.57 1 5.00 5.08 3.00 to 5.00 19/10/2017 10:20:00 ---\_ -----Key: I = Initial, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v. Contract Ref: Compiled By Date Checked By Date **RSK Environment Ltd** MDStrewiger 313583 Abbey Park 26/10/17 Humber Road Contract. Page: Coventry **Roade Bypass** 48 of **48** AGS

GINT LIBRARY V8 06.GLB : E - GAS MON - STANDARD - 6B - A4L : 313583 - ROADE BYPASS.GPJ : 26/10/17 09:47 : MS4 :

CV3 4AQ